

Process over Product: Kinesthetic Cinema, Sporting Bodies, and Media Milieux

by

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After several fruitless onslaughts, don't give up, don't persist either. But keep this problem in a corner of your mind where it can mature. Change, both of you.

-Paul Valéry, *Cahiers/Notebooks I*

Yes, by the / heavens, if I wanted a boat I would want / a boat I couldn't steer.

-Mary Oliver, "If I Wanted a Boat"

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This dissertation examines historically the interplay between sporting bodies, technological experimentation, and the fluctuations of moving-image practice. Each of its chapters revolves around a historical, local collision of sport and media-making, yet it also offers a broader framework through which we can consider how cinema has given sport a particular image while being heavily determined, aesthetically and technologically, by sport and athletics. In analyzing “standard” sports—boxing and Olympic events—as well as those often considered as marginal—freediving, skateboarding, and nineteenth-century athletic motion studies—I offer a more robust account of how these sporting cinematic relations have unfolded. By looking closely at production processes and the often experimental course of technological development, I argue that renewed attention to cinematic devices generated vis-à-vis athletic process and sporting milieux allows us to place significant pressure on a number of film-theoretical assumptions. In this regard, the four chapters and coda of this dissertation provide a reconsideration of cinematic contingency, indexicality, questions of milieu and measurement, embodied image-capture, and the notion of “problems” in filmmaking. Critically, I expand the discussion of sporting bodies to include those on both sides of the lens, paying close attention to how cinematographers and camera operators are often *moved* by the surprising and kinesthetic movements they aim to track. I develop an approach that rethinks cinematic relationality, providing a thickened sense of experience that accounts for a sporting process that sweeps up both athlete and camera operator. In so doing, I argue that careful attention paid to technical specifications and production particulars can

profitably coexist with a close-reading disposition; increased familiarity with the processes of production urges us to see—and feel—in the images themselves certain markers of this relation. Although sports media is a privileged site for such analysis, this approach is also useful in terms of image-making practices far afield from the gymnasium, the boxing ring, or Olympic stadia.

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Preface: Dice Throws

My office corkboard saw its contents change many times during the writing of this dissertation, but one element pinned to it never moved. It is a large printout of a slide from the Universal Newsreels catalogue at the National Archives and Records Administration in College Park, Maryland, and it reads as follows:

SPORTS AND AMUSEMENTS Division

Here are found subjects covering a broad spectrum of amusements, entertainment, pastimes, recreational and sports activities, although some may be considered to be business ventures, either legal or otherwise, e.g., GAMBLING.

I so love this document, not least because it captures some of the flexibility of “sport” to which my project aims to pay heed. But I think its significance lies more expressly in what it reminded me about researching, thinking, and writing; it’s always a gamble, always a throw of the dice. Deleuze spoke eloquently about this by way of Nietzsche, latching on to the latter’s invocation of the “dance floor for divine accidents, [...] a divine table for divine dice and dice players.” In Deleuze’s words, “[t]he dice which are thrown once are the affirmation of *chance*, the combination which they form on falling is the affirmation of *necessity*.”¹ *Amor fati*, then, affirming chance (repetitively) and smiling at the returned destiny. The chapters which follow will discuss chance and the contingent as historically critical concepts in both sport and cinema, but we are not yet there. First, a few words about several of the dice throws that led to this work.

In early October, 2015, having just arrived at the University of Pittsburgh, I gave a paper at the FSGSO’s annual Graduate Student Film Studies conference. The topic of the paper was

¹ Gilles Deleuze, *Nietzsche and Philosophy*, trans. Hugh Tomlinson (London and New York: Continuum, 1986), 26, emphasis in the original.

street skateboard cinema, affect theory and political potential, and I had little intention of pursuing the matter any further after the conference. For although I had skateboarded and filmed skateboarding for over a decade before beginning graduate school, I had just completed a Master's Thesis on influence and intertextuality in the work of Paul Thomas Anderson, and I felt as though skateboarding and sport were to be vestiges of my past as I moved on to more "acceptable" scholarly matters. I had also trained as a cinematographer in film school and done my time in Hollywood, and I likewise thought that questions of craft and production would remain in the realm that I was already thinking of as a previous life.

But I had yet to meet Marcia Landy. Having just retired (and I am eternally sad to have missed the opportunity to take one of Marcia's famed seminars), she acted as a respondent for my panel, and I wondered how this Distinguished Professor Emerita, whom I knew nothing about, would respond to my talk. Even if I don't recall the precise wording of her reaction, I will never forget its energy. To the best of my memory, Marcia, with characteristic—and infectious—joy and philosophically dense leaps of thought, said something along the lines of: "I want to talk about *this* clip, right here! I want to talk about *energy*, about *bodies in motion*, *camera movement*... about *sex* and *desire*, and about *potential*! Talk to me about this, I want *you to say more about this*! You spoke of Spinoza and Deleuze, but why don't we consider..."

I think I may have blacked out for a moment. I believe I gave something of an answer, which was probably not very good. A fellow graduate student found me after the panel and asked if I knew Marcia, to which I responded in the negative. He told me that she was referring to me as Skateboard Guy in a conversation nearby, and I didn't know quite how to feel. I wasn't Skateboard Guy. At least I thought I wasn't. But when Marcia gives you a title, it's perhaps best to just accept it.

Word seemed to get around, and colleagues present at the conference or kept abreast of its proceedings would ask me about skateboarding, or joke with me about how it felt to be Skateboard Guy, or inquire about my research—work which, frankly, I didn't think I had accomplished, at least not sustained research pertaining to skateboarding or sports media. But I would see Marcia around campus every once in a while, often walking and talking with Adam Lowenstein or Mark Lynn Anderson or one of her advisees, and we would always talk. I was now Adam to her, but also still Skateboard Guy. She would ask me about my interests, we would discuss Deleuze and Guattari (mostly I would just listen), and I would inquire as to when she wanted to learn to skateboard. My wife and I once drove Marcia and her partner home from a gathering and, upon being invited in to stay “for a few minutes,” talked for hours about cinema, life, and Marcia's paintings of the Ireland hillsides. These are some of my fondest memories from my time at Pitt, for obvious reasons.

As I moved through coursework and my project paper phase, preparing for comprehensive exams, I began to see skateboarding and sports media slipping back in to my thinking and my writing. Although I was still unsure about its validity as a dissertation topic, I eventually traveled to London for Pitt's second biannual BIMI conference and gave a talk about street skateboard videography, experimental film, and creative uses of space. This led to a return across the Atlantic the following year to participate in the inaugural meeting of Pushing Boarders, the first international academic conference on skateboarding. Work from these presentations leaked into one of my project papers and led to my first peer-reviewed publication. And when it came time to generate my dissertation prospectus, skateboarding was back on the menu, even if relegated to a single chapter (along with surfing and snowboarding media), which would ultimately act as a coda.

Marcia thus cast the first die of this dissertation, even if she didn't know it. For that I am ever grateful. Even if the finished product took a more varied and multifaceted shape, the imprint of that event remains. In many ways it seemed that she knew more about me and my research than I myself did, which is hardly surprising.

The four members of my committee were as instrumental as Marcia in kicking off this project, and during its writing their feedback, insight and advice was unparalleled. Their fingerprints are all over the dissertation. My chair, Mark Lynn Anderson, was the best possible mentor for me at this stage of my career and, I believe, this stage of my life. His commitment to film historiography and matters of media archaeology always challenged me to be a more careful researcher, yet he also celebrated risk-taking and academic adventure. Every page of this project shows the influence of his wonderfully eclectic seminars in Film History/Theory and Film Historiography, as well as our many conversations, held among the various camera and projection systems in his office or via Zoom (with my cats forever present). In short, he always knew when to place me back on track and when to let me wander a bit. He once told me, when I was struggling to finish a project paper, to remove my super-ego and place it in his wastebasket. I could have it back when the work was done. I didn't always act on this advice, but I consistently reflected on what it meant, and this loosened my self-imposed burden tremendously. Furthermore, he was always able to tell me what I was *really* writing about when I couldn't see it, and his knack for conveying this information in the most delightful sporting metaphors was exactly what I needed. Perhaps someday I will learn enough about bicycles to hold my own in our conversations about such matters.

Randall Halle has been so supportive of my work in all of its stages here at Pitt, and in our first prospectus meeting he offered me an axiom about effectively blending a range of interests

within the dissertation, which I thought about every time I caught myself wondering if this work was really doing what I wanted it to do. I am blessed to have learned from him in the classroom, in conference settings, and in the most cordial of private conversations. In some of the most trying times of my life, when everything appeared to be hanging in the balance, he gave me strength and hope. The word “apparatus” appears but sparingly in this dissertation, but Randall’s Apparatus Theory seminar has informed so much of my thinking on cinematic technology.

It seems as though my work has very little to do with that of Adam Lowenstein, but the more I reread his monographs and articles the more I have come to realize how influential his thinking has been to this project. I will never forget writing a term paper for his Film History/Theory class on Brakhage’s *The Act of Seeing with One’s Own Eyes*, which I imagine was more an act of masochism or purgation than anything else. His feedback and teaching style are wonderfully careful, and he displays a true joy for close analysis. I am so lucky to have learned from him.

Neepa Majumdar was the first person I spoke with at Pitt, many moons ago, during my initial contact and campus visit. I can think of no better ambassador for the school’s Film and Media Studies Program and what it stands for. Although I never got to take one of her courses, participating with her in the London conference and getting to know her better was one of the distinct pleasures of my time here at Pitt. She is tireless, caring, and inspirational. And, in a less academic vein, I must say that her smile and laughter will always stay with me. She may not know how often she brightened my day when I really needed it.

Other members of the Pitt FMST faculty, both present and former, deserve more space than I will be able to dedicate here. However, I would like to acknowledge Mark Best, John Cantine, Robert Clift, Nancy Condee, Charles Exley, Zack Horton, Lucy Fischer, Jinying Li, Colin

MacCabe, Dana Och, Volodia Padunov, David Pettersen, and Terry Smith. In the English Department, thanks are due to Jonathan Arac, Nancy Glazener, Jean Grace, Cory Holding, and Mark Kemp.

Words fail to express the debt I owe Nancy Glazener. Her seminars in literary studies and affect theory helped prepare me for the rest of my coursework, and her guidance kept me afloat at times. Furthermore, Nancy's feedback and suggestions during my comprehensive exam phase helped tremendously as I translated some of that thinking to my prospectus. I was so blessed to have the opportunity to participate in Lucy Fischer's final seminar, and I likewise cherished being able to take Terry Smith's Contemporaneity course shortly before his retirement.

Dana Och has made me a better teacher, scholar, colleague, and—most importantly—a better friend. Her selflessness knows no bounds. I will never forget our meetings, held ostensibly to discuss a single teaching element but spiraling always into a hands-on engagement with philosophical toys, recently unearthed projection systems, video game platforms, skateboarding videos, etc. I owe her many batteries, AA and AAA alike, and many more thanks. I'm glad we did not set her office on fire when the View-Master projector began cooking.

Sarah Baumann, Jesse Daugherty and Mark Kemp helped me with so many administrative matters over the past seven years. Not only did they answer myriad questions for me with tremendous alacrity, but they also remained courteous when I would ask the same exact questions year after year without fail. Jesse Daugherty is quite truly the Swiss Army Knife of Pitt's English Department and Film and Media Studies Program. There is no problem this man cannot fix. His flexibility, kindness, and ability to assist in any situation are unparalleled. I stole his pen by accident when I first visited the school to sign various forms, and I feel as though this theft stands as an apt metaphor for our interactions. I am ever in his debt.

This project would also never have come to fruition without incredible support and assistance from Pitt's English Department, its Film and Media Studies Program, and the Dietrich School of Arts and Sciences Dean's Office. Numerous research and development grants allowed me to travel to archives and undertake critical research, even if COVID-19 scrambled certain of those plans. The Arts & Sciences Graduate Fellowship was immensely important to me as I begun this dissertation in 2019, and it became even more essential as 2020 continued to present new problems with respect to teaching, problems that I did not need to worry about. Likewise, the Carolyn Chambers Memorial Fellowship allowed me to produce substantial work in 2020-21 while again dramatically easing my teaching burden, and then once more did I find the fellowship doubly important when life intervened, this time in the form of wholly unforeseen medical contingencies. As I rounded out the project, the English Department Summer Degree Completion Fellowship was of the essence in allowing me to make it to the (literal, figurative) finish line.

In terms of archival research, I was blessed to benefit from the knowledge and assistance of so many wonderful archivists, librarians and staff members. Special thanks are due to Jim Duffin, Timothy Horning and the rest of the staff at the University of Pennsylvania's Archives & Records Center. The first chapter of this project changed in myriad and exciting ways thanks not only to their help, but also their suggestions of collections, boxes and papers I would have never considered consulting. I cannot thank them enough. At the National Archives and Records Administration I wish to thank everyone in the Motion Picture, Sound, and Video Branch; Ellen Mulligan was extremely helpful during my initial trip to the archive, and when COVID-19 threw a wrench into subsequent visits she, along with Katherine Stinson, was instrumental in aiding my continued research. At the Hans Hass Institute, Michael Jung enthusiastically responded to my (much delayed) request for information and material, and I so enjoyed our correspondence about

the life and work of Hans and Lotte Hass. Christine Windheuser and Kay Peterson at the NMAH Archives Center so kindly assisted me in the eleventh hour of my writing. The staff at Pitt's Special Collections room was so helpful in guiding me through critically important materials, and I also owe a blanket thank-you-very-much to the numerous librarians and assistants who fielded hundreds of questions, scanned scores of .pdfs, obtained texts through interlibrary loan, and watched patiently and without comment while I removed a metric ton of sticky notes from dog-eared library books to return. This dissertation also benefited greatly from the open-access resources provided by the Digital Media History Library and its Project Lantern search engine. I thank Eric Hoyt, David Pierce, and the entire DMHL team for aggregating and cataloging such a helpful (and frequently surprising!) body of materials.

I frequently shared what we might call the craps table of graduate school with a wonderful cast of characters. As such, I threw many of these dice among friends and colleagues. Thanks here are due to Ben Agrodnik, Eve Barden, Emma Ben Hadj, Andrew Berehndt, Jordan Bernsmeier, Maxime Bey-Rozet, Katie Bird, Eli Boonin-Vail, Zhanna Budenkova, Kelsey Cameron and Kelsey Cummings, Evan Chen, Dan Chyutin, Jonathan Devine, Jessica Fitzpatrick, Veronica Fitzpatrick, Kevin Flanagan, Gabbie Guedes, Jeff Heinzl, Jonah Jeng, Sonia Lupher, Silpa Mukherjee, Julie Nakama, Gen Newman, Javier O'neil-Ortiz, Ryan Pierson, Adam Prosk, Laura Stamm, Michael Svedman, Kuhu Tanvir, John Taylor, and Nikhil Titus. Our group lost a truly inspirational and kind-hearted friend and colleague, Denis Saltykov, as I worked on this project. We are all lucky to have known him, and I am lucky to have had this great support system in the wake of such a loss.

I was so fortunate to live with Katie Bird, Kevin Flanagan and Jeff Heinzl upon first arriving in Pittsburgh. The "Burchfield House" was the best possible site for my introduction to doctoral studies at Pitt, and the combined experience, knowledge and guidance (and fun!) of these

three colleagues was incomparable. That it was the go-to house for Film Studies gatherings at this time even more firmly etches it in my memory as my former *home*, in every sense of that term.

Of this list of friends and colleagues, a few merit special mention. I could not imagine my time at Pitt absent the friendship and advice of Sonia Luper and Maxime Bey-Rozet, two of my very favorite people in the entire world. That they happened to be the only two people at my wedding during the first year of Covid protocols (well, two of only three—their infant son, Emile, being the third!) makes clear how much they mean to me and my wife. And Katie Bird taught me so much about how to be a researcher, writer and instructor. More than anything, though, she taught me so much about friendship and care. I am so grateful to have gotten to know Katie and her husband, Adam Prosk. They may have left the Pittsburgh area some years ago, but their friendship buoys me always. (Adam was also the online video game partner-in-crime I desperately needed during the strange lockdown months of 2020).

I was also lucky to benefit from the insight and academic enthusiasm of a number of colleagues across the Humanities, whether in conference settings, correspondence, or private conversation. I would like to acknowledge, in this capacity, Iain Borden, Katherine Contess, Jennifer Doyle, James Gilmore, Lisa Han, Sander Hölsgens, Andrew Johnston, Kevin B. Lee, Akira Mizuta Lippit, Duncan McDuie-Ra, Ryan Pierson, Jordan Schonig, Meghan Sutherland, and Travis Vogan. From my time at NC State, I will always cherish the guidance and wisdom (and humor) of my advisor, Devin Orgeron, as well as the significant roles that Ora Gelley, Marcia Gordon, Michael Grimwood, Andrew Johnston, and Leila May played in my development as a scholar.

Many of the ideas and arguments that ended up in this project were presented, discussed, tested, and fundamentally changed at various conferences, including the Society for Cinema and

Media Studies, Pushing Borders, The Society for the History of Technology, the Pitt-Birkbeck Conference, Film & History, and the graduate student conferences at Pitt, Yale, and UMass Amherst. Chapter four of this dissertation is a revised and expanded version of “Experiments in the Cine-Olympic Cycle: Camera Technology and Operation in *The Grand Olympics* (1961) and *White Rock* (1977),” *The Velvet Light Trap* 87 (2021): 4-21, while elements of the Coda originally appeared as “Concrete Jungles: Street Skateboard Cinema, Animal Worlds and Contingent Ecologies,” *The Cine-Files* 14 (2019): <https://www.thecine-files.com/hebert/>.

I have been so lucky to teach (and learn from) a wonderful group of students during my seven years at Pitt, and this dissertation greatly benefited from our discussions over the years. Although many of my courses had a hand in fine-tuning my thinking on the chapters which follow, I would like to highlight in particular my Spring 2022 Technologies of the Body class. The students in this group engaged with a range of texts and materials that form the spine of this project, pushing me to rethink some of my assumptions, and this was a great help to me as I finalized a number of the chapters. The students’ insight was fantastic, and they kept my spirits high.

Completing a dissertation is no walk in the park, and doing so while living with Type-I Diabetes could become very frustrating at times. Luckily I have a wonderful group of doctors and PA-Cs who kept me—and my blood sugar—on the straight and narrow. I am forever indebted to Marni Greenwald and Carley Stoy in this regard. I also spent plenty of time over the past five years in and out of various physical therapy programs. The contortions required to film skateboarding for so many years can do strange things to a body, not least when one is also spending time jumping down sets of stairs and playing any sport in sight. This is a project heavily concerned with bodies, their functioning, their laboring—and their occasional breakdown. Thus, I was so lucky to have wonderful physical therapists who not only eased me back to pain-free living but listened to my

ramblings about late-nineteenth century physical culture, the Olympics, and extreme sports media. Special thanks here are due to Michael Tsang and Nick Stephenson. They will likely never see this acknowledgment, but the fact that I'm still standing and in one piece attests to their expertise.

To my friends back home, some of the very best I could ever ask for, I thank you all. You may never know how much you helped me throughout these years, nor how much your imprint and spirit is registered somewhere in these pages.

My wife sometimes remarks that I am like a sports encyclopedia—"but a strange one," she wisely adds. This much is true. My encyclopedic knowledge is struck through with peculiarities; it is partial; and it has some significant gaps. I humbly suggest, though, that this is the most fun sort of almanac. It's why Novalis' remains the best encyclopedia: it works via fragments, and it is auto-philosophical, unfinished, and often cryptic. (My personal favorite Novalis entry is 586: "Couldn't I perhaps even hold lectures here?"—meaning at the Mining Academy). I am no Novalis, that much is certain. But my "strange" encyclopedism emerged in no small part from my mother and father acting as my very earliest filmgoing pals. When I wasn't watching *Jason and the Argonauts* for the hundredth time with my mom (before the age of six), marveling at Ray Harryhausen's stop-motion skeletons and learning what it meant (to my mind) to be Greek, we were dusting off a VHS copy of *NFL Rocks*, a rather bizarre mash-up of classic NFL Films footage with the sounds of Elton John, Robert Palmer, John Mellencamp, and Richie Sambora. And my father introduced me to the wide and varied world of sports, both in person and in its mediated valences. More importantly, my parents have always been my biggest supporters, and they consistently encouraged me to follow my dreams, however outlandish those might have been and in whichever way the spirit might have moved me. From filming skateboarding, to studying cinematography in film school, to Hollywood, to North Carolina, and on to Pitt for *many more*

years of school, they smiled, encouraged, and told me to go get it. Words fail to express how much their continued support means to me. I never could have done this without them.

Reviewing these pages for the last time, I was struck by how apparent are the anger, pain and sadness of certain sections, sentences, even single words. Maybe this is evident only to my eyes. I know which passages were written during the long, frightening months when what most absorbed me was my wife's cancer treatment—when to work on a dissertation (or to work on anything) seemed—was—so far from what is important in life. And yet these selfsame sequences, I think, also express hope, or faith. If so, if there is faith and strength running parallel with the fear, it is due to my wife's resiliency and spirit during this time period and after that fantastic day when she was declared cancer-free. Her influence is felt across every page, every word (how many proofreads, how many suggestions, how many words of wisdom...), but I find it also between the words, under the text, supporting it. She has long been my best friend, but over the past few years she became in a very real sense my hero. I couldn't imagine this project—or any aspect of my life—without you, Madison, and your love. I am so grateful, every day, for your recovery and your companionship.

Our two feline companions, Eloise and Luna, also deserve special mention. They were with me from box to wire on this project, and they spent much of the writing process on my lap or knocking things about on my desk. They are just the best. Our little one, Luna, walked across my keyboard once and altered the spelling of a word, but somehow it could still stand in its new valence. I kept it in the document with her change preserved, and it is thus our secret with respect to which of the many thousands of words she had a ~~hand~~ paw in.

Finally, I dedicate this project to my grandfather, Arthur Zitrides (15 March 1917 – 15 March 2003). He was the best all-around athlete I ever knew, and very likely the best Greek. I think he might've liked reading what follows.

1.0 Introduction

*Bodies don't "know," nor are they in
"ignorance."*

-Jean-Luc Nancy²

This is not a dissertation about what bodies know, yet it has plenty to say about how they are in-formed. Neither is it expressly concerned with bodies' ignorance, or their so-called "automatic" processes, although it is interested in how bodies are individuated, often in unforeseen and imperceptible ways. In short, the bodies discussed herein are suspended—leaping, perhaps—between the non-place of crystalline knowledge and the shadow-world of automatism. What situates them, yet without ever fully determining, is their milieu, with(in) which they resonate.

The bodies discussed in these chapters run, jump, fight, struggle, labor. They present and are represented. They perform acrobatic feats, compete in prize fights, dive under the waves, and fly through the air. They operate singly and in large groups, dancing, acting, performing, and expressing before the camera. Of equal import, however, are those bodies on the "other" side of the lens that perform a range of athletic feats—even, sometimes, when stationary. These bodies stalk the action, preparing technology for a certain type of capture; they too leap and sprint, swim and ski, operate mounted camera rigs and cumbersome sound recording machinery; they react, often with a mixture of prescribed and haphazard movement, to ballistic motion and kinetic exuberance. Yet they also anticipate, balance, wait, tire, get sluggish, sway. In fact, this may be a surprisingly effective way to address *movement* in media production, since there really is no such

² Jean-Luc Nancy, *Corpus*, trans. Richard A. Rand (New York: Fordham University Press, 2008).

thing as standing still. “Everyone sways,” says Erin Manning: “To stand still you have to move.”³ As such, we deploy no fundamental distinction between the moving camera and the still camera, the process of preparing for a shot and the product generated through its recording, or movement in its most kinetic weft and its more centripetal, proprioceptive warp. These are differences of degree, not kind.

Such differences are of course produced in part through technological *handling*. Thus, we also have the various camera and lens systems around which the aforementioned figures swirl, and through which their mediation is effected. These, too, are bodies, albeit ones with different internal structures. Such technologies likewise do not “know” anything, although I would hasten to add that they are far from “ignorant”—their operations rely on trace efforts and actions of human workers (and players), craftswomen and craftsmen, as well as various entropic processes that may *give* the device a special quality through chance adjustments, or that may *take* from the device a certain characteristic through system breakdown. Thus, for Gilbert Simondon, a prerequisite to rethinking the supposed divide between culture and technics is not just the acceptance that technical objects may be considered as “bodies” but something much simpler: the technical object always carries with it a “human reality,” oft overlooked in lofty discussions of *techne* (τέχνη). In other words, “[c]ulture has constituted itself as a defense system against technics; yet this defense presents itself as a defense of man, and presumes that technical objects do not contain a human reality within technical reality.”⁴ Such a defense, I would argue, is therefore both overly proud and overly deferential.

³ Erin Manning, *Relationescapes* (Cambridge, MA and London: The MIT Press, 2009), 43.

⁴ Gilbert Simondon, *On the Mode of Existence of Technical Objects*, trans. Cecile Malaspina and John Rogove (Minneapolis: Univocal, 2017), 15. See translator’s note on 15 fn.1 on the difficulty of parsing Simondon’s use of “la technique” in his texts, as well as his treatment of the difference between “technics” and “technology.”

It is thus paradigmatically human in its contradictions. We retreat to culture to reemphasize what makes us human, and we refuse to see the human reality which informed the technical, opting rather to view technical tools, once “released,” as fundamentally other—even if they are quite helpful. It comes as little surprise that Simondon (1958) viewed this divide in terms of *alienation*, albeit one to which a “physio-psychological sense” must be added to Marx’s socio-economic, dialectically framed theorization of *Entfremdung* and *Entäusserung*.⁵ In other words, running parallel with the alienation of the worker from the means of production is an alienation of “human individual” to “technical individual,” so to speak a mistaken belief that man and machine are fundamentally separate, that tools are fundamentally separate from the human processes that inform them, and that men and women are in effect split-selves whose cultural and technical “mentalities” remain, once again, separate.

Simondon’s thinking on alienation and technical mentality is thus historical, its primary target stretching from the mid-nineteenth century into the post-WWII years of the twentieth. As such, it fits comfortably with much of the media discussed in this dissertation, challenging us to rethink questions of labor, invention, and experimentation in image-making practices. Yet it also transcends this period. Our increasingly hyper-mediated, virtual-leaning, information-overloaded, and technologically-alienated society continues to present examples and problems immanent to these very questions. In what follows, I examine a set of local and historical nexuses through which moving-image processes changed, often in unforeseen and surprising ways, attending to the relationality of bodies (in front of the camera, behind—or “with”—it, and the camera body itself)

⁵ Simondon, *Mode of Existence*, 133-34. See e.g. Karl Marx, *Economic and Philosophical Manuscripts of 1844*, trans. Martin Milligan (Amherst: Prometheus Books, 1988), 69-84, and Karl Marx, *The Grundrisse*, trans. Martin Nicolaus, in *The Marx-Engels Reader*, 2nd ed., ed. Robert C. Tucker (New York and London: W.W. Norton & Company, 1978), spec. 250-61; 292-93.

in an attempt to render a prismatic picture of such experiences. Thinking media-archaeologically already encourages us to weigh these histories against contemporary media-making practices, not just to trace a linear through-line between “old” and “new” but to hold fast to disjunctions, discontinuities, and cyclical processes. But this focus on technical mentality also provides the added bonus of sketching a broader approach to media production and bodies’ relationship with technics, moving from these local sites of inquiry to contemporary theoretical and philosophical imbroglios.

Cinema is a privileged site for such processes—as is sport. As we will see, there have been many claims made about sports and athletics “giving” cinema certain qualities or bona fides, and the exponential rise of mediated sport has raised inverse questions about the moving image “giving” sport its essence, its economic success, or its ideological charge. In simple terms, this project endeavors to think less in a unidirectional sense than through a thickened relationality wherein sport and cinema each give and take, changing via their various entanglements.

1.1 Sporting Sensibilities

If this project also aims to reshuffle what we mean by “sport” when we refer to sports media, it must confront the double bind of over-defining and casting too wide a net, of either arguing for a “novel” definition or allowing general connotations to proliferate endlessly. Furthermore, when the linguistic matrix of *sport*, *play*, *game*, *athletics*, and *kinetic/kinesthetic motion* is already swirling, along with these terms’ etymological complexities, there is the danger of letting wordplay outstrip their connection to embodiment and play. Nevertheless, my use of sport and “sporting” aims to do some important work here and merits clarification. In terms of

“sport,” Alan Ingham follows Marx in restricting the definition to “exchange- and surplus-value creating relation[s],” distinct from the “democratic” spirit of games and the “self-centered,” “use-value” process of play.⁶ For Roger Caillois, sport is best considered as the professionalization and/or rationalization of (most frequently) the competitive *agôn*-based games, opening the free and “unproductive” nature of play to socializing (=legitimizing) and capitalistic impulses.⁷ And C. Richard King and David J. Leonard, in “Why Sports Films Matter,” opine that “sport cinema matters because sport matters,” in essence avoiding the question of what we mean by *sport* in favor of an amorphous, floating(ish) signifier that is ever-attached to “dominant tropes and discourses of race, gender, class, sexuality, and nation.”⁸

Setting aside, for the moment, the peculiar etymological valence of *sporting* as “sexually promiscuous,” a cursory glance at the *OED* suggests that while the adjectival form of sporting (ca.1475) does end up in use to describe those “practising, following, or interested in hunting, shooting, or fishing and [...] other activities involving physical skill and exertion,” other elements of the word’s polysemy might work to reconfigure our attunement to “sporting bodies.” For example, definition 2a, “Providing entertainment or diversion; characterized by jesting or levity,” and definition 3, “Of a person or animal: lively, playful; characterized by light or playful movement; sportive, frolicsome,” both hint at a sort of exuberant expression oft-lost in certain rigid definitions of “sports culture.” They likewise also suggest notions of performance and

⁶ Alan G. Ingham, “The Sportification Process: A Biographical Analysis Framed by the Work of Marx, Weber, Durkheim and Freud,” in *Sport and Modern Social Theorists*, ed. Richard Giulianotti (New York and Hampshire, UK: Palgrave MacMillan, 2004), 16-17.

⁷ Roger Caillois, *Man, Play and Games*, trans. Meyer Barash (Urbana and Chicago: University of Illinois Press, 2001), *passim*.

⁸ C. Richard King and David J. Leonard and, “Epilogue: Why Sports Films Matter; or, Refusing a Happy Ending,” in *Visual Economies of/in Motion: Sport and Film*, eds. C. Richard King and David J. Leonard, 227-39 (New York: Peter Lang, 2006).

performativity, and of a playful acting-with of technology and medium.⁹ Lastly, and not for nothing, one other definition (6) is “Of a plant that sports,” bringing us back to concerns of other non-human bodies and the thoroughly contingent: in Darwin, for instance, we read of “sporting plants,” or “a single bud or offset, which *suddenly assumes a new sometimes very different character than that of the rest of the plant.*”¹⁰ In Katie Bird’s recent essay on “sporting sensations” and the *Bergfilm*, Bird bakes the term into her title and carefully examines Béla Balázs’ own sporting film theory vis-à-vis adventure filmmaking, but this remains a rather rare use of the word in a field that most frequently recurs to the more static noun, sport(s).¹¹

As always, verbs get us farther—or they at least foreclose less. Thus *to sport*, or to speak of someone or something *sporting*, suggests new relationalities, which we can pair with the word’s adjectival form. I imagine that the occasional clunkiness of the verb “to sport” may suggest its function as a sort of middle voice form separate from the active, a lexical sense that did not reach to our present as effectively as the ancient Greeks’ obsession with *athlos* (ἄθλος) or *aisthetikos* (αἰσθητικός). The middle voice, inasmuch as the verb’s subject is at once an “agent” of action and an effect of action’s process, appears useful here. As Béatrice Han-Pile phrases things, “The reason why the middle voice may help us to rethink agency from the doing, rather than from the doer or the deed, is that in ancient Greek the use of the middle, firstly, marks the action expressed by the verb as processual and, secondly, indicates an internal relation of the subject to the process: it puts the doer ‘back in the doing.’”¹² It makes little sense to say that one “sports” a game or “sports” his

⁹ Thanks go to Mark Lynn Anderson for pointing out this wonderful polysemy to me.

¹⁰ Charles Darwin, *The Origin of Species: A Variorum Text*, ed. Morse Peckham (Philadelphia: University of Pennsylvania, 2006), 81, emphasis mine.

¹¹ Katie Bird, “Sporting Sensations: Béla Balázs and the *Bergfilm* Camera Operator,” *JCMS* 60, no. 3 (2021): 9-36. Samantha Sheppard’s *Sporting Blackness*, to which I will return at this introduction’s close, is another example of film studies’ recent shift toward a fuller engagement with the term.

¹² Béatrice Han-Pile, “‘The Doing is Everything’: A Middle-voiced Reading of Agency in Nietzsche,” *Inquiry* 63, no. 1 (2020): 44. See Suzanne Kemmer, *The Middle Voice* (Amsterdam: John Benjamins, 1993).

or her opponents. Rather, *one sports*, and in so doing is less a unidirectional subject of action than an internally resonant element of process and/or event. As I will argue throughout this project, such a “middle voice” perspective can also recalibrate our understanding of media production processes, since these too are often incorrectly assumed to operate through strict subject-object, filmer-filmed dynamics.

Again, it is outside the purview of this project to radically alter what we mean when we address sport and sporting endeavors, but my attempt to throw such etymological “givens” into new relief, within the bounds of film and media studies, may in fact serve to break down certain barriers hitherto accepted *prima facie*. Sporting bodies need not remain restricted to anthropocentric inquiry; they needn’t be addressed without recourse to play, levity, or rule-bending; they move—and are moved—on both sides of the lens; and, of course, the insights and modes of study that sports media can offer us are not necessarily beholden to the major athletic “pastimes” of specific societies. The aim is not necessary to supplement our sport lexicon with a slew of additional terms or neologisms, although some will in fact dot these pages. And, as we have just seen, many of these useful expressions and linguistic senses have been there all along, but they have either atrophied from disuse or been swept away by the self-assuredness of subject-predicate thinking.¹³ As Deleuze and Guattari suggest, in a fortuitous simile, “Some concepts call for archaisms, and others for neologisms, shot through with almost crazy etymological exercises: etymology is like a specifically philosophical athleticism.”¹⁴

¹³ On the latter, see e.g. Alfred North Whitehead, *Process and Reality*, ed. David Ray Griffin and Donald W. Sherburne (New York: The Free Press, 1978), spec. 184-208; Gilles Deleuze, *The Fold: Leibniz and the Baroque*, trans. Tom Conley (Minneapolis: University of Minnesota Press, 1993), 52-53; Ludwig Wittgenstein, *Tractatus Logico-Philosophicus*, trans. C.K. Ogden, in *Major Works: Selected Philosophical Writings* (New York: Harper Collins, 2009), spec. 6-11 (prop. 2.01-2.1).

¹⁴ Gilles Deleuze and Félix Guattari, *What Is Philosophy?* trans. Hugh Tomlinson and Graham Burchell (New York: Columbia University Press, 1994), 8.

1.2 The Sports Media (An)Archive, or: to Tympanize?

What is then woven does not play the game of tight succession. Rather, it plays on succession. Do not forget that to weave (tramer, trameare) is first to make holes, to traverse, to work one-side-and-the-other of the warp.

-Jacques Derrida¹⁵

At some point during 1930, Bobby Jones apparently found enough time off to teach golf to a group of “novices.” Jones, already dubbed “Mechanical Bobby,” was plenty busy during the calendar year, rather automatically rolling through the competition to win all four of the year’s major events, a feat not since duplicated.¹⁶ Jones, an amateur (officially, but very much the professional on the links), would retire from regularly competing at the close of the season after making it four in a row, opting to make instructional films for Hollywood, and—in a move that has solicited the thanks of many millions who have tuned in to televisual coverage over the years—co-develop Augusta National, home of The Masters tournament. The January 18, 1931 issue of the *New York Times* rather rapidly ran a piece titled “Bobby Jones Addresses the Duffers of Golf,” explaining that “Bob Jones is going into the movies in a mild way.”¹⁷ Not content to simply extol the virtues of Jones’ would-be teaching methods or the proposed simplicity of his lessons, John

¹⁵ Jacques Derrida, “Tympan,” in *Margins of Philosophy*, trans. Alan Bass (Chicago: The University of Chicago Press, 1982), xxviii.

¹⁶ In the early 1930s the four “majors” were the United States Amateur, the United States Open, the (British) Open, and The (British) Amateur Championship. No one else ever swept these four tournaments in a calendar year, nor has anyone achieved the “Grand Slam” of the modern majors—The Masters, the U.S. Open, the British Open, and the P.G.A. Championship—in a single calendar year. Tiger Woods did, however, win the four majors in succession between 2000-2001, a feat surely on equal footing with Jones’ achievement.

¹⁷ John Kieran, “Bobby Jones Addresses the Duffers of Golf: And They Can Blame No One But Themselves If They Now Fail to Profit by His Example,” *New York Times*, January 18, 1931, 7+.

Kieran's article also puts forth a takedown of other more "scientific" approaches to golf instruction, complete with a breathless rebuff of motion studies and moving image instruction:

But as for those pedagogical golf charlatans who go in for "scientific systems," diagrams and complicated formulae, let them be anathema! They lecture on arcs, centripetal and centrifugal force, moving centers of gravity. They put their victims in dark rooms with electric lights all over them like a Christmas tree and then take movies of their swings. Only the lights show up on the films, of course, but they chart the course of the knee, the head, the elbow, the wrists and the club in the process of swinging and, from this scientific evidence, the professor deduces any number of things that are wrong and the steps that must be taken to correct the errors.¹⁸

Et cetera, et cetera. It remained to be seen, then, whether the "mechanical man of golf," Robert (Bobby) Tyre Jones Jr., could improve upon the golfing sports media landscape. How would he endeavor to *mediate* the accepted—or, to some, "anathema"—pedagogical approach to the sport? And what sort of visual methods would he and his team employ? Would it look anything like the lessons he gave amidst the whirlwind of 1930, lessons that were (thankfully) captured by the Universal Newsreel cameras?

If only Kieran had seen the newsreel footage from San Francisco, the title card of which reads "Golf by proxy!—'Iron Bobby,' mechanical champ, instructs novices in the art of the links" (Fig. 1.1). Oh, how he would have blushed—for "Iron Bobby," or golf's "Mechanical Man," was surely doing the instructing on that fair afternoon by the Bay, but it was not the flesh-and-blood Robert Jones. Rather, the novices were arrayed around a rather massive mechanized "version" of Jones, the likeness of which began and ended with a crudely crafted, yet recognizable, two-sided "mask" of sorts, complete with tweed hat. Underneath this visage appear various circuits, gears, pulleys, modular limbs, and—of course—a driver. An anonymous operator swings a lever side-to-side, laterally, and "Iron Bobby" draws the club back, turns at the

¹⁸ Kieran, 7+.

hips, pauses for a moment at the top of his backswing, and drives down toward the ball (Fig. 1.2).

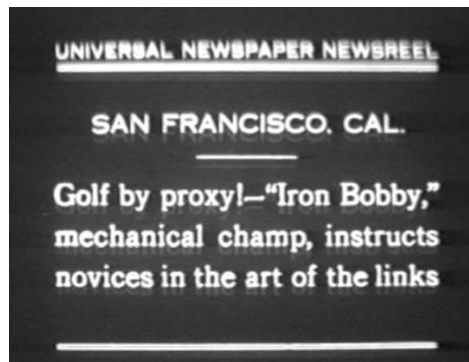


Figure 1.1 Title card for "Iron Bobby" newsreel sequence (1930)



Figure 1.2 Iron Bobby and the "novices" swing away

Filling out the mise-en-scène of this bizarre scene are a number of women following Iron Bobby's lead, glancing over shoulders at the animatronic Jones as he jerks and rumbles slightly, following his prescribed path of motion. There is even a shot from about waist level that frames the mechanism from the "hips" down, while three of the "novices" are grouped theatrically behind the apparatus, rapidly half-swinging their clubs back and forth across uniform black skirts.

Iron Bobby does hit two balls in the brief excerpt. Neither go very far. Kieran may have felt validated, in fact. Jones' instructional series, *How I Play Golf* (1931), fared better. Warner

Bros. used their pull, as well as Jones' considerable fame,¹⁹ to enlist among his students W.C. Fields, Jimmy Cagney, Loretta Young, and other stars of the silver screen. The instructions are simple and clear, much like the visuals. But the tips and tricks—which seem timeless—are not the only intriguing element of this series, for the Hollywood cameos add tremendous spice to the films and place some of the period's brightest stars in unfamiliar relief. Watching Cagney inquire as to “Mr. Jones”' handling of practice shots while covering Louise Fazenda's mouth is worth the price of admission alone. And when Jones and Co. do implement something in the vein of chronophotography, they do so in the full light of day, rather than “put[ting] their victims in dark rooms with electric lights all over them,” per Kieran. A normal lens full shot of Jones, framed frontally, captures his smooth swing, while a bright “diagram” is traced along the head of the club as Jones completes his full rotation. The wooded background, left to fall into soft focus, offers a flawless canvas on which to trace the picture-perfect arc of the *real* Mechanical Man's swing (Fig. 1.3).

The legendary polymath and stroboscopic photographer Harold “Doc” Edgerton had other ideas. On 7 July, 1938, Edgerton's notebooks include some reflections on ultra-rapid photographic experiments at the Harvard[?] swimming pool, as well as the following plan: “We are to work for 6 months at 400 per[?] on studies of golf etc.”²⁰ His 1938-39 notebooks are peppered with stroboscopic and high-speed photographic images of golf swings; photographs of a 5th Avenue storefront (A.G. Spalding & Bros.) displaying golf clubs, diagrams, still images, and posters “explaining” elements of the process; and other props, including ski equipment. Among these

¹⁹ Jones was treated to a ticker tape parade in New York City in July of 1930 after his British Open victory.

²⁰ See Harold Edgerton, *Personal Notebooks*, notebook 09, print page 39. Edgerton's notebooks are available to view in .pdf form on the following site link, and I have added, if possible, print page numbers that are stamped within the notebooks. <https://edgerton-digital-collections.org/notebooks>.

storefront images are chronophotographs of Jones, one labeled “Bobby Jones, M.I.T., taken Summer 1938. 100 flashes/second”²¹ (Fig. 1.4).

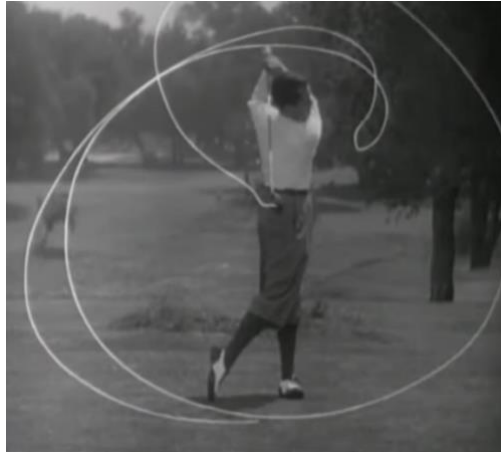


Figure 1.3 Tracing Jones' swing path in *How I Play Golf* (1931)

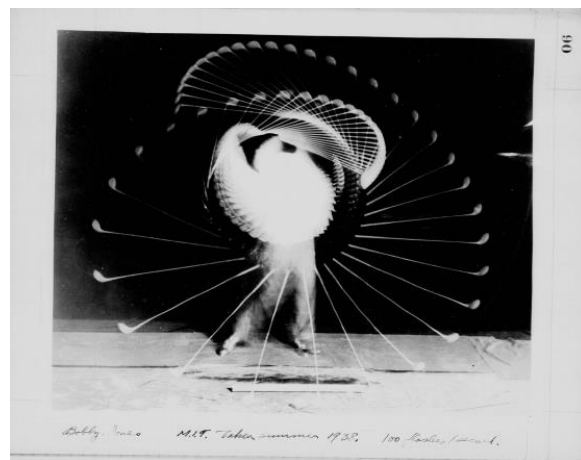


Figure 1.4 Harold Edgerton's stroboscopic images of Jones' swing (1938)

Edgerton Digital Collections

²¹ Edgerton, notebook 09, print page 90.

Edgerton's publications contain extended descriptions of this high-speed photography as it pertains to sport, and Jones would end up one of his more utilized (and more accomplished) sporting models.²² The image of Jones' legendary swing is an example of Edgerton's multi-flash method, in which the stroboscopic pulses of light correspond with multiple exposures made upon a single negative. In terms of aesthetic yield, these multi-flash images most closely resemble the work of Étienne-Jules Marey, whose chronophotographic output likewise encompassed diverse techniques. Marey's early fixed-plate work relied on the development of a "black hangar," a wide shed of sorts which "was oriented so that the sun did not penetrate its depths but did illuminate the subject walking in front of it."²³ According to Marta Braun, Marey, not satisfied with the background darkness obtained through the paint alone, added a layer of "black velvet" to the shed's interior.²⁴ After experimenting with models and athletes clothed in all white against the deep black of the surroundings, Marey and his assistant Georges Demeny extended the velvet enclosure to the sporting bodies themselves, leaving only "shiny buttons" and "metal bands" to effect a skeletal, kinetic rendering of his subjects' motion.²⁵ Edgerton likewise placed his athletes in a darkened room with the camera's shutter wide open, the rapid and evenly-spaced flashes ensuring brilliant white traces of frozen movement against a similarly velveteen void. Sometimes there is blurring in these chronophotographs, and Edgerton's golfers—in addition to tennis players, divers, and rowers—often seem suspended somewhere between Marey's phantomlike locomotorists and his abstracted, skeletal bodies.

²² See e.g. Harold E. Edgerton and James R. Killian Jr., *Flash!: Seeing the Unseen by Ultra High-Speed Photography* (Boston: Hale, Cushman & Flint, 1939), 56-79. Golf here takes up twenty four of the fifty eight pages dedicated to "Sport," not counting some sporting and athletic miscellany under the rubric of "People in Action."

²³ Marta Braun, *Picturing Time: The Work of Étienne-Jules Marey (1830-1904)* (Chicago and London: The University of Chicago Press, 1992), 75.

²⁴ Braun, *Picturing Time*, 75.

²⁵ Braun, *Picturing Time*, 81.

Edgerton had already experimented with ultra-high-speed imaging of a golf ball's compression during impact, noting in July of 1935 that a baseball “does not compress like a golf ball.”²⁶ It turns out that Edgerton and Kenneth J. Germeshausen had given a talk at the Spring 1934 Convention of the Society of Motion Picture Engineers (SMPE), the topic of which was “Stroboscopic Light High-Speed Photography.”²⁷ Around the same time, the pair gave what appears to be a similar paper for the annual meeting of the American Institute of Chemical Engineers (AIChE); the published version of this talk (May 1934), titled “The Stroboscope and High-Speed Motion Picture Camera as Research-Instrument,” dedicates plenty of space to the analysis of golf “strokes” vis-à-vis high-speed photography. Amid discussion of clubhead velocity, ball spin (r.p.m.), and “actual contact” between clubhead and ball (1/1000 of a second), we learn that these sequences were photographed at 960 exposures per second (Fig. 1.5).²⁸ The images, golfer anonymous, are reminiscent of attempts made around 10 November 1932, where we discover that “trip contacts [were] lined up on the front of the ball so that trip will occur[?] as soon as the ball begins to move.”²⁹ In April of 1933, another golf legend—Francis Ouimet—stopped by Doc’s lab to take a series of “films,” the results of which appeared in the aforementioned article.³⁰ Who held the club, then, in the Fall of 1932? Could it have been Jones, fresh from Hollywood? And what became of the “trip contact” method, one that cannot help but remind us of Eadweard Muybridge’s Palo Alto years and his experimental approach to “capturing” the horse in motion?

²⁶ Edgerton, notebook T-5, print page 130.

²⁷ Germeshausen was credited, at the time, as an MIT Research Assistant. Along with Herbert Grier, the pair would eventually form EG&G, at the behest of the Atomic Energy Commission. The trio set to work in the Post-War years experimenting with high-speed (“rapatronic”) photography of hydrogen bombs. See James Elkins, “Harold Edgerton’s Rapatronic Photographs of Atomic Tests,” *History of Photography* 28, no. 1 (2004): 74-81.

²⁸ Qtd. in Edgerton, notebook T-4, print pages 150-55.

²⁹ Edgerton, notebook T-3, pp 100+.

³⁰ Edgerton, notebook T-3, pp 123+.

Fast forward to the mid-sixties—and back to the 1870s. The United States Navy produces a “photographic report,” titled *It Started With Muybridge* (1964). Contemporary footage of engineers “tracking” ballistic missiles (and avian bodies) are interspersed with photographs of Muybridge and Marey, the filmmakers rather liberally compressing these two forebears despite giving titular pride of place to the former. The film’s focus actually jibes with many of Edgerton’s interests and professional attachments, inasmuch as his photographic experiments extended from cathode ray tubes and underwater image-making to the explosive power of atomic warheads. *It Started With Muybridge* ends with footage from a contemporaneous horse race and an insert of a photo finish culled from a local sports page, bringing its Muybridge tale—closing the sporting loop, punctuated by excursions into thermodynamics and missiles—to a pat conclusion. One sequence stands out to me, however. After a measured tracking shot across various 1960s high-speed cameras (“the elaborate equipment of today, adapted to a variety of special purposes...”), the viewer is treated to two examples of the “uses” of such technology “outside of scientific research.” The first of these images is of high-speed photography measuring the golf swing’s velocity and the compression of the ball upon impact, set against a velvety, black non-space (Fig. 1.6).



Figure 1.5 Edgerton's high-speed capture of clubhead impact (ca. 1934)

Edgerton Digital Collections



Figure 1.6 A sporting link in *It Started with Mybridge* (1964)

This veritable odyssey of Bobby Jones' swing is a perfect encapsulation of the “messiness” of the sports media story. The golfer's body, his swing path, and the impact of his club on a regulation ball are *fragmented and fragmenting*. In the case of Jones' famous swing, we have a split across numerous media forms: a “simple” machine is devised to replicate the soon-to-be-retired golfer's mastery, with hip turn and attack angle made literally mechanical and displayed for the masses; the motion picture camera frames him against a receptive backdrop, allowing the film's editors to trace the swing's ribbon onto the negative; Jones' powerful trunk—the source of much of the golf swing's force and efficiency—becomes a brilliant blur in front of Edgerton's multi-flash camera, a 100 frames-per-second (fps) core of torque and centripetal force around which the clubhead “pings,” constellation-like; and the moment(s) of impact—whether generated by Jones, or simply *imagined* by me as belonging to Mechanical Bobby—are frozen in time through the use of ultra-high-speed or micro-second-exposure photography.

The provenance of these images, as well as their generic and socio-cultural attachments, are likewise explosive in terms of codification. I discovered the “Iron Bobby” snippet while perusing scores of Universal Newsreel entries at the National Archives and Records Administration (NARA), filing it away mentally and digitally as little more than a curio. Sometime later, while reading *Ben Hogan's Five Lessons: The Modern Fundamentals of Golf*—sorry,

Bobby—I was struck by the inclusion of images arrayed in ways reminiscent of chronophotographs and sequence photography, as well as drawings imagining the golfer’s body as a set of machinic relays during the swing.³¹ Cursory digging online led me to film clips of both Hogan and Jones from instructional vantages, and I ended up in a *How I Play Golf* wormhole, tagging along with the newly-retired Jones and friends as they explored the intricacies of the game for George Marshall’s camera. And, while researching different approaches to chronophotography for the following chapter’s discussion of Étienne-Jules Marey, I was pleasantly surprised to find images of and notes about Jones stashed away in the journals of Doc Edgerton, even if one must occasionally need to sift through one hundred pages of minutiae about circuitry and cathode ray tubes to turn up a single hit on golf.

Sport also acts as a node here, a relay of sorts connecting a number of pursuits and concepts which often flit through discussions of cinematic technology and representation. Following Thomas Elsaesser, Jussi Parikka has discussed the “S/M-histories of cinema and media” at play in media archaeology, “transdisciplinary” approaches (and/or “perversions”) “in which the alternative histories for media cultures are sought somewhere on the fuzzy borders of art/science/technology.”³² Although sport is certainly no stranger to notions of the sado-masochistic, this is not the S/M Parikka and Elsaesser have in mind; rather, we are dealing with “science and **m**edicine, surveillance and the **m**ilitary, sensory-**m**otor coordination, and **GMS** and **MMS**.”³³ All of the chapters in this dissertation will display attachments, however perverse, to

³¹ See Ben Hogan and Herbert Warren Wind, *Ben Hogan’s Five Lessons: The Modern Fundamentals of Golf* (New York: NYT Special Services, 1985), spec. 19; 82-83. Illustrations are supplied by Anthony Ravielli.

³² Jussi Parikka, *What Is Media Archaeology?* (Cambridge, UK, and Malden, MA: Polity, 2012), 14. See Thomas Elsaesser, “Early Film History and Multi-Media: An Archaeology of Possible Futures?” in *New Media, Old Media: A History and Theory Reader*, eds. Wendy Hui Kyong Chun and Thomas Keenan (New York: Routledge, 2006): 13-25.

³³ Parikka, *What Is Media Archaeology?*, 14, emphasis in the original.

these various fields in an attempt to paint a richer picture of media technologies and approaches to screening sport. In miniature, a number of them are already present in the brief sketch of Bobby Jones' swing as it traverses media forms and is fragmented across disciplines. Concerns of exercise and the maintenance of "healthy bodies" are apparent, and the images discussed above are easily placed in dialogue with a number of incentives and methods for analyzing—and fine-tuning—sensory-motor coordination. Furthermore, the fact that Edgerton's diverse photographic methods stretch across the study of sporting bodies, the behavior of light particles, underwater image-making and the deployment of atomic warheads is a stark yet unsurprising reminder about the relationships between sport, cinema, and the military.³⁴ An occasionally perverse triangulation, to be sure, and one that often frustrates attempts to disentangle.

Therefore: invoke **sports media**, **sporting motion**, **sport's machines**. Add these to media archaeology's growing list of S/M obsessions. The alphabetical link is fortuitous, the actual connections airtight. However, it will not do to simply cite the existence of these networks and their "fuzzy borders" and proceed unchecked, comfortable in the knowledge that we've simply *added* something to the discussion—and to the archive. What constitutes sports media? What is its archive, and what is the archive of this project? My preliminary remarks on the sport(ing) etymology have already made clear a certain flexible expansion of the concepts, media forms, and bodies considered herein. But we immediately run up against another dual threat: the danger of

³⁴ On cinematic technology and the military, see Haidee Wasson and Lee Griveson, eds., *Cinema's Military Industrial Complex* (Berkeley: University of California Press, 2018). For a distinctly media-archaeological perspective, see Friedrich Kittler, *Gramophone, Film, Typewriter*, trans. Geoffrey Winthrop-Young and Michael Wutz (Stanford: Stanford University Press, 1999), spec. 115-51, as well as the standard entry for thinking through the perceptual systems of militaristic and cinematic technologies, Paul Virilio, *War and Cinema*, trans. Patrick Camiller (New York: Verso, 2009). On sport and matters of warfare/militarism, see Daniel A. Dombrowski, *Contemporary Athletics & Ancient Greek Ideals* (Chicago and London: The University of Chicago Press, 2009); Stephen G. Miller, *Arete: Greek Sports from Ancient Sources*, 3rd ed. (Berkeley: University of California Press, 2012); Michael L. Butterworth, *Sport and Militarism: Contemporary Global Perspectives* (London and New York: Routledge, 2017); and Gerald R. Gems, *The Athletic Crusade: Sport and American Cultural Imperialism* (Lincoln: University of Nebraska Press, 2012).

endless proliferation and the fear of neutralizing the force of the outside that might be said to have existed in such items and events heretofore without³⁵ the sports media archive's imprimatur. On the one hand, as Gerard Genette once said, "more infinity than we can handle"; on the other—more circumscription, more canonization.

Archives are always already anarchives, though. Jacques Derrida knew this by way of the death drive, by the ways in which "anarchiving destruction belongs to the process of archivization and produces the very thing it reduces, on occasion to ashes, and beyond."³⁶ Derrida's own archive fever had yet to break when he held in suspension the *archon* (ἄρχων), the guardian(s)—"those who commanded"—and the *anarchive*, "the possibility of putting to death the very thing, whatever its name, which carries the law in its tradition."³⁷ Michel Foucault had likewise built the anarchic—as well as the *anarchaeological*—into his conception of the archive. Speaking about these two thinkers, "now considered classic scholars who theorized the archive in terms of its hegemonic structure," Giulia Battaglia et al remind us that Derrida and Foucault "also created the possibility of rethinking archives in subversive and *anarchival* ways."³⁸ Siegfried Zielinski, among the more faithful contemporary proponents of anarchivism, latches on to an "anarchic pun" made by Foucault during a lecture, in which the latter "remarks that he had a method in mind which makes no more use of power than is acceptable: 'So I will say that what I am proposing is rather a sort of *anarchaeology*.'"³⁹ For Michael Goddard, both Zielinski and Thomas Elsaesser have made productive use of this Foucauldian *anarchaeological* disposition, explicating the "abandonment of

³⁵ By which is meant both "lacking" and "outside of."

³⁶ Jacques Derrida, "Archive Fever: A Freudian Impression," trans. Eric Prenowitz, *Diacritics* 25, no. 2 (1995): 59.

³⁷ Derrida, "Archive Fever," 9; 51, emphasis mine.

³⁸ Giulia Battaglia, Jennifer Clarke, and Fiona Siegenthaler, "Bodies of Archives / Archival Bodies: An Introduction," *Visual Anthropology Review* 36, no. 1 (2020): 10, emphasis in the original.

³⁹ Siegfried Zielinski, "AnArchaeology for AnArchives: Why Do We Need—Especially for the Arts—A Complementary Concept to the Archive?" *Journal of Contemporary Archaeology* 2, no. 1 (2015): 121.

the search for origins, a questioning of the already-stated, and the description of discourses as practices, all of which Foucault's meta-archaeological text *The Archaeology of Knowledge* elucidates."⁴⁰ It seems that anarchivic and anarchaeological theories and practices are thus always present with respect to the seemingly static sites of "guardianship," however latent these *an-* impulses may be.

Celebrating the anarchivic for its disruptive and boundless potential risks supplanting one problem with another. Zielinski knew as much when he described anarchivics as "effective alternative[s]" to archives proper, suggesting that the *an-* prefix here connotes a relationship of the "counterdraft" rather than the reactivation of a "prior state."⁴¹ Elsewhere he warns against the stultification of the anarchivic, anarchaeological method and its relationship to "freestyle thinking," reminding us that such activity and thought "without banisters to offer provisional support can become, in the long run, the movement of a prescriptive regulating-machine."⁴² Goddard in fact interrogates Zielinski's own anarchaeologies for their tendency to rely on examples and moments of potential which "often seem plucked out of the economic, social, and technological modes of development in which they were embedded and given a semi-eternal status as the great inventions of great men, with an undisguised uncritical act of constructing media-archaeological heroes."⁴³ Posing a rhetorical question that has been of great interest to me as I developed the following chapters, Goddard asks: "But is a new canon of great media inventors and dreamers any better than a pantheon of great cinematic auteurs? It certainly does not seem very anarchivic [...]."⁴⁴

⁴⁰ Michael Goddard, *Guerilla Networks: An Anarchaeology of 1970s Radical Media Ecologies* (Amsterdam: Amsterdam University Press, 2018), 23. See Michel Foucault, *The Archaeology of Knowledge & The Discourse on Language*, trans. A.M. Sheridan Smith (New York: Pantheon, 1972), spec. 79-140.

⁴¹ Zielinski, "AnArchaeology for AnArchives," 121.

⁴² Siegfried Zielinski, *Variations on Media Thinking* (Minneapolis: University of Minnesota Press, 2019), xiii.

⁴³ Goddard, 26.

⁴⁴ Goddard, 26.

This dissertation certainly adds a great many men and select women to the historically male-dominated sports media story, yet it is not primarily interested in celebrating them as “great” or in enumerating crucial inventors around which a linear tale can be woven. It aims rather to look closely at the historical relations between sporting bodies, technological experimentation, labor and chance. The following section will clarify my thinking on the very concept of invention, which I prefer to approach from a Simondonian perspective. Suffice it to say, for the moment, that I find it uninteresting to posit a list of “inventors and dreamers” who simply *gave* us media technologies and *gave* us means of appreciating sport. The inverse is likewise true: neither does it do us any good to suggest that sport is the *fons et origo* of specific photo- or cinematographic inventions, such as the horses and athletes of Muybridge or the boxing bouts which “generated” the Latham Loop technology. What matters—and what makes for the most exciting study—is that these things are relational, co-constitutive, and always in flux.

Their borders, in other words, are “fuzzy,” to return to Parikka’s idiom about media (an)archaeology. In thinking about the margin that separates sport and cinema, athletics and media, *paidia* (παῖδιᾶ, “play, amusement”) or *askesis* (ἄσκησις, “training, practice”) and *techne*, it is profitable to consider the value of this porous limit. It is also worth theorizing the margin itself as a potential site of passage, whether in terms of the sinuous and folding course of Bobby Jones’ swing or the larger question of sports media’s margins. Derrida had another useful term for this double-directionality of the margin, for the existence of “overflows and cracks” at the supposed limit: the *tympan*. To tympanize is at once to “decry” or to publicly ridicule, and to sound, in effect, a concussion against the ear’s membrane (L. *tympanum*, the cavity of the middle ear, from Gk. *tumpanon* [τύμπανον], “drum”). He was most interested in the (im)possibility of philosophy

“thinking its other,” thinking “that which limits it.”⁴⁵ In other words, Derrida was reflecting on the curious situation whereby a discourse, in this instance philosophy, believes it has sway over its own limit. That it not only can think and “control the margin of its volume,” but by doing so it—however knowingly—thinks and controls its other, *places* everything “outside” of its margins in a conceptual container.

Derrida knew that to philosophize with a hammer, à la Nietzsche, does not entail smashing concepts, doxa, or accepted theories to smithereens, although this is certainly not out of the question. To philosophize thusly means, more accurately, to sound, to sound out, to resound. Hence Nietzsche: “For once to pose questions here with a *hammer* and perhaps to receive for answer that famous hollow sound which speaks of inflated bowels.”⁴⁶ Derrida considers such a (re)sounding in terms of the taut musical drum (tympanum) as well as the human eardrum (tympanum),⁴⁷ and here we might look ahead to chapter two and consider the disorienting ringing that attends a box on the ears, as pugilists from all eras will attest. But what is ultimately at stake for Derrida are texts, practices, and modes of thinking that “[gnaw] away at the border,” “eat the margin,” “unhinge the limit.”⁴⁸ The limit will not disappear, the archive-anarchive threshold does not dissolve. But it remains porous and flexible, and more importantly *it works both ways*, forming a “double understanding no longer forming a single system.”⁴⁹ Ultimately, then, in probing this limit, the “impression, as always, is made on some tympanum, whether resonating or still, on the double membrane that can be struck from either side.”⁵⁰

⁴⁵ Jacques Derrida, “Tympan,” x.

⁴⁶ Friedrich Nietzsche, *Twilight of the Idols or How to Philosophize with a Hammer*, trans. R.J. Hollingdale, in *Twilight of the Idols and The Anti-Christ* (London: Penguin, 2003), 31, emphasis in the original.

⁴⁷ Derrida, “Tympan,” xii.

⁴⁸ Derrida, “Tympan,” xxiii; xxv; xvii.

⁴⁹ Derrida, “Tympan,” xxiv.

⁵⁰ Derrida, “Tympan,” xxv.

The following chapters form an attempt to listen to the resonance that results from the hammering of such a tympanic limit. Their purpose is not to make a case for media objects and modes of inquiry that “belong” in the sports media archive, or arrogate to this archive anarchic and esoteric elements from beyond the pale, or maintain a split between the two. Rather, in attending to the ways in which such items and experiences resound when placed in configurations at the margins, it essays to harness some of the resulting din, and to continuously ask questions of and about the apparently limitrophic “weave” that was always already formed with holes and folds.

Joining back up with the arc of Bobby Jones’ swing path: in miniature, such a network of media forms, representational strategies, technological investments, and S/M attachments suggests the simultaneous thrills and pitfalls attendant to this type of operation at the perimeter. In effect, that was one particular node (or note) that, once struck, resonated profoundly for me when considering the status of this project’s (an)archive. But each of the following chapters walks a similar line in terms of its content as well as its source material. Cinema makes up much of the focus, yet this project relies on still images, sequence photography, chronophotography, motion studies, patent records and litigation, journal entries, journal esoterica and marginalia, letters, class yearbooks, sculptures and reliefs, medical treatises, military primers, classified adverts, trade publications, newsreel footage (sometimes of dubious provenance), newspaper articles, poetry, technical reports, industrial films, government films, live television footage, (auto-)biographical musings, video games, my own sporting home movie collection and dust-covered video cameras of yesteryear, and VHS tapes both original and overwritten.

Increased volume does not a better product establish. Yet in pairing this array of artifacts with a focus on sports both “accepted”—boxing and Olympic events—and those on the margin—diving and underwater image-making, as well as so-called “extreme” sports—it is hoped that the

specifics of each section are instructive while also suggestive about the larger concerns of the border itself. In this spirit it is perhaps best to invoke another of Zielinski's terms for the anarchaeological, which he rightly suggests is as relevant to the sorts of experiments undertaken by this dissertation's *dramatis personae* as it is for the scholarly attempt to make sense of them: "generators of surprise."⁵¹ I can hardly think of a better example than "Iron Bobby," yet the game would hardly be worth the candle if the surprise itself didn't generate further thought, further work, further revelations.

1.3 In the Corridor with William James

Leibniz had his windowless monads, and only infinite Substance would do for Spinoza. Locke has us as so many *tabulae rasae*, given ideas via sense, whereas with Hume there are only ever impressions, which may forge ideas through a glass, darkly.

Very likely none of them would've liked to stay in William James' Hotel.⁵² For the James of *Pragmatism*, in the late period—one which fits snugly between the topics of this dissertation's opening chapters—members on both sides of the aisle, that of "dogmatic" rationalism and pluralist,

⁵¹ Zielinski, *Variations on Media Thinking*, xvi. Zielinski clarifies the genealogy of the term thusly: "In his book *Experimentalsysteme und die epistemischen Dinge* (Experimental systems and epistemic things, 2001), Hans-Jörg Rheinberger, a biologist, philosopher, and historian of science, uses the term *Überraschungsgenerator*, or 'generators of surprise,' to describe the most important function of the experiment in scientific laboratory activity. The term originates in the work of molecular biologist Mahlon Hoagland (1980) and characterizes the epistemic goal of a *cultural experimentalis* as I would like to see it. [...] To consider texts as generators of surprise is likely a reliable formulation for the astonishment that one must never unlearn, neither in the sciences nor in media thinking" (xvii-xviii, emphasis in the original).

⁵² Marcus Steinweg writes of the "metaphors of architecture [that] pervade Western thought, from Plato's Cave" onward. In a wonderfully sporting turn of phrase, he suggests that all of these figures are "concerned with structural engineering and load-bearing capacity." William James is not mentioned, neither are any hotels or windows. Marcus Steinweg, *The Terror of Evidence*, trans. Amanda Demarco (Cambridge, MA and London: The MIT Press, 2017), 5-6.

“fact-based” empiricism, can have a key and rooms to let. James appends many differences between these two approaches, and he certainly picks favorites, but in the second lecture of *Pragmatism* (“What Pragmatism Means”) he offers a metaphorically dense explanation of what pragmatism *does*, above all. It is in this spirit that the theoretical and philosophical fabric of the following chapters is woven. Deploying one of the many “athletic” turns of phrase that we will encounter throughout this project, James says of the pragmatist disposition that it “unstiffens all our theories, limbers them up and sets each one at work.”⁵³ Rationalist or empiricist, monist or pluralistic: they all need to stretch out occasionally, because

if you follow the pragmatic method, you cannot look on any such word as closing your quest. You must bring out of each word its practical cash-value, set it at work within the stream of your own experience. It appears less as a solution, then, than as a program for more work, and more particularly as an indication of the ways in which existing realities may be *changed*. ¶ *Theories thus become instruments, not answers to enigmas, in which we can rest.*⁵⁴

The emphasis on process, renewal and “flux” is readily apparent. Moreover, theory-as-instrument is useful here, inasmuch as it retains James’ suggestion of an approach that can “harmonize” with other “philosophic tendencies.” Yet it also urges us to think, perhaps, inversely. The “instruments” of cinema—camera and lens systems, body-mounted rigs, celluloid circuits—also theorize, if we let them. As they are developed, tweaked, put to use, and placed in novel relations with bodies on both sides of the lens, they too appear less as solution than as *a program for more work*, ever-changing.

Back to the hotel. Methodologically, pragmatism functions here not in terms of Jamesian specifics or the positions of Peirce, Dewey, Rorty, et al, but rather as an instrumental—or “plastic,”

⁵³ William James, *Pragmatism and Other Writings*, ed. Giles Gunn (New York and London: Penguin Books, 2000), 26.

⁵⁴ James, *Pragmatism*, 26, emphasis in the original.

as James says—disposition. One of its more (radical) empiricist gestures is certainly the privileging of experience and “fact” over *a priori* principles, but this tells but part of the story:

At the outset, at least, it stands for no particular results. It has no dogmas, and no doctrines save its method. As the young Italian pragmatist Papini has well said, it lies in the midst of our theories, like a corridor in a hotel. Innumerable chambers open out of it. In one you may find a man writing an atheistic volume; in the next some one on his knees praying for faith and strength; in a third a chemist investigating a body’s properties. In a fourth a system of idealist metaphysics is being cogitated; in a fifth the impossibility of metaphysics is being shown. But they all own the corridor, and all must pass through it if they want a practicable way of getting into or out of their respective rooms.⁵⁵

Again, this is not to say that James’ pragmatism lends equal weight to the competing schools of thought, equal space to elements of the theoretico-philosophical manifold. But they do all have a room in the corridor, and needn’t be dismissed out of hand. The question, simply, is: what can they do? How are they practicable? How can they be made—again—to *work*?

One of the fundamental claims of this dissertation is that *sports media reshuffles many of our accepted film-theoretical positions*. This may be variously due to overlooked media objects, an unwillingness to consider sports media as “applicable” to film theory as such, the failure to properly interrogate athleticism in production studies, or simply gaps in the narrative of the moving image’s history. Each of the following chapters aims to fill in blanks and to test such assumptions, specifically those having to do with milieu and measuring (Muybridge’s motion studies); contingency (the Latham Loop, boxing, and the “long take”); optics and refraction (underwater cinematography); and aspect, with a return to cinematic measurement (Olympic filmmaking). The coda briefly weaves these together under the concept of relationality in discussing street

⁵⁵ James, *Pragmatism*, 29. See Ulrich Franke and Ralph Weber, “At the Papini Hotel: On Pragmatism in the Study of International Relations,” *European Journal of International Relations* 18, no. 4 (2011): 669-91. For the original, see Giovanni Papini, *Pragmatismo*, in *Tutte le opera di Giovanni Papini, Vol 2* (Verona: Mondadori, 1961).

skateboarding's camera movements and its particular optics, yet the chapters already interpenetrate.

The two most prominent suites in this Jamesian hotel are occupied, for the purposes of this dissertation, by Alfred North Whitehead and Gilbert Simondon. We can begin with Whitehead, if only because of his proximity—temporally, philosophically—with James. If James' major works, including *The Principles of Psychology* (1890), *Pragmatism* (1907), and *Essays in Radical Empiricism* (1912), align synchronically in interesting ways with the focus of my first two chapters, Whitehead's more explicitly philosophical output arrives on the back-end of this period of American Pragmatism,⁵⁶ seeming at once to clarify and extend aspects of James' thought—and aspects of late-nineteenth century motion studies—and to introduce novel perspectives on creativity and process. As such, Whitehead also serves as a fulcrum with respect to the closing chapters of this project, as well as its coda: his exploration of science and modernity, as well as his at times mystical (or mystagogical) approach to process, dovetails productively with media milieux in which waves and wonder, floating and flying, and technological experimentation are elemental. In this vein, Whitehead also lays groundwork for Simondon, however much this link has been overlooked.⁵⁷

⁵⁶ By which is meant his work that is less focused on mathematics proper. The earlier period, which not coincidentally ends—or phase-shifts—when Whitehead moves to America in 1924, included the following: the three-volume *Principia Mathematica*, co-written with Bertrand Russell (1910-13), and the earlier *A Treatise on Universal Algebra* (1898).

⁵⁷ This is not to say that the productive relationship between Whitehead and Simondon has not been made use of. See Tyler S. Fox, "Prehensive Transduction: Techno-aesthetics in New Media Art," *Platform: Journal of Media and Communication* 6 (2015): 96-107; Emeline Deroo, "On the Effects of a Fictitious Encounter between Alfred North Whitehead and Gilbert Simondon," in *Ontological Landscapes: Recent Thought on Conceptual Interfaces Between Science and Philosophy*, ed. Vesselin Petrov (Frankfurt: Heusenstamm, 2011): 295-310; Manning, *Relation-scapes*; and Vinicius Portella Castro, "From Polyphasic Latency to Polyrhythmic Concretion: Rhythm and Relation in Simondon and Whitehead," *AM Journal* 24 (2021): 57-69.

Prefatory remarks in both *Science and the Modern World* and *Process and Reality* signal Whitehead's debt to James, even if the latter is cited more in spirit than in print. To wit: when Whitehead, in 1925, was beginning his lectures that would make up *Science*, his meditations on the massive effects of minor "change[s] of tone" are given support and "illustrated by a sentence from a published letter of that adorable genius, William James. [...] 'I have to forge every sentence in the teeth of irreducible and stubborn facts.'"⁵⁸ We will soon see that this invocation of James sounds two principle notes for Whitehead: first, it signals the productive tension inherent in such an approach, variously termed "speculative philosophy," "speculative pragmatism," or "radical empiricism"—in short, Whitehead's system functions *both/and* with respect to constructivism and objectivity, as well as *both/and* vis-à-vis flux/becoming and the stubbornness of the empirical, which James elsewhere called "brute fact."⁵⁹ Yet the other note sounded is no less important. For Whitehead, the development of modern science is perhaps more relevant for the changes it introduced to "mentality," broadly conceived, than the concrete changes effected in "the new science and the new technology."⁶⁰

As a claim this may not surprise us, coming as it did in the wake of Darwinian evolutionary theory, the general theory of relativity and quantum physics, and the second Industrial Revolution ("Technological Revolution"). But Whitehead is of course not just describing *additions* to a mentality that we might call both scientific and "popular"; these foundation-shaking shifts do not just supply new edifices, they also leave rubble to be reinterpreted, rebuilt anew. In a passage as pertinent to the historical and technological changes detailed in opening chapters of this dissertation as it is to my film-theoretical approach, the Whitehead of 1925 suggests that

⁵⁸ Alfred North Whitehead, *Science and the Modern World* (New York: The Macmillan Company, 1928), 3.

⁵⁹ James, "The Will to Believe," in *Pragmatism and Other Writings*, 208.

⁶⁰ Whitehead, *Science and the Modern World*, 3.

[t]he old foundations of scientific thought are becoming unintelligible. Time, space, matter, material, ether, electricity, mechanism, organism, configuration, structure, pattern, function, all require reinterpretation. What is the sense of talking about mechanical explanation when you do not know what you mean by mechanics?⁶¹

Some three decades prior Nietzsche had said much the same, albeit with more fire: “But how could we possibly explain anything? We operate only with things that do not exist: lines, planes, bodies, atoms, divisible time spans, divisible spaces. How should explanation be at all possible when we first turn everything into an *image*, our image!”⁶² Nietzsche here speaks *avant la lettre* about what Whitehead called the “fallacy of misplaced concreteness,” or the act of “mistaking the abstract for the concrete.”⁶³ In a text pairing Whitehead with Kant and Deleuze, Steven Shaviro wisely appends Nietzsche to his discussion of the fallacy based on the latter’s distaste of the *fin-de-siècle* treatment of “becoming” that did not “[reach] beyond the image [of becoming] or behind it.”⁶⁴ Shaviro reminds us that such a Whiteheadian position wouldn’t remain on the fringes for long, variously finding purchase throughout the twentieth century “parallel to the critiques proffered [...] by Heidegger and by Wittgenstein, and more recently by Derrida and Rorty—not to mention already in the nineteenth century by Nietzsche.”⁶⁵ However, it will certainly not due to collapse all of these strains of thought; as Shaviro suggests, they differ wildly in “*style and manner*,” and “*pragmatically* they are quite distinct.”⁶⁶

“Pragmatically” does double duty here. In the main, it stresses the link to James, Dewey, et al, whom Whitehead listed—along with the decidedly non-pragmatist Bergson—as a triumvirate

⁶¹ Whitehead, *Science and the Modern World*, 24.

⁶² Friedrich Nietzsche, *The Gay Science*, trans. Walter Kaufmann (New York: Vintage, 1974), 172 (§112), emphasis in the original.

⁶³ Whitehead, *Science and the Modern World*, 74. See Whitehead, *Process and Reality*, 7-8.

⁶⁴ Nietzsche, *The Gay Science*, 172 (§112). See Steven Shaviro, *Without Criteria: Kant, Whitehead, Deleuze, and Aesthetics* (Cambridge, MA and London: The MIT Press, 2009), 145.

⁶⁵ Shaviro, 145.

⁶⁶ Shaviro, 145, emphasis in the original.

to which he owed a great debt: *Process and Reality* acknowledges that one of its goals is “to rescue their type of thought from the charge of anti-intellectualism, which rightly or wrongly has been associated with it.”⁶⁷ However, such links always come with qualifications. For Nancy Frankenberry, what most unites Whitehead with capital-P Pragmatism is the importance in his thought—as in the larger “mentality”—of chance and the contingent. Darwin and quantum physics leave in their wake a novel *idea* of contingency: “For both Whitehead and the contemporary pragmatists, contingency and chance mark the universe as unfinished.”⁶⁸ We will soon see Whitehead’s particular approach to such flux, and the importance of the contingent will underpin much of chapter two’s examination of cinematic long takes. Steven Meyer prefers to discuss Whitehead’s “complex pragmatism[s],” most notably with the goal of finessing Isabelle Stengers’ account of the former’s “cosmopolitical pragmatism.”⁶⁹

Stengers and Didier Debaise in fact are most interested in what they call Whitehead’s *speculative* pragmatism, resulting from the latter’s own description of his speculative philosophy. But I wonder whether “speculation” here continues to be misplaced. As Stengers and Debaise note, “etymologically the *speculator* was the one who observes, watches, cultivates the signs of change in the situation.”⁷⁰ The watchtower is no place for pragmatism; too much vision, too removed and lofty. More preferable would be the site of the mineralogist or prospector—digging, metallurgic,

⁶⁷ Whitehead, *Process and Reality*, xii.

⁶⁸ Nancy Frankenberry, “Contingency All the Way Down: Whitehead Among the Pragmatists,” in *Thinking with Whitehead and the American Pragmatists: Experience and Reality*, eds. Brian G. Henning, William T. Myers, and Joseph D. John (New York and London: Lexington Books, 2015), 106.

⁶⁹ Steven Meyer, “Prefiguring Whitehead: Reading Jamesian Pragmatism with Stengers and Latour,” in *Thinking with Whitehead and the American Pragmatists*, 62-66. The phrase “cosmopolitical pragmatism” is Meyer’s, yet relies on Stengers’ discussion of “cosmopolitics.” Also see Isabelle Stengers, *Thinking with Whitehead: A Free and Wild Creation of Concepts*, trans. Michael Chase (Cambridge, MA: Harvard University Press, 2011).

⁷⁰ Didier Debaise and Isabelle Stengers, “The Insistence of Possibles: Towards a Speculative Pragmatism,” *Parse 7* (2017): 18, emphasis in the original. Also see Brian Massumi, “The Ether and Your Anger: Toward a Speculative Pragmatism,” *Semblance and Event: Activist Philosophy and the Occurrent Arts* (Cambridge, MA and London: The MIT Press, 2011), 29-37.

grounded. This is actually closer to what Whitehead has in mind in terms of speculative philosophy: “The true method of discovery is like the flight of an aeroplane. *It starts from the ground of a particular observation*; it makes a flight into the thin air of imaginative generalization; and it *again lands for renewed observation, rendered acute by rational interpretation.*”⁷¹ This sounds to me like radical empiricism, and not just because of its grounding (L. *radix*, the root of a plant). For James, radical empiricism (“a mosaic philosophy”) as a method may co-exist productively with the pragmatist disposition, yet it places greater emphasis on flux, relationality, and thickened experience. In his words, “[f]or such a philosophy, *the relations that connect experiences must themselves be experienced relations, and any kind of relation experienced must be considered as ‘real’ as anything else in the system.*”⁷² Furthermore, radical empiricism is distrustful of subject-object or mind-body dualisms within the “tissue of experience,” providing a process philosophy approach that Whitehead will finesse. Critically, while James likewise casts a mistrustful eye on common descriptions of “consciousness” and rational thought, his concern with relations (conjunctive or disjunctive) and “pure experience” does not mean that this experience is fundamentally unavailable to analysis. Rather, the specific relations that make up experience must be considered in their specificity, without recourse to universals. There are no givens in this empiricism, nor are there reasons to dismiss experiences out of hand.⁷³ Debaise and Stengers, while stressing Whitehead’s “extension” of James’ radical empiricism, call this a “double constraint”: “Firstly, to exclude nothing, to factor in the multiplicity of the dimensions, which make up the experience here and now [...]. Then, not to allow a principle of judgment outside the situation,

⁷¹ Whitehead, *Process and Reality*, 5, emphasis mine.

⁷² William James, *Essays in Radical Empiricism* (E-book: The Floating Press, 2012), 30-31, emphasis in the original.

⁷³ James, *Essays in Radical Empiricism*, 30: “To be radical, an empiricism must neither admit into its constructions any element that is not directly experienced, nor exclude from them any element that is directly experienced.”

which would domesticate this multiplicity in terms of categories or requirements alien to it.”⁷⁴ Such a disposition is as useful in the consideration of sporting experience as for the processes of moving image production.

Two of Whitehead’s oft-cited and just-as-oft-puzzling remarks may stand epigrammatically here with respect to what follows. The first, from a section on the need for philosophy to expand what counts in terms of its “evidence,” reads as follows: “Philosophy may not neglect the multifariousness of the world—the fairies dance, and Christ is nailed to the cross.”⁷⁵ An interesting and very radical empiricism, to be sure. The second is the statement which effectively subtends all of Whitehead’s thinking: “The many become one, and are increased by one.”⁷⁶ Let us phrase this in a slightly different way, since in Whitehead it is actually the fundamental question, not the fundamental principle, metaphysical or otherwise: *how is it that the many become one, and are increased by one?* In other words, how does creativity happen? How does “novelty” come about? How does process fuse the many, resulting not solely in their reconfiguration as one but, additionally, in the production of a novel one? How do things become, or how does becoming produce what we think of as things, as beings?

Much of Whitehead’s thought revolves around the concepts of *concrecence* and *prehension*. Concrecence is perhaps the most expansive of these concepts, given that “the ‘production of novel togetherness’ is the ultimate notion embodied in the term ‘concrecence.’”⁷⁷ In fine, creativity and novelty are instances of “concrete togetherness” or concrecence, which explains how the many can become one while being increased by one, rather than an Aristotelian

⁷⁴ Debaise and Stengers, 15.

⁷⁵ Whitehead, *Process and Reality*, 338.

⁷⁶ Whitehead, *Process and Reality*, 21.

⁷⁷ Whitehead, *Process and Reality*, 21.

“primary substance” that can only be hylomorphically reconfigured. What generates instances of concrescence are various prehensions, otherwise termed “Concrete Facts of Relatedness.” Eyes prehend light, a cell prehends “various elements of the universe out of which it arises,” celluloid prehends light waves and chemical flux to generate a material object shot through with percepts and affects.⁷⁸ “Positive” prehensions become “feelings,” negative ones exclude elements in terms of concrescence. In this Whitehead joins James in positing a view of experience which needn’t be anthropocentric or purely phenomenological. As Parikka suggests, “thinking in terms of prehensions and superjects instead of subjects and intentions [...] gives us tools to understand how subjectivity can be contracted beyond the human form.”⁷⁹ We don’t need a new ontology, even if it is object-oriented.

What of subjects and objects, though, and this strange term “superject”? Whitehead maintains the words “subject” and “object” but qualifies that what we’re really talking about is the superject or the “subject-superject.” Deleuze will refer to these as “subjectiles” and “objectiles.” What matters for Whitehead is that superjection is the process whereby something has “become a ‘being,’” *viz.* a subject.⁸⁰ The subject does not experience a world of objects, nor does it become solely through intention. The subject doesn’t feel its feelings, the feelings feel the subject (in its superjection). It is often held that the camera operator wields the camera to a direct end (with varying success), not that the camera likewise wields the operator. Or, again it is assumed that the athlete surveys the field and *acts* upon it, instead of being carried through action via relationality. It is wise to keep both of these facets of experience in mind. Such processes also always split into

⁷⁸ Whitehead, *Process and Reality*, 219.

⁷⁹ Jussi Parikka, *Insect Media: An Archaeology of Animals and Technology* (Minneapolis and London: University of Minnesota Press, 2010), 61.

⁸⁰ Whitehead, *Process and Reality*, 45. Also see 22-23.

the actual and the virtual, not least with respect to which elements are prehended in concrecence. James has a simpler way of putting things with respect to pure experience: *that*. He writes: “The instant field of the present is at all times what I call the ‘pure’ experience. It is only virtually or potentially object or subject as yet. For the time being, it is plain, unqualified actuality, or existence, a simple *that*.”⁸¹ Parikka has a nice way of summarizing this, which is relevant in terms of sporting flux as well as human interaction with cinematic technology: “We are being individuated by [...] objects as much as we individuate them, and perception becomes an event instead of a grid imposed on the world. Objects and subjects emerge through such concrete events, which always have a stronghold in the virtual defined as a potentiality of future and past actualizations.”⁸²

Ultimately, Whitehead is not a thinker much concerned with technics as such, even if his philosophy of science and the transmission of ideas is fruitful for recontextualizing technological processes. To flesh out Whitehead’s process-oriented stance we can now (re)turn to a thinker whose own brand of process philosophy is inseparable from a focus on technological innovation and individuation, Gilbert Simondon. It may be said that Simondon is experiencing a bit of a renaissance—or a naissance, depending on whom one queries. In part the lag is due to delays in translation. The recent publication of *Individuation in Light of Notions of Form and Information* is an exemplary case in point. Published in 2020, *Individuation* (as I will henceforth refer to it) is the first English-language version of Simondon’s doctoral thesis “in its entirety.”⁸³ This actually represents Simondon’s “main” 1958 thesis, however, which was formerly split into two parts, the

⁸¹ James, *Essays in Radical Empiricism*, 21, emphasis in the original.

⁸² Parikka, *Insect Media*, 61.

⁸³ See the Publisher’s Note in Gilbert Simondon, *Individuation in Light of Notions of Form and Information*, trans. Taylor Adkins (Minneapolis and London: University of Minnesota Press, 2020).

first of which (*L'Individu et sa genèse physico-biologique* [*The Individual and Its Physico-biological Genesis*]) was published in 1964 in French. The second half of the main thesis would have to wait an additional twenty-five years for publication.⁸⁴

For the purposes of this project the three primary areas of Simondon's thought I rely on and seek to modulate when necessary are as follows: first, his specific critique of the hylomorphic schema, a critique which has relevance for both sport and cinema studies; next, his general development of *ontogenesis* against, for instance, subject-object thinking and the seeming stability of "being"—in dealing with Simondon's ontogenetic approach, which I argue shares much with Whitehead's own brand of process philosophy, I will have recourse to the particulars of *metastability* and *metastable systems*, likewise resonant with the moving image as well as athletics; lastly, it is of the essence to treat Simondon's position on the *technical mentality*, which syncs up with Whitehead's admittedly epigrammatic writing on "mentality." All of the aforementioned intertwine, of course, and rely on one another.

In effect, everything follows from the critique of hylomorphism, which finds Aristotle as its obvious target. In answer to the spiraling flux of Anaxagoras, Anaximander, Heraclitus et al, Aristotle posits the teleology of matter, sending us on a multi-millennial quest to explain the causal efficiency and form-taking of matter.⁸⁵ One of the many sticks Simondon will place in the hylomorphic wheel is concerned with what is left out of the "technical operation" during form-taking: "There is a hole in the hylomorphic representation *that makes the true mediation disappear*, i.e., the very operation that attaches the two half-chains [form and matter] to each other by

⁸⁴ This second part is *L'Indivivuation psychique et collective* [*Psychic and Collective Individuation*]. See Sean Bowden, "Gilles Deleuze, a Reader of Gilbert Simondon," in *Gilbert Simondon: Being and Technology*, eds. Arne de Boever et al (Edinburgh: Edinburgh Press, 2012), 150 fn.6.

⁸⁵ Gk. *hyle* (ύλη, "wood, matter") + *morphe* (μορφή, "form, shape").

instituting an energetic system, a state that evolves and must effectively exist for an object to appear with its haecceity.”⁸⁶ As a principle example, Simondon heads to the “workshop,” suggesting that the hylomorphic position represents the viewpoint of one who only sees “what goes in and goes out,” the matter prepared and its ultimate form-taking.⁸⁷ However, gaining access to this workshop and working in tandem “with the craftsman” still may not get us far enough. Rather, “we would have to penetrate into the mold itself in order to follow the operation of form-taking on the different scales of magnitude of physical reality.”⁸⁸ As Conor Heaney suggests, Simondon’s workshop is a perfect site for us to consider his larger explorations of ontogenesis and the process(es) of individuation, since it is a concrete example of form-matter relations from which we often exclude a middle, to paraphrase Whitehead: “Simondon seeks [...] to grasp the *operation* of individuation through exploring the *obscure zone* of their [form/matter] relation and becoming. Exploring the zone of their relation is precisely what [he] also famously calls going *into* the mould.”⁸⁹

How to think with Hephaestus, then, rather than with Apollo? Less hyperborean sunshine and knowledge, more subterranean labor and the flicker of the forge. References to metallurgy and smithing find their way into certain of my chapters, but I admittedly don’t always aim to “go into the mold.” What remains important, at base, is the frustration of hylomorphic schemata as they spread across various registers. For hylomorphism is insidious—but not wholly without merit. It reduces our approach to technical invention, botching a consideration of process and emphasizing (teleological) products and production. It necessarily subtends any true subject-predicate thinking

⁸⁶ Simondon, *Individuation*, 29-30, emphasis mine.

⁸⁷ Simondon, *Individuation*, 30.

⁸⁸ Simondon, *Individuation*, 30.

⁸⁹ Conor Heaney, “The Disparity Between Culture and Technics,” *Culture, Theory and Critique* 60, nos. 3-4 (2019): 194, emphasis in the original.

(and writing).⁹⁰ And it remains a popular heuristic for considering the sporting experience and athletic “achievement.” Consider Daniel Dombrowski’s otherwise very nuanced discussion of athletic process vis-à-vis Greek “ideals,” wherein he muses that “we are hylomorphs whose integration of body and mind is always at least partially achieved, but full integration can be approached only asymptotically,” and aims to guard against a reduction to static categorization by admitting that “athletics involves hylomorphs *in motion*.”⁹¹ But this has not gotten us very far. In short, it returns us to a certain strain of ancient Greek thought which Simondon likewise finesses to reinscribe individuation into the equation: “The Ancients only knew stability and instability, rest and movement, but they did not know metastability clearly and objectively.”⁹² If “the principle of individuation”—whether physical, technical, or psycho-social—is found in ontogenesis and the “primacy of processes of becoming over the states of being through which they pass,”⁹³ then there must be something other than static states and movement. Thus the *metastable equilibrium*, a state charged with potential energy and subject to an increase in entropy.⁹⁴ Not just stability and movement, then, but metastable states, archipelagoes of potential energy in the processual path between seeming zones of *terra firma*. Potential energy will ever thus remain, however, unless activated, unless *pushed*. In Sean Bowden’s words, we can consider the metastable system and transfers of energy “between different orders of magnitude and where the process of individuation corresponds to the progressive degradation of this potential energy through a series of

⁹⁰ On hylomorphism, subject-predicate thinking, and “unity,” see Mark Johnston, “Hylomorphism,” *The Journal of Philosophy* 103, no. 12 (2006): 652-98.

⁹¹ Dombrowski, 127; 130, emphasis in the original.

⁹² Simondon, *Individuation*, 5.

⁹³ Brian Massumi, “‘Technical Mentality’ Revisited: Brian Massumi on Gilbert Simondon,” interview by Arne De Boever, Alex Murray, and Jon Roffe, in *Gilbert Simondon: Being and Technology*, 20.

⁹⁴ On the scientific (spec. thermodynamic) understanding of metastable systems, see E. Olivieri, “Metastability and Entropy,” in *Entropy*, eds. Andreas Greven, Gerhard Keller and Gerald Warnecke (Princeton: Princeton University Press, 2004): 233-50.

transformations (a potential energy is said to be actualized by these transformations).”⁹⁵ In other words, metastable systems may get *resolved*, yet these resolutions cannot be fully circumscribed before such an action.⁹⁶ There is also nothing stopping them from arriving at yet another metastable equilibrium as they continue to individuate.

Simple examples of metastable bodies, states, or systems abound, and yet one stands out here particularly inasmuch as it fits snugly into this project’s sporting focus: the bowling pin.⁹⁷ Setting aside the rather thin and uniformly shaped candlepin, the metastability of which is less apparent, we can consider the tenpin and duckpin targets with respect to their ability to “change” position. When placed on the aisle, the pins are in stasis. At least they appear to be. The aim of the sport is, of course, to disrupt this stasis, to effect a change in the pins’ state through the mechanism (=force) of the ball itself. As any amateur bowler knows, though, brute force won’t always serve to topple all of the pins; furthermore, what seems a direct hit may in fact result in more of a pin wobble or spin-out, with the target rather elliptically returning to a static position after moving just a few inches from its original placement. The pin here is thus in a state of metastable equilibrium, “of fragile, provisional equilibrium that is subject to constant perturbation, from whose jaws it must repeatedly snatch its homeostasis.”⁹⁸

We can place sport and cinema as the seven-ten split of such metastable “pins” and endeavor to hit both at once. In fact it is much easier to do this, given that there is such a proximate relationship between the two fields. In any case, I take as axiomatic the fact that cinema and sport

⁹⁵ Bowden, “Gilles Deleuze,” 138.

⁹⁶ Simondon, *Individuation*, 5.

⁹⁷ See Mark M. James, “Bringing Forth Within: Enhabiting at the Intersection Between Enaction and Ecological Psychology,” in *Enaction and Ecological Psychology: Convergences and Complementaries*, eds. Ezequiel A. Di Peolo, Manuel Heras-Escribano, Anthony Chemero and Marek McGann (Frontiers SA), 169.

⁹⁸ Massumi, “‘Technical Mentality’ Revisited,” 30.

are each highly metastable, at least in a figurative sense. Approaches to cinema's "origins," its evolution, and its idealistic-teleological consideration, most frequently clustered around the writing of Bazin, are numerous and variously suggestive. To reduce Bazin here, perhaps unfairly, would be to follow his line of thought that The Cinema exists as Platonic Ideal, or rather as "guiding myth"—that of "total cinema."⁹⁹ Thus the imaginary cinema, cinema's *essence*, is also its Aristotelian final cause, the *telos* that can only be achieved—and "invented"—via a set of progressive "developments."¹⁰⁰ Such a view is likewise hylomorphic in the extreme. On the contrary, as Jon Hackett points out, explicitly materialist and/or marxist accounts of the moving image and its vicissitudes reinscribe technological and scientific change, along with the role of laboring bodies, to the equation, thus granting primacy to technico-industrial factors as determinants and locating the (commodity) essence of cinema as an effect of these processes, not its cause;¹⁰¹ by inverting the Bazinian stance, we lose the teleological thrust but do little to dispel certain elements of the hylomorphic approach. The zenith of this latter endeavor is the "classical" apparatus theory, which among its various crimes could not escape the tug of the transcendental viewing subject, greeted by, positioned, or (re-)produced within the cinematic apparatus in both its technical and ideological sense.

This obituary has been written many times and it would hardly do to host another dance on the grave of apparatus theory.¹⁰² It is more important to address how a *metastable* approach opens

⁹⁹ André Bazin, "The Myth of Total Cinema," trans. Hugh Gray, in *What Is Cinema? Vol I*, ed. Hugh Gray (Berkeley and Los Angeles: University of California Press, 2005), 21-22.

¹⁰⁰ Bazin, "The Myth of Total Cinema," 21.

¹⁰¹ Jon Hackett, "The Ontogenesis of Cinematic Objects: Simondon, Marx, and the Invention of Cinema," *Platform 6* (2015): 12-13.

¹⁰² For a compelling take on the demise and fall of apparatus theory as well as an approach to a novel understanding of the opportunities afforded by a "contemporary" apparatus theory, see Randall Halle, *Visual Alterity: Seeing Difference in Cinema* (Urbana, Chicago and Springfield: University of Illinois Press, 2021), spec. 66-83; 201-07. It is also worth noting the often provocative work which resulted from a shift from classical apparatus theory to notions of

up new avenues for thought. In terms of cinema, thinking about the medium's ontogenesis does a few things for us. In the main, as Hackett suggests, it offers an expanded view of the moving image, its chemical and technical support, and the relationality between its purveyors and their various instruments: "[O]ntogenesis and individuation, by which things organic and inorganic become, extend to chemical, organic, psychic, technical and collective entities—thus incorporating all of the aspects we might conceive of as contributing to the development of cinema."¹⁰³ As such, we are thinking about interrelated individuations which give no special priority to, variously, the so-called pioneering inventors of cinema, technics, or certain cultural factors. We are in the middle (milieu), from whence these factors emerge. Furthermore, since approaches to ontogenesis and individuation, for Simondon, must always attend both to a) a certain "pre-individual reality," charged with potential, and b) "successive resolutions of *problematic fields* of metastability," there is little reason to turn one's back on cinema's "dead ends," its borrowing from other fields and modes of expression, or its problems—which, although "solved," are never fully resolved.¹⁰⁴ Therefore, call it *cinemetastability*, and set it to work. (It has always been at work, individuating).

One of Simondon's most critical, if cryptic, concepts is the *associated milieu*, and any discussion of the metastable must account for the plural role of milieux in the process. In this project I am somewhat liberal with the term. Thinking in general terms of metastability, we have the twin milieux of sport and cinema. More specifically, there are what might be termed the associated milieux of motion studies and nineteenth-century athletics; of early cinema and prizefighting; of ocean freediving and optical systems; of the Olympics and widescreen formats;

the *dispositif/dispositive*, for which see eds. François Albera and Maria Tortajada, *Cine-Dispositives: Essays in Epistemology Across Media* (Amsterdam: Amsterdam University Press, 2015).

¹⁰³ Hackett, 13.

¹⁰⁴ Heaney, 195, emphasis in the original.

and of extreme sports and the moving camera. Here it is quite simply a question of two milieux, broadly considered, which engage and innovate. But Simondon has something more specific in mind. In a certain sense every individual is also its associated milieu, or “the energetic system in which an individual is constituted.”¹⁰⁵ This milieu is “the very activity of relation,” or “the exchange between the extrinsic and the intrinsic.”¹⁰⁶ Neither is primary, for in the process of individuation both individual and associated milieu change, and “each order of individuation entails a new order of milieu and a new reserve of the preindividual,” as Elizabeth Grosz suggests.¹⁰⁷ What is most important to point out here is that the relation between an individual and its associated milieu or between disparate milieux (natural and technical) is charged with potential *informational* relays, not necessarily form-taking as commonly considered.

Andrew Iliadis provides a succinct clarification of the somewhat puzzling use of “information” in Simondon. For Iliadis, Simondonian “information is that which, depending on the way that it comes into contact with another abstraction of itself, unlocks or ‘clicks’ into another form of reality.”¹⁰⁸ This at once separates it from notions of “measurable” information espoused by mid-century information theorists and, again, Aristotle’s hylomorphism. Simondon often uses the term *disparation* to describe bodies, systems or states in (metastable) tension, and the partial resolution of these “disparates” is in effect a provisional informational exchange. Thus, disparate optical entities (either human eyes or “stereoscopic” lenses) can “convey information” through a resolution of tension,¹⁰⁹ as can camera and lens systems that focus light (“natural” milieu or reality)

¹⁰⁵ Simondon, *Individuation*, 49-50.

¹⁰⁶ Simondon, *Individuation*, 50.

¹⁰⁷ Elizabeth Grosz, *The Incorporeal: Ontology, Ethics, and the Limits of Materialism* (New York: Columbia University Press, 2017), 176.

¹⁰⁸ Andrew Iliadis, “A New Individuation: Deleuze’s Simondon Connection,” *Media Tropes* 4, no. 1 (2013): 94.

¹⁰⁹ Simondon, *Individuation*, 248-49.

onto celluloid or digital sensors (“technical” milieu or reality). Furthermore, as intimated in this introduction’s opening, this affords us a perspective on how sporting bodies on both sides of the lens are “in-formed,” in other words how experience and milieu affect gestural and habitual comportment in a relation that need not be addressed with respect to either embodied “knowledge” or “automatic” reaction.

1.4 Twin Processes

Whitehead and Simondon are thus placed in dialogue here within the Jamesian field of experience. A fusion of their thinking results in a process philosophy “program” that accounts for both technological and physical individuations. Process-philosophical approaches to sport and cinema are not entirely novel, yet neither do they have a particularly rich history. While this project is unique inasmuch as it considers sport and the moving image processually, jointly, and with respect to their mutually beneficial metastability, it is worth sketching the current landscape of each field’s extant gestures toward process philosophy. In the realm of sports studies—and philosophy “proper”—the central figure in the discussion is one Paul Weiss, a twentieth century metaphysician who studied under Whitehead at Harvard. In truth, Weiss’ approach is not as explicitly process-oriented as Whitehead’s, and at times it seems as if the thinking of his advisor runs as it were under the stream, a parallel current that frequently rises to the surface to account for things such as *change*, *plurality*, and the problem of the *One and the Many*. S.K. Wertz, in 1995, admirably took the scaffolding of Weiss’s thinking about sport and, in essence, draped on it a more Whiteheadian coverlet. For Wertz, Weiss’s treatment of sport as “essentially a world of action; *a world in which new events are being produced in fresh unions* of what had been achieved

and what is sought,” was enough to justify a closer look at the value of sporting process philosophy.¹¹⁰ Wertz goes on to address Weiss’s writings on the event, on the notion of “interplaying,” and on the micro-/macrocosmic relation between the temporal and “historical” nature of a specific “play” vis-à-vis its “narrative” result—or, in other words, the always-folding status of a play that is at once located *and* subject to reconfiguration by way of the event’s extension and “closure” (=“the game is over”).¹¹¹ Curiously, Weiss’ published reply to Wertz not only works to subtract these process additions, but also snuffs out any real discussion of Whitehead’s concrete influence:

1. I did not approach the subject of sport from the position of process philosophy, either in the form that Whitehead gave it, or in those into which his followers have tried to mold it. [...] I wrote my thesis under Whitehead; I thought he was the greatest of living philosophers; I benefited immeasurably from my conversations with him. But [...] I thought his view had grave defects. [...] Process philosophy never did consciously guide, control, or provide a background for any of my studies.¹¹²

Spoken like someone who has something to hide. Although Weiss’s approach is rife with discussions of sporting “excellence,” of the separate “world” of gifted athletes, and of the teleological urge to “become self-complete,” these odes to *kalokagathiā* (καλοκαγαθία, “beautiful, and good”) do leave space for more process-oriented thinking. Although Dombrowski reserves for Weiss’ philosophy the title of “dynamic hylomorphism,” he also suggests that some of Whitehead’s work “is congenial in many respects to Weiss’s process orientation”; Dombrowski explicitly agrees with Wertz that Weiss’s oeuvre is fundamentally about the “processual nature” of sport and athletics, utilizing Whitehead’s “stages of concrecence” to argue for twin processes in

¹¹⁰ S.K. Wertz, “The Metaphysics of Sport: The Play as Process,” in *The Philosophy of Paul Weiss*, ed. Lewis Edwin Hahn (Chicago and La Salle: Open Court, 1995), 662, emphasis in the original. See Paul Weiss, “Some Philosophical Approaches to Sport,” *Journal of the Philosophy of Sport* 9, no. 1 (1982): 92.

¹¹¹ Wertz, “The Metaphysics of Sport,” spec. 670-71.

¹¹² Paul Weiss, “Reply to S.K. Wertz,” in *The Philosophy of Paul Weiss*, 675.

sport: the atomic and the transitional.¹¹³ In short, individual sporting motions or plays can be considered—theoretically—in terms of process (atomic), and the game’s flow may be discussed for its broader becomings and relationality (transitional), inasmuch as events proliferate and shift until the bell rings.¹¹⁴ In this we might see inklings of atomic process philosophy in Muybridge’s motion studies, and transitional flow in the boxing film long take. But this will have to wait for chapters one and two, respectively.

Most critically for sports studies, “[l]argely because of Weiss, one no longer has to apologize for taking a philosophical interest in athletics.”¹¹⁵ Weiss’ process imprint is thus extremely influential in the field, even if he gainsays its importance. In terms of cinema, however, the stadium seats are a bit more empty. How else could Edward Branigan, in 2019, put forth a process philosophy *framework* for cinema? In any case, Branigan’s attempt to populate (posthumously) the arena of film process philosophers is far from convincing. Referencing “a few classic examples of process philosophy at work in film theories and analysis,” Branigan considers Deleuze’s two volumes of *Cinema*, surely process-oriented and always provocative (although I find nearly every other Deleuze entry, perhaps paradoxically, to be richer sources for thinking the moving image).¹¹⁶ In an extremely perplexing move, he then cites Eisenstein, Noël Burch, Christian Metz, Stephen Heath—by way of the next example, the Roland Barthes of *S/Z*—and David Bordwell, before waffling a bit on whether Bazin merits inclusion.¹¹⁷ We have somehow

¹¹³ Dombrowski, 129. Dombrowski here is, I think, both celebrating Wertz’s development of the atomic/transitional schema in terms of process philosophy *and* making the case that, as Wertz suggested, Weiss’ work had already been making similar claims in spirit if not always manifestly.

¹¹⁴ Dombrowski, 130.

¹¹⁵ Dombrowski, 41.

¹¹⁶ Edward Branigan, “A Process Philosophy Framework for Film Theory and Aesthetics,” *New Review of Film and Television Studies* 17, no. 2 (2019): 189.

¹¹⁷ Branigan, 189

managed to fuse together formalism, dialectical thinking, structuralist semiotics, psychoanalysis, and hermeneutics, while back-dooring Bazin by virtue of his interest in the thought of Bergson.

Branigan's pragmatic hotel is thus filled to the brim, and very likely the guests don't get along. While the aforementioned thinkers may all, at times, be placed in productive dialogue with process-oriented approaches, the bulk of their various theoretical artifices is too solid to support process philosophy as such (aside from Deleuze). In fairness, doing so may also weaken much of what *works* in the thinking of these film theorists by attempting to square the circle. Branigan also spends some time discussing processual epistemology, which cannot help but sound oxymoronic. Nevertheless, he is right to suggest how "[t]hinking about processes allows an analyst to see a text in a fundamentally new way without destroying the utility of seeing it when it has been hypostasized, thingified," and his Rescher-influenced brand of process philosophy does generate productive questions about cinema's textual processes.¹¹⁸ But what happened to the process of production, and the experience of those who forge what we call the "text"? Branigan gives precious little space to matters of production, and when speaking of "production histories" he prefers to describe how they "mislead" the "mind" of the viewer, not least via "objective descriptions of camera lenses, optical printers, and so forth."¹¹⁹ Histories, ethnographies, and phenomenological reports of production can certainly "mislead," but this is no reason to prioritize process in the mind and body of the viewer while abolishing concerns of process in production. Although my project does at times rely on certain film-theoretical approaches or accounts of production that appear at odds with process philosophy, I try to take what works from those in the hotel in terms of their relation to cinema and sport.

¹¹⁸ Branigan, 199.

¹¹⁹ Branigan, 195.

1.5 Why *Not* Sport and Film?

I am lucky to have, laid out before me, a wonderfully eclectic mix of sports media studies. This project could certainly not exist as such were it not for what came before. However, there is a sort of *sine qua non* in a number of these studies, specifically the more contemporary entries, which I find does little to push sports media forward—and very likely risks setting it back.

The question of Why. One finds, spread across an increasing number of studies of the sports film or mediated live sporting events, a strangely defensive gesture. It is as if, to study sport and film, one must genuflect to either cinema studies, sport studies, or both. A few examples here will suffice. Michael Serazio's *The Power of Sports*, a very rich analysis of contemporary sport spectacle and the totemic power—however sublimated—of sporting events, leads with a lengthy rundown of the multi-billion dollar sport industry, exploring the various “media convergences” that regulate the twin flows of capital and socio-ideological desire.¹²⁰ Serazio also reflects on an argument about how “sports are, in short, a force that gives us meaning,” appending various philosophical and theological positions in an attempt to make sense of the particular religious, spiritual, moral, and ideological charges that spark along the fibers of the sporting network.¹²¹ In *The Uses of Sport: A Critical Study*, John Hughson et al dig into certain of these attachments, offering a springboard for further thought about sport's position vis-à-vis popular culture and material relations. They find within sport a particular valence, often suppressed, of counter-cultural irruption: “Of the various forms of culture [sport, arts, etc], sport is most likely to shatter the City of Culture's illusory cultural democracy, and for this, as much as the other reasons discussed in

¹²⁰ Michael Serazio, *The Power of Sports: Media and Spectacle in American Culture* (New York: New York University Press, 2019), *passim*.

¹²¹ Serazio, spec. 15-21; 280-96.

this book, should be of importance to cultural analysts.”¹²² In a gesture both analytic and pedagogical, Zachary Ingle suggests in the introduction to *Identity and Myth in Sports Documentaries* that the increase of (student) viewers attending to “ESPN documentaries” was the impetus for the edited collection.¹²³ And although not always explicitly attuned to sports *media* and mediation, various leftist and marxist approaches to sport have, in effect, operated on the *a posteriori* principle that since sport in the twentieth—and now twenty-first—century is a) increasingly inseparable from the flow of capital and dominant mode(s) of production, b) among the most express examples of mass culture, and c) related to issues of work, labor, and leisure, then the question of *why* is immaterial (although *very much material*, as it were).¹²⁴

One of the strengths of such critical-theory approaches to sport, even if I tend to swerve rather widely from their wake, is that they often recognize a productive tension inherent in *why*, or *whether*, sports matter. Thus in William J. Morgan’s *Leftist Theories of Sport* the entire treatise is struck through with what he describes up front as “the critical rehabilitation of sport,” not least from its corruption: “Furthermore, it is this linkage of theory and practice that defines my materialist reading of the emancipation project: that the corruption of contemporary sport can only

¹²² John Hughson, David Inglis and Marcus Free, *The Uses of Sport: A Critical Study* (London and New York: Routledge, 2005), 184.

¹²³ Zachary Ingle, “Introduction,” in *Identity and Myth in Sports Documentaries: Critical Essays*, eds. Zachary Ingle and David M. Sutura (Plymouth, UK: Scarecrow, 2013), x. In Ingle’s words: “It was with the popularity of [ESPN documentary series] *30 for 30* that I noticed the necessity for a book on sports documentaries while teaching. I would ask my students in my ‘introduction to film’ courses what they were watching. Some weeks, more students had seen the most recent ESPN documentary than the newest Hollywood offering that had topped the previous weekend’s box office. A paradigm shift had occurred and sports documentaries were being consumed and appreciated by the masses.” In this context (socio-cultural, pedagogical), see Kristy A. Brugar, “*30 for 30*: An Inquiry into Sports Documentaries to Engage in Social History,” *The History Teacher* 49, no. 2 (2016): 285-99.

¹²⁴ On this topic see Eric Dunning and Chris Rojek, eds., *Sport and Leisure in the Civilizing Process: Critique and Counter-critique* (Toronto: University of Toronto Press, 1992); William J. Morgan, *Leftist Theories of Sport* (Urbana and Chicago: University of Illinois Press, 1994); Susan Birrell and Mary G. McDonald, eds., *Reading Sport: Critical Essays on Power and Representation* (Boston: Northeastern University Press, 2000); Ben Carrington and Ian McDonald, eds., *Marxism, Cultural Studies and Sport* (London and New York: Routledge, 2009); and Nathan Kalman-Lamb, “Athletic Labor and Social Reproduction,” *Journal of Sport and Social Issues* 43, no. 6 (2019): 515-30.

be overcome by a transformation of its existing material conditions.”¹²⁵ This stance makes clear that there is, or *was*, something called sport, and for it to matter it must be stripped of its more injurious and corrupting elements, or analyzed as a problematic field through which larger questions of ideology may be addressed anew. Seán Crosson’s introductory chapter to *Sport and Film*—titled “Why Sport and Film?”—gestures toward a focus on Gramscian cultural hegemony underlying certain readings of the sport-cinema-culture relationship. For Crosson, Gramsci’s position on the subtlety of power and control with respect to “structures of domination and subjugation” is perfectly tailored for thinking through sports culture: by pairing analyses of more explicitly forceful or coercive methods of achieving hegemonic ideological control with less express, but more insidious, methods of *maintaining* such control, the critical theorist develops a more holistic reading of ideology.¹²⁶ As Crosson wisely remarks, sport and film are both prominent structures and sites for this circulation of ideologies, not least because they each suggest “utopian possibilities [...] that are their most seductive qualities.”¹²⁷

C. Richard King and David J. Leonard’s *Visual Economies of/in Motion* uses its introduction and epilogue to meditate on these matters of cultural impact and ideology. Although King and Leonard, along with the volume’s chapter contributors, sometimes look toward “counter-hegemonic possibilities” of sport film, the overwhelming sentiment remains one that views sports media as a nexus through which ideology circulates. Reflecting on the growing number of twenty-first century sports films, the exponential increase of websites detailing sports film hierarchies, and ESPN’s ever-expanding film library, they suggest that these factors “demonstrate the importance of critical interrogation of cinematic sports fantasy and the ways in which hegemonic

¹²⁵ Morgan, *Leftist Theories of Sport*, 1.

¹²⁶ Seán Crosson, *Sport and Film* (New York and London: Routledge, 2013), 5.

¹²⁷ Crosson, 6-7.

visions of self, race, gender, nation, class, and sexuality play through the production and consumption of these films.”¹²⁸ The closing remarks of *Visual Economies* (“Why Sports Films Matter”) are even more direct in their attempt to make clear the stakes:

Clearly, sport cinema matters. [...] [I]t is increasingly significant precisely because of the ways it reflects and reinforces dominant modes of production, means of representation, and conventions of reception. Indeed, whether infused with nostalgia or realism, concerned with identity or difference, preoccupied with race, class, or gender, or rendering American dream or global nightmares, films focused around sporting worlds more and more constitute vehicles and vectors for the expression and inscription of dominant symbols, preferred sentiments, and hegemonic structures.¹²⁹

I do not wish to suggest that this approach is without merit. Plenty of important work has been done, and continues to be done, in terms of sports media’s ideological *messiness*. However, in this project I turn from such an outside-in stance, a disposition that I argue tends to place ideological carts before horses. In effect, many of these studies take a ready-made ideological critique and layer it onto the sports film, or cite the sports film as an exemplar of various hegemonic strains. They often tell us little about sport, less about cinema, and something we already know about ideology. Consider King and Leonard’s choice of words for the sports film itself: *vehicle*, *vector*. Much is evacuated when we see the media object, its narratologico-representative elements, and the terms of its production as placeholders, as *something that matters* because it can be analyzed via *something else that matters*.

I was tempted to name this section “Why Sports Media Doesn’t Matter” and have done with it. This is said only partially in jest, but if sports media matters, this is because it is made by men and women who labor and experiment, and because it relies on bodies that move. It thus

¹²⁸ David J. Leonard and C. Richard King, “Screening the Social: An Introduction to Sport Cinema,” in *Visual Economies of/in Motion*, 9.

¹²⁹ King and Leonard, “Why Sports Films Matter,” 227.

matters no more and no less than other modes of moving image production. It is not *ipso facto* special. This is another way of saying that it must consistently be made to matter or be reactivated in its uniqueness. In terms of what “matters,” Debaise and Stengers read Whitehead’s ethics as a question of “making-important.” In their terms, “[m]aking a situation, past or present, be of importance, means intensifying the sense of possibles it harbours, as expressed by the struggles and claims to another way of making it exist.”¹³⁰ As such, my approach does not foreclose examinations of power and control, questions of the racialized, gendered, and sexed valances of sports media’s production practices and representational strategies, or its attachments to capitalism, commerce, and commodification. It simply refuses to take any of these concerns for granted or utilize them as overlays. Among the recent studies which do this most effectively I would highlight the trailblazing work of Samantha Sheppard and Travis Vogan. Sheppard’s *Sporting Blackness* is profound and wide-ranging in its analysis of race and representation in the sports film, and the grounding of the project introduces an array of novel and provocative insights to the story of mediated blackness. Her approach—“work[ing] within the celluloid”—means not just that the (fine) particulars of film form and genre are reconsidered vis-à-vis “content,” but also that “cinematic-athletic stylistics” informed by a range of image-making modes and epistemological disciplines (neuroscience, kinesthetics) must be interrogated for their historical spread across distinct but related fields.¹³¹ Sheppard’s theorization of an “under-theorized genre” is at once a revision of how race has operated in the sports film and a clarion call to examine the circulation of sporting bodies in terms of their “capture” as well as their forces of resistance.¹³²

¹³⁰ Debaise and Stengers, 17.

¹³¹ Samantha N. Sheppard, *Sporting Blackness: Race, Embodiment, and Critical Muscle Memory on Screen* (Oakland: University of California Press, 2020), 5-6.

¹³² Sheppard, 5. Also see Samantha N. Sheppard and Travis Vogan, eds., *Sporting Realities: Critical Readings of the Sports Documentary* (Lincoln: University of Nebraska Press, 2020).

Vogan's 2014 monograph on NFL Films, *Keepers of the Flame*, was a snare-shot that reinvigorated sports media studies, or perhaps ushered in its new phase.¹³³ As Vogan understood, in many ways NFL Films *is* American football, both aesthetically and commercially. In unpacking the process through which filmmakers Ed and Steve Sabol mythopoeticized a league that lacked such representational purchase, Vogan never loses sight of the fact that aesthetic and industry are but two sides of the NFL Films coin. As such, the Sabols' declared artistic influences, most notably Leni Riefenstahl's work in *Olympia*, are interrogated hand-in-hand with their broader discursive and self-representational strategies, tactics which ensured that such aesthetic brilliance generated money for the company and its league while also suggesting the imprimatur of high-art cinema. Yet Vogan also digs deep into the NFL Films institutional archive, examining how the production company's content generated meanings and "tags" that would fold back into its planning and greatly influence camera operators' sense of what and how to film.¹³⁴ Not unlike Sheppard's attempt to "work within the celluloid," Vogan dedicates crucial space to the study of NFL Films' early use of 16-mm color reversal film stock, and his analysis of the archive's SABER (Server and Archive Based Editing and Research) System extends this focus from initial exposure through to preservation and remediation.

Other wide-ranging monographs, *ESPN: The Making of a Sports Media Empire* and *ABC Sports: The Rise and Fall of Network Sports Television*, apply similar archival and cultural analysis to account for ESPN's rise to media dominance; the parallel thread running from box to wire in Vogan's work on ESPN and ABC is one that tracks the exponential growth of sport capital (monetary and cultural), a development inseparable from these networks' strategies of

¹³³ Travis Vogan, *Keepers of the Flame: NFL Films and the Rise of Sports Media* (Urbana, Chicago and Springfield: University of Illinois Press, 2014).

¹³⁴ See Vogan, *Keepers of the Flame*, ch. 3 ("The NFL's Smithsonian").

mediation.¹³⁵ More recently, Vogan's *The Boxing Film* explores the cinematic and televisual history of the sweet science, both fictional and documentary. In his words, "[b]oxing films, through both their representations and how they circulate, participate in creating the sport as a site of cultural production."¹³⁶ Using a transmedia approach, Vogan considers questions of race, gender, and cultural consumption from the earliest days of cinema to contemporary boxing and MMA live coverage and docu-dramas. What I refer to as sport and cinema's metastability Vogan calls "sport and media's interdependence," and he reminds us that while "[s]ports sit at the center of popular media culture, [...] they occupy the margins of media scholarship."¹³⁷ I have already intimated my conflicting feelings here about the status of the margin, or tympan, but one of the strengths of Sheppard and Vogan's work is that they have done crucial groundwork in pushing sports media forward; put another way, they open the door for ruminations on the sports media margin itself by placing these media objects and discourses front and center in the first place. Perhaps, in this sense, we had to ask "why sport and film" before being able to bristle at whether such justifications are worthwhile.

As indicated above, Katie Bird's work on sport filmmaking encourages us to reconsider classical film theory's occasional meditations on sporting bodies while paying heed to contemporary production practices, and her work thus pairs nicely with the interests of Sheppard and Vogan. But this dissertation also builds on Bird's more extensive studies of the history of film production and the discourses of its laborers and craft practitioners, in which she excavates a set

¹³⁵ Travis Vogan, *ESPN: The Making of a Sports Media Empire* (Champaign: University of Illinois Press, 2015), and Travis Vogan, *ABC Sports: The Rise and Fall of Network Sports Television* (Oakland: University of California Press, 2018).

¹³⁶ Travis Vogan, *The Boxing Film: A Cultural and Transmedia History* (New Brunswick, Camden and Newark, NJ, and London: Rutgers University Press, 2021), 3.

¹³⁷ Vogan, *The Boxing Film*, 7.

of materials that expand our familiarity with the process whereby film technicians generated their own mode of critical reflexivity.¹³⁸ In so doing, she describes how wearable camera systems—whether the Steadicam and Panaglide rigs or sport-specific attachments—can index the embodied labor of camera operators, perhaps resulting in a connection between the “athletic” camerawork and the sensory experience of the spectator.¹³⁹ Yet Bird also makes clear that even in situations we may not consider as kinetic or embodied, cinematographers throughout the twentieth century “often discuss[ed] framing and shooting as a capturing of their own sensation, latent in the image but rendered visible again through the audience’s viewing.”¹⁴⁰ In other words, why not sport and film? And, further: who decides which movements and sensations are sporting?

1.6 Dissertation Chapter Breakdown

1.6.1 Chapter One. Reframing Muybridge’s (Associated) Milieu: Scientific and Sporting Mediators in the *Animal Locomotion* Period

Chapter one reexamines Eadweard Muybridge’s tenure at the University of Pennsylvania (1884-87) while he was making his studies for *Animal Locomotion*. In analyzing a range of archival sources from Penn that are often left out of the Muybridge narrative, I initially shift attention away from the zoopraxographer to more effectively account for the flexibility of the sporting milieu in

¹³⁸ Katie Bird, “‘Quiet On Set!': Craft Discourse and Below-the-Line Labor in Hollywood, 1919-1985 (PhD Dissertation, University of Pittsburgh, 2018).

¹³⁹ Katie Bird, “ ‘Dancing, Flying Camera Jockeys: Invisible Labor, Craft Discourse, and Embodied Steadicam and Panaglide Technique from 1972 to 1985,” *Velvet Light Trap* 80 (2017).

¹⁴⁰ Bird, “Quiet on Set!,” 56.

this period. The first of the major figures I examine is Dr. J. William White, a Philadelphia surgeon and staunch advocate for athletics and exercise at Penn and in the city. White would become Penn's first director of Physical Education in 1884 just prior to Muybridge's arrival, and his papers and scrapbooks paint a picture of the local sporting situation that urges us to reconsider what was meant by *athletics* and *sport* in this decade. I also aggregate surprising materials generated by Penn's undergraduates of the time period, culled from yearbooks, university magazines, and archival holdings. From the 1887 class poem, a lyrical tour de force that features metamorphoses of "the athletes" or "gay jolly jokers," to sporting cartoons and reports on a lecture series featuring both White and Muybridge, what emerges is an understanding of a sporting ethos that was elastic, filled with potential, and often queer. In examining the role of Dr. R. Tait McKenzie, White's eventual replacement, I analyze the myriad ways in which McKenzie enters into "sports media": as professor of physical therapy, sports sculptor, and occasional film-advisor. McKenzie also penned influential treatises on the "reclaiming of the maimed" in war, and he created sculptures using some of Muybridge's sporting models as his templates. This section thus weighs my consideration of sporting *potentials* against the contradictory energies of bodily measurement, discipline and control. The chapter closes with George E. Nitzsche, Penn's first and only University Recorder and its most obsessive Muybridge archivist. Careful study of Nitzsche's numerous articles as well as his archival holdings leads me to consider that in aiming to place Penn and Philadelphia as the "birthplace" or "origin" of the moving picture, Nitzsche in fact placed Muybridge in the *middle* (temporally and spatially) of such a history. Having altered our understanding of Muybridge's sporting and scientific milieux, I propose that the zoopraxographer's aesthetic yield, as well as the historical terms of his work at Penn, may be felt with a new force.

1.6.2 Chapter Two. “Supplies of Slack”: The Latham Loop, Long Takes, and Contingency

Chapter two uses the development and fine-tuning of the Latham Loop technique to put forth theoretical arguments about contingency and temporality in the cinema. The chapter opens by analyzing a set of well-known long takes of the boxing ring and its environs, including iconic shots from *Rocky*, *Raging Bull* and *Creed*, long takes that make clear that cinema has long been fascinated with the pressure of time as it is channeled in relation to boxing bouts. Having examined the ways in which such films seem to “rehearse” cinema’s earliest long takes, I turn to the “origin story” of the long take itself, the emergence of the Latham Loop. The Loop was innovated in the mid-1890s to allow more film to pass intermittently through the camera, smoothly enough to “capture” the contingencies of boxing rounds or full bouts as they unfolded. Although Woodville Latham is the titular inventor of the process, I am more concerned with how many hands played a role in the various individuations of the Loop, including those of W.K.L. Dickson, Eugene Lauste, Enoch Rector, and various machinists. I argue that the genesis and various individuations of the Latham Loop are prime examples of Simondon’s insistence that the “emergence” of an invention often outstrips the planning and schematization of its inventor(s). As such, while this chapter carefully considers the various inventors, machinists, tinkerers, craftsmen and producers who played a role in the development of the Loop and its pairing with the sport of boxing, it also establishes that, in a certain sense, the Loop itself authored its own emergence. Among the *fin-de-siècle* films that relied on iterations of the Loop to allow for longer run time, I pay particular attention to *The Corbett-Fitzsimmons Fight* (1897), helmed by Enoch Rector. *Corbett-Fitzsimmons* was a wide-gauge, widescreen film that utilized a three-camera array to film the bout in its entirety (nearly 100 minutes). The Veriscope camera was in effect a giant engine, relying on hand-cranking and the manual guidance of large Loops, with Rector and myriad assistants working

rhythmically in a giant enclosure as Corbett and Fitzsimmons battled in the ring. *Corbett-Fitzsimmons* was the only film photographed with this bespoke camera system, yet I marshal evidence about the Veriscope's life as a projection system and the theatrical presentation of its widescreen prize fight to clarify the experimental and spectacular charge of early-cinematic sporting displays. I then examine the lasting significance of the Latham Loop for nearly all of the celluloid camera systems of the twentieth century, analyzing film-industry handbooks, "how-to" films designed for the novice filmmaker, and the process whereby the loops are manually set, time and again, by the hands of film loaders and camera assistants. Next, I consider André Bazin's positions on indexicality, realism, and contingency with respect to the long take and the boxing film's fascination with deferral. Doing so allows us to rethink certain of Bazin's claims about how "the photograph *of* the danger" functions for the spectator and his would-be "edict" against montage in such situations. The chapter closes with a meditation on the filmic "event" and the problem of "perpetual presents" in the unfolding of cinematic time, which I argue might be resolved by once again attending to the Loop's material and theoretical status, as well as its function as a potent figure for cinematic temporality, even in the digital age.

1.6.3 Chapter Three. Writing with (Refracted) Light: Underwater Cinematography and the Many Meanings of Media

The third chapter moves from the sporting experiences of the field or the ring to those found beneath the waves. My primary focus in this chapter is the husband and wife media-making team of Hans and Lotte Hass, whose mid-century work challenges us to test many of our film-theoretical assumptions about movement, milieu, and indexicality. Hans was the first person to make moving pictures while freediving, when in 1940 he shot what would become *Pirsch unter*

Wasser [*Stalking Under Water*], released in 1942. Although Hass is often placed in a subordinate position to Jacques-Yves Cousteau, he was frequently ahead of the famed oceanographer in technical matters. Placing Hans' earliest work in dialogue with previous underwater filmmaking experiments that relied on submersibles or other protective apparatuses, I argue that free-diving handheld cinematography inaugurates a particular type of milieu-based image-capture, wherein the ocean water becomes part of the lens system. Such a consideration also allows us to reconsider the notion of the cinematic "problem." In the Greek, *problema* can mean "hindrance," but it also carries senses of "shield or screen," something "projected or thrown," or a "bulwark." A standard way of addressing "problems" of film technology and style is to say that there is a problem "out there"—e.g. the refractive index of water, the shakiness of the moving camera, etc—that must be fixed or resolved through technological invention. Here, I argue that the inverse is also true: there is no real problem "out there" as such; rather, the devices individuated through experimentation and bodily handling *are the problemata*. Their material status and aesthetic yield are records of attempts to resolve situations, yet each *problema* becomes its own shield or screen, its own project. Considered thusly, the bespoke camera and lens systems of the Hass enterprise, as well as Hans' various camera housings and focus-assist tools, are read as technologies that crystallize these "problems" in their specificity. In analyzing such systems hand-in-hand with Hans' writings and his sporting sentiments, I split my engagement into sections on refraction, buoyancy, steadiness, and pressure. While these concerns are of course heightened in the underwater mode of dynamic image-making, I argue that such a milieu-based approach also encourages us to rethink questions of embodied filmmaking above sea-level. Turning to the importance of Lotte Hass, who first joined Hans on a Red Sea expedition that would result in 1951's *Abenteuer im Roten Meer* [*Under the Red Sea*], I argue that Lotte's role in the films has been all but evacuated in the existing literature,

which casts her as a talented photographer who nonetheless operates mostly as a damsel in distress, or as an image-maker always subordinate to the more “proficient” male crew. With recourse to Lotte’s autobiography, *Girl on the Ocean Floor*, I propose a renewed look at her plural and often disruptive status in the Hass films. In considering Lotte’s report of how she had to function as both “Man” and “Girl” on the expeditions—as Man to be accepted on equal footing with the rest of the crew, and as Girl to “steal some of the thunder” in the films, as she says—I argue for Lotte’s elemental and destabilizing function in these multi-medial enterprises. In closing, this chapter briefly examines the continuing problem of sexist gatekeeping in cinematography and camera operation, which is especially heightened in the sphere of underwater image-making.

1.6.4 Chapter Four. Experiments in the Cine-Olympic Cycle.

Chapter four shifts to a set of official Olympic films from the 1960s and 1970s, an era of sustained sports media experimentation in terms of screen width, lens length, film speed, and camera mounts. This chapter is the most committed to close-reading, yet I develop an analytical approach that can hold fast to highly specific technical specifications and precise camera operation particulars without sacrificing attention to the images themselves. I open by considering a specific moment from Kon Ichikawa’s *Tokyo Olympiad* (1965), wherein the onset of the men’s 100-meter dash renders a felt sense of *waiting* that extends to the athletes, the crowd, the cinematic spectator, and the camera operator. In discussing how the camera operator is often named *last* when I screen this sequence for my students—and ask them “who waits?”—I make a case for carefully attending to the relationality between those on both sides of the lens, even when the “markers” that register such embodied experiences by camera operators are less obvious. Having done so, I argue that many Olympic films explode our conceptions of auteurism due to the plethora of camera operators

and sound recordists who craft the films' material. While many of these films are generally approached with respect to their auteur status or the directorial command over the editing of a massive amount of footage, I suggest that sports media often encourages us to consider the varied perspectives and experiences of its craft practitioners without recourse to a unifying vision. Although the three primary films discussed in this chapter are addressed with respect to the sporting relationality of camera operators and Olympic athletes, each receives its own unique treatment. I examine *The Grand Olympics* (dir. Romolo Marcellini, 1961) for its dramatic shift in film speed that allowed for increased image fidelity and depth-of-field options, as well as its foray into widescreen aspect ratios. I also use this section to clarify the ways in which the representational characteristics of sport cinematography should be analyzed with an eye toward how athletic events partially dictate camera placement and lens selection. With *White Rock* (dir. Tony Maylam, 1977), a radically kinesthetic 2.39:1 aspect ratio Winter Olympics film, I am primarily interested in extreme telephoto camerawork that makes felt a dynamic if asymmetrical relation between the minute and ultra-quick movements of camera operators and the extremely rapid ballistic motion of Olympic athletes. I also use this section to examine *White Rock's* use of a range of sled- and body-mount camera systems, arguing that the more successful of these technologies generate a felt sense of feedback between operator, camera, and the pro-filmic. Lastly, I analyze *The Olympics in Mexico* (Alberto Isaac, 1969) with respect to its use of the Dynalens stabilization system, invented by Juan de la Cierva y Hoces. The Dynalens, often thought to have first been deployed for helicopter footage in *Tora! Tora! Tora!* (1970), was put to experimental use for the filming of the 1968 games, shifting the terms of how kinetic movement might be rendered on film. I also examine *The Olympics in Mexico's* foregrounding of motion studies in its mise-en-scène as well as its self-reflexive moments dealing with mechanisms for

measurement, such as Omega’s photo-finish cameras. In so doing, I return to the discussion of measurement and milieu in the work of Muybridge and Marey, aiming to place the historical motion studies in a mutually informing relationship with more contemporary sport filmmaking. This chapter closes with a postscript on the current situation of the overlapping fields of sports media and the nature documentary, in which technologies designed to promote “immersion” and dynamism in fact evacuate much operator embodiment and relationality while privileging automatic stabilization and remote capture.

1.6.5 Coda: Wipeout.

In a brief coda that concludes the dissertation, I turn my attention to so-called “extreme” sports image-making, placing emphasis on the practice of street-skateboarding videography. I examine skate filmmaking’s most famed *problemata*, the Sony-VX1000 camcorder and its Century Optics fisheye lens, also known as the “Death Lens.” Released in the mid-1990s, the VX1000 remains for some videographers the go-to camera for filming skateboarding, despite numerous “improvements” by Sony and other camera companies and a slew of HD and 4K image-making systems. In considering the aesthetic affordances of the VX1000 and Death Lens, I highlight the ways in which this particular camera and lens ensemble became the “perfect” device for rendering skateboarding’s *feel*, a process as beholden to sporting experimentation as it is to technological “accidents.” In examining a number of VX1000 videos, such as Colin Read’s 2017 *Spirit Quest*, I argue that skate videography’s self-reflexivity is intimately tied to the subculture’s DIY ethos and consistent impulse of escape. In this regard, I discuss turn-of-the-century videos produced by *Transworld Skateboarding* that feature a range of footage gathered from nocturnal, “guerilla” filmmaking missions, in which the skate crew operates as a sort of roving, provisional

film set. Often as not, elements of these filmmaking processes—such as generators, lights, and other camera operators—are embedded into the videos’ mise-en-scène. Lastly, I consider the kinesthetic “dance” between board-mounted filmmakers and the skaters, returning once again to process and relationality amid the unfolding of sporting experience.

2.0 Reframing Muybridge's (Associated) Milieu: Scientific and Sporting Mediators in the *Animal Locomotion* Period

*The clock has run, the horse has run, and
which has measured which?*

-Cormac McCarthy¹⁴¹

*The third reality, which we call milieu or
constituting energetic system, should not be
conceived as a new term that would be added
onto matter: the milieu is the very activity of
relation, the reality of the relation between
two orders that communicate across a
singularity.*

-Gilbert Simondon¹⁴²

Muybridge's horses can only ever run in circles. There they are—Occident, Sallie Gardner, Mahomet and the others—frozen in time yet made animate, again and again. Whether cycling around the edge of a zoopraxiscopic disc, arrayed in a motion study publication, or rendered cinematically through optical printing, they are doomed to repeat.

As are we, perhaps. For although there may seem nothing left to say about Muybridge—about his massive personal and professional contradictions, his dubious role in the development of cinema, the ideological and philosophical purchase of his work—we keep coming back. We rehearse and revisit, finding only *slightly* different ways to fit his experiments into Film and Media History syllabi, wondering if anything has been overlooked in the corpus of a man so fanatical

¹⁴¹ Cormac McCarthy, *Suttree* (New York: Vintage, 1992), 136.

¹⁴² Simondon, *Individuation*, 50.

(superficially, at least) in his exhaustive taxonomic pursuits. Will something be different this time? Will it strike us anew? Might the bodies in motion alter their course?

It is ever the same. Hollis Frampton's meditation on the annihilation of *scale* and *place* in Muybridge's sequences may also stand as the perpetual answer to what remains when one returns again to these images, pregnant with possibility yet always already repeating: "About all that is left, in each case, is an archetypal fragment of living action, *potentially subject to the incessant reiteration that is one of the most familiar and intolerable features of our dreams.*"¹⁴³ There is plenty of the oneiric in the motion studies, to be sure; for Frampton, this is due to the representative constraints that generate, in essence, a non-place for these bodies to inhabit, as well as the repetition to which we subject the studies, whether via projection on screen or in the reveries of mind.

Thus they circle back; they enact their appointed cycles. Even when various of the motion studies—whether or not equine—do not fit tidily into a "loop," their insistent performance of an action lends such repetition to our experience of them. It may be best, then, to say that they *spin*, that they get up to speed and run their prescribed course. Each of the following chapters will address, somewhat fortuitously, instances of spinning, whether the celluloid circuitry of the film strip through the Latham Loop structure, the pin-wheeling underwater cinematography of Hans and Lotte Hass, or the tracked motion of Olympic cyclists' wheels around a central camera position. And, of course, there is plenty of literal spinning in Muybridge's motion studies, generated by both the acrobatic movement of his athletic "models" and the frozen arc of a camera array around a body.

¹⁴³ Hollis Frampton, "Eadweard Muybridge: Fragments of a Tesseract," in *Circles of Confusion: Film Photography Video Texts 1968-1980* (Rochester: Visual Studies Workshop Press, 1983), 77, emphasis mine.

There is a slightly more figurative way to think of “spinning” with respect to the Muybridge sequences, though, one which sounds the keynote upon which the rest of the chapters will play. I would argue that the longer one dwells on these motion studies—whether animated or not—the harder it becomes to separate the effect of the camera(s) on the moving bodies from the effect of said bodies on the technical array. The epigraphic Cormac McCarthy quote that opens this chapter, and which itself comes amid a discussion of death, time “frozen,” and a feverish memory of running horses, timed by a stop-watch, can here be altered slightly. From “the clock has run, the horse has run, and which has measured which?” we arrive rather easily at “the *cameras* have run, the horse has run, and which has measured which?”

Such aphoristic gestures are not wholly new to studies of Muybridge’s experiments. Speaking specifically about the zoopraxographer’s earliest work with horses, Antoine Traisnel suggests that the images of Occident or Sallie Gardner, wherein the horse (and rider) effectively *trigger* their image-capture via trip-wires after the technology has been carefully laid out, give us “a portrait of a specific human-machine-horse configuration, a snapshot of a certain historical assemblage.”¹⁴⁴ Traisnel’s emphasis is an ethical one, which asks us to consider these entanglements and configurations across time and to mark how they shift, how the experience of animal locomotion (both human and non-human, expressly “athletic” or not) is divided up and mediated, generated by different relations of energy yet always milieu-specific. By the time Muybridge began his work at the University of Pennsylvania, in June of 1884, the automatic image-trigger was in his rearview mirror. But this does not mean that his experiments were free from a sort of multidirectional measuring, in which the kinetic movements of human and animal

¹⁴⁴ Antoine Traisnel, *Capture: American Pursuits and the Making of a New Animal Condition* (Minneapolis and London: University of Minnesota Press, 2020) 189-90.

bodies to a large extent dictated the technical structure of Muybridge's arrays even as these photographic devices "captured" the bodies in motion. It is the primary aim of this chapter to consider what we have missed when we reduce the Muybridge process into a set of representative products, and when we try to place Muybridge's photographic approach and his subject matter into neat cause and effect relationships. In other words, to keep *spinning* in mind is to look closely at these sporting-technological entanglements as they unfold, but also to follow the rotation outward toward the broader collision of milieux.

2.1 Muybridge, Milieu, Mediation

Toward the close of Muybridge's time at Penn, Nietzsche made the following observation about one of his many bogeymen, "causalism."

A translation of this world of effect into a visible world—a world for the eyes—is the conception "motion." This always carries the idea that *something* is moved [...] i.e., we have not got away from the habit into which our senses and language seduce us. Subject, object, a doer added to the doing, the doing separated from that which it does: let us not forget that this is mere semiotics and nothing real.¹⁴⁵

Nietzsche may as well have been meditating on Muybridge's motion studies, for his notebook entries seem consistently to dance around the complexities of what was unfolding in Philadelphia—and, to be fair, in France under the guidance of Marey. The mis- or distrust of *motion* here has less to do with movement as such and more, or perhaps everything, to do with the shortcomings of "mechanistic" theories and their linguistic givens. Hence "Mechanistic theory as

¹⁴⁵ Friedrich Nietzsche, *The Will to Power*, trans. Walter Kaufmann and R.J. Hollingdale, ed. Walter Kaufmann (New York: Vintage Books, 1968), 338 (note 634, March-June 1888), emphasis in the original. See also 336 (note 631, 1885-1886), on "the separation of the 'deed' from the 'doer,'" and 297 (note 552, Spring-Fall 1887), likewise on the "dangerous concept" of cause and effect.

a theory of motion is already a translation into the sense language of man,” doomed to fail before the clock can even begin.¹⁴⁶ Subject-predicate thought/language is a grid overlaid on events, processes, or (especially for Nietzsche) *forces*. And what, exactly, is Nietzsche’s “real” here, if not the relations of forces that are retrofitted into subject and object, doer and done-to? Thus our senses also mislead, with respect to the carving up of forces into “things” for that ultimate theater of perception, the “world for the eyes.” Does this mean, therefore, that Muybridge’s sequences, carefully curated and arranged for us, likewise are an inadequate conception, just another false semiotic?

Certainly for Nietzsche. In *The Gay Science*, first published in the interim between Muybridge’s Stanford period and his tenure at Penn, a particularly striking section on cause and effect follows aphoristic entries on “truth” and “logic.” Nietzsche’s strange rumination on our inability to *see* motion notwithstanding, the section once again runs parallel to the Muybridgian endeavor: “Cause and effect: such a duality probably never exists; in truth we are confronted by a continuum out of which we isolate a couple of pieces, just as we perceive motion only as isolated points and then infer it without ever actually seeing it.”¹⁴⁷ This continuum Nietzsche will term variously “becoming” and “flux,” and he tellingly uses the word *image* to designate the illusory grasp we tell ourselves we have on becoming’s elasticity. Such an image need not be pictorial, need not be figural—historically, the various ideas (*a priori* or *a posteriori*) science has held about causality and motion are likewise images,¹⁴⁸ made most often for Nietzsche in the image of man, and thus ill-fated from the start.

¹⁴⁶ Nietzsche, *The Will to Power*, 338.

¹⁴⁷ Nietzsche, *The Gay Science*, 173 (§112).

¹⁴⁸ See Halle, 55-56. For Halle, the roots of the term “theory,” from Gk. *theoria* (θεωρία) and *theorein* (θεωρεῖν), has lost much of its original sense of “to consider, speculate, or look at” (55). Thus Halle’s aphoristic expression of theory,

Muybridge's photographic images in *Animal Locomotion* comprise some of the most unimpeachable *descriptions* of motion and causality theretofore produced. The error, as Nietzsche recognized, is that in the photographic sequence—as in any semiotic of cause and effect—description is cloaked in the language of explanation: “‘Explanation’ is what we call it, but it is ‘description’ that distinguishes us from older stages of knowledge and science. Our descriptions are better—we do not explain any more than our predecessors.”¹⁴⁹ But it is in Nietzsche's twin examples of the “miracle” of process, put forth in almost throwaway fashion, that we find a most startling rebuttal of the explanatory fallacy. These also happen to fuse, fortuitously, in motion studies relying on photochemical systems: “In every chemical process, for example, quality appears as a ‘miracle,’ as ever; also, *every locomotion; nobody has ‘explained’ a push.*”¹⁵⁰

Muybridge spent years *describing* various “pushes.” This is signaled most expressly by the title of his 1893 publication: *Descriptive Zoopraxography*. His models box, grapple, hurdle, leap, and sprint. The less athletically-framed sequences likewise describe certain locomotive processes. But it is clear that his sporting material is the most resonant in terms of force and motion, and the space dedicated in *Animal Locomotion* to athletics is significant. I argue, however, that no account of Muybridge's work at Penn has yet accounted for what the terms *athlete* and *athletics* meant during this period. In other words, most studies of the zoopraxographer's work address sport and athletics as if transcendental, as if these pastimes are unchanging and self-explanatory. Marta Braun, whose work does in fact clarify certain of the terms of Muybridge's use of athletes, nonetheless stands as an example here, consistently glossing the engagement with sporting bodies.

itself a sort of injunction: “Thinking sight and theorizing seeing” (55). We might ask how much of this is likewise at play in Nietzsche's discussion of the “image,” even if in reverse: vision forging theory, theory becoming *image*.

¹⁴⁹ Nietzsche, *The Gay Science*, 172 (§ 112).

¹⁵⁰ Nietzsche, *The Gay Science*, 172 (§ 112), emphasis mine.

She refers to “the University athletes” as one of Muybridge’s initial “three subjects”; “the university’s student athletes” as “examples of ‘civilized’ masculinity”; and Muybridge’s closing days on the project in 1885 as focusing on “once again the athletes—wrestling, rowing, shot-putting and pole-vaulting.”¹⁵¹

Braun is careful to point out, however, that Muybridge’s earlier experiments with sporting bodies (culled from the Olympic Club in Palo Alto) contributed to novel technological systems in an attempt to render athleticism. Thus “amidst the running, high-jumping, boxing, wrestling, fencing and tumbling athletes,” Muybridge—who would also take part in these athletic performances—“devised a new camera arrangement for photographing the athletes.”¹⁵² This was the semi-circle camera array which Muybridge called “foreshortening,” and which Braun likens to a sort of tracking shot frozen in time. More often than not, though, accounts of Muybridge’s work at Penn place the terms athlete or athletics as independent variables or descriptive placeholders, as if something *given* that happened to be part of the process. Examples of this critical disposition emerge in observations such as “he photographed the athletes again” or “Muybridge used athletes because X wanted to...,” but this helps us little in terms of the complex relationship between motion studies and sporting sensibilities during this period.¹⁵³

How did Muybridge refer to himself during this time? “*Ex-Athlete*, aged about sixty.” This is Muybridge’s descriptor for the sequences of *Animal Locomotion* that he appears in (as model

¹⁵¹ Marta Braun, *Eadweard Muybridge* (London: Reaktion Books, 2010), 192; 196; 198.

¹⁵² Braun, *Eadweard Muybridge*, 153-54.

¹⁵³ See, e.g., Rebecca Solnit’s glossing of the use of “athletes” in Palo Alto and Philadelphia, aside from the inference that Muybridge likely focused on “boatmen” due to Thomas Eakins’ “preoccupation with the sport of sculling”; R.B. Haas’ pithy “Athletes were depicted”; or the wholesale avoidance of athleticism and sport in other treatises. This is not to say that these various studies lack value or are not well enough concerned with their own areas of focus. However, there is a risk of bracketing off a hugely significant valence of Muybridge’s experiments. Rebecca Solnit, *Motion Studies: Eadweard Muybridge and the Technological Wild West* (London: Bloomsbury, 2003), 198-99; 220-21; Robert Bartlett Haas, *Muybridge: Man in Motion* (Berkeley, Los Angeles, and London: University of California Press, 1976), 148.

number 95).¹⁵⁴ It is an interesting and fortuitous reminder, perhaps, of the term's flexibility toward the close of the nineteenth century. In Philadelphia, one of the figures most interested in a shift in athletics was one William Pepper, Provost of the University of Pennsylvania (1881-94): "About the time of Dr. Pepper's entrance upon the office of Provost the subject of college athletics was attracting its first public interest. He clearly foresaw that it was destined to be one of permanent interest in college life, and he determined to take the initiative and *direct the course of this new force*."¹⁵⁵ Pepper began organizing what would become the school's Department of Physical Culture, simultaneously gaining more familiarity with Muybridge when the latter visited Philadelphia to lecture in the Spring of 1883.¹⁵⁶ Through the influence of artists and sometime-athletes Fairman Rogers and Thomas Eakins—both of whom had corresponded with Muybridge—Pepper formed a committee (or "Commission") to raise money and attract the zoopraxographer to the potential site of this new force's emergence.¹⁵⁷ The agreement was made in the autumn of 1883, and Muybridge relocated to Philadelphia to prepare for his study.

Muybridge of course did not undertake this endeavor alone, and the list of figures attached to or in the orbit of his motion studies at Penn is both extensive and at times unclear. Braun lists Francis X. Dercum as one of the "nine professors and doctors" on the Muybridge Commission,¹⁵⁸ and while Dercum certainly figured in the proceedings during the *Animal Locomotion* period, he is not numbered among the names in a missive from Edward H. Coates, a member of the Commission, to the University Secretary Reverend Jesse Burk, to wit: Pepper, Eakins, Dr. Joseph

¹⁵⁴ The plates, as listed in Muybridge's catalogue, are as follows: 489-91, and 519-21.

¹⁵⁵ Francis Newton Thorpe, *William Pepper M.D., LL.D* (Philadelphia and London: J.B. Lippincott Co., 1904), 193, emphasis mine.

¹⁵⁶ Haas, 143.

¹⁵⁷ Braun, *Eadweard Muybridge*, 181. Haas, 143-44.

¹⁵⁸ Braun, *Eadweard Muybridge*, 182.

Leidy (Anatomy), George F. Barker (Physics), Lewis M. Haupt (Civil Engineering), William D. Marks (Dynamical Engineering), Harrison Allen (Physiology), and Rush Huidekoper (Vetinary).¹⁵⁹ The University Records' current historical overview excludes Dercum, Huidekoper, and Leidy from the commission.¹⁶⁰ George E. Nitzsche, University Recorder from 1901-1944—to whom I will return at this chapter's close, and whose papers at Penn form the bulk of the school's Muybridge material—credits, among those who most directly assisted Muybridge, Dr. Marks and four students, “[L.]F. Rondinella (B.S. ’85, M.E. ’86), William A. Bigler (’86), and Edward and Thomas G. Grier (’86).”¹⁶¹ As it happens, Rondinella would publish a brief essay, “More About Muybridge’s Work,” in 1929, clarifying his role as “chief of staff” for Muybridge as an undergraduate in 1884-85. While Rondinella generally agrees with Nitzsche’s claims, he maintains that although Marks did assist Muybridge in crafting his “apparatus,” all of the electrical work was done not by the Dynamical Engineering professor, but rather by Rondinella and his temporary fill-in, Bigler.¹⁶² Muybridge’s own published work agrees, stating that “the electrical manipulations were directed by Lino F. Rondinella.”¹⁶³

Certainly, then, it remains unclear exactly how each of the aforementioned individuals, whether expert or assistant, influenced the project. But it *is* clear that as a unit the Commission did not much influence things at all once the ball was rolling. As Braun reports, “The committee must

¹⁵⁹ Edward H. Coates, letter to Jesse Y. Burk, November 26, 1887[?]. Coates makes clear that Pepper and Barker were not present at the initial meeting. UPT 50 M993, Box 62, Folder 6. Unless otherwise signaled, all cited archival holdings in this chapter’s notes are from the University of Pennsylvania Archives & Records Center. For a listing of the collections cited, see this dissertation’s bibliography.

¹⁶⁰ See <https://archives.upenn.edu/exhibits/penn-history/muybridge/>.

¹⁶¹ George E. Nitzsche, “Pennsylvania Pioneering in the Movies,” *General Magazine and Historical Chronicle* (Fall 1951): 43. UPA9, Box 3, Folder 2.

¹⁶² L.F. Rondinella, “More About Muybridge’s Work,” *General Magazine & Historical Chronicle* (July 1929): 492-93. UPT50 M993, Box 62 Folder 16.

¹⁶³ Eadward Muybridge, *Descriptive Zoopraxography, or the Science of Animal Locomotion* (Philadelphia: University of Pennsylvania, 1893), 25.

have had confidence in Muybridge's capacity as a sophisticated and innovative photographer: they met only once and rarely came to watch what he was doing."¹⁶⁴ Although Eakins was heavily involved with the project early on, a disagreement over whether Muybridge should adopt Marey's "wheel" approach led the painter and occasional chronophotographer to distance himself.¹⁶⁵ Dercum, although not a member of the Commission, seems to have been around frequently, developing a sort of symbiotic relationship with Muybridge. Taking umbrage with Nietzsche leaving him out of the narrative (a "really unpardonable" omission), Dercum clarifies the situation in the summer of 1884:

I should add that when Mr. Muybridge was about to start his work, which was of course in the summer, the members of the Commission which had been appointed to assist him, left on their various vacations and poor Muybridge was left alone. Because I had become so much interested in his work, I voluntarily gave up my summer vacation for two successive years; and due to my connection with various athletic societies and various trotting organizations, I was able to furnish him with abundant material.¹⁶⁶

One wonders not only how inflated Dercum's role becomes in this telling, but also how happy Muybridge really was to have a de facto Commission member present when the entirety of that group's de jure membership had left him to his own devices. In any case, the *in absentia* status of many committee members does two primary things for us here: it makes clear that much of Muybridge's work at Penn ran its course with less direct influence from these advisors than it might seem; and it opens up a space to consider the importance of other figures from outside of the Commission in shaping the sporting milieu during these years. The first of these "mediators" is J. (James) William White, who was Pepper's choice to direct the school's new interest in physical culture.

¹⁶⁴ Braun, *Eadweard Muybridge*, 182.

¹⁶⁵ Braun, *Eadweard Muybridge*, 185-86. Also see Haas, 150.

¹⁶⁶ Francis X. Dercum, letter to Dr. Goodspeed, April 23, 1929. UPA9, Box 1, Folder 11.

2.2 Dr. J. William White: Surgeon, Physical Educator, Duelist?

J. William White cuts an interesting figure, to say the least. He was a born and bred Philadelphian, the son of an eminent philanthropist, James Sr., who put his own medical degree to work less in practice than in a sort of philosophical auxiliary role governing his charitable ventures, which included the development of a maternity hospital system and an attachment to sanitary fairs. These last, which “became perhaps the most enduring symbol of home-front mobilization” during the Civil War, were particularly grand in their Philadelphia instantiations.¹⁶⁷ Furthermore, the fairs’ mixture of fundraising concerns, a focus on the question of healthy bodies, and—of course—military matters signals a confluence of factors that will flare up time and again throughout this chapter. J. William, for his part, earned “both a Ph.D and an M.D. from [the University of Pennsylvania] in 1871,” becoming a clinical surgeon and returning to practice and teaching at his alma mater in 1874.¹⁶⁸ Throughout these years and beyond, White was a staunch and at times flamboyant advocate for both physical education and college athletics, ultimately becoming the University’s first chair/director of Physical Education in 1884. He remained a fixture in the city of his birth for decades yet traveled widely through Europe; friends with the likes of Henry James and Teddy Roosevelt, White would also spend time at an American hospital in Paris during World War I, and by that time he had already produced *A Primer of the War for Americans*, published in 1914, two years before his death. This primer, a “twelve-chapter pamphlet,” argued in late-1914 for American intervention in the war on behalf of the Allies, with White casting Germany as a

¹⁶⁷ Richard S. Newman, “All’s Fair: Philadelphia and the Sanitary Fair Movement during the Civil War,” *Pennsylvania Legacies* 13, nos. 1-2 (2013): 56-65.

¹⁶⁸ David Y. Cooper III and Marshal A. Ledger, *Innovation and Tradition at the University of Pennsylvania School of Medicine: An Anecdotal Journey* (Philadelphia: University of Pennsylvania Press, 1990), 118.

“menace” and pledging to donate the proceeds to the Belgian relief effort.¹⁶⁹ Furthermore, he participated in what has been referred to as “the last pistol duel in America,” an event which “gained him national notoriety.”¹⁷⁰

Reasonable minds differ on how seriously to take the events of 10 April 1880, nor can we be sure that the duel in question was the “last” in the classical sense. Nonetheless, it is a tale widely reported across biographies and histories of Penn faculty members, and it *was* quite the sensation in the news-sphere of the day. Headlines such as “Shooting High to Save Honor” (which may have been the case) and “The Folly of the Duel” (which seems likely) dot the pages of the *Philadelphia Record* and *Evening Bulletin*, and the following Sunday’s *Item* dedicated a full-page spread to the curious bit of high-stakes theater, complete with caricatured images. White’s biographer, Agnes Repplier, would write in 1919 of the events thusly:

Forty years ago, dueling was as obsolete in the United States as it is to-day. It was, or men thought it was, as dead as the dodo. Yet Dr. White, disregarding both custom and consequence, fought a duel; a bloodless one, it is true, but nonetheless a duel, with pistols, at fifteen paces, after the approved fashions of other lands and centuries. His antagonist was Robert Adams Jr., and the simple subject of dispute was the proper dress to be worn by a surgeon of the City Troop.¹⁷¹

According to Repplier, the duelists arrived at the Maryland-Delaware borderline—so chosen, again theatrically, since it could be marked as the crux of four states—trailed by their seconds and an attending surgeon. Pistols were aimed and shots exchanged, with “Dr. White being seen to fire in the air.”¹⁷² The *Record* suggests that the shots were both fired “in the direction of the rising sun”; the *Item* reported, rather comically, that the pistol fire so clogged the air that by the time the

¹⁶⁹ “Germany a Menace, Dr. White Declares,” *Evening Telegraph*, December 4, 1914; “Primer of War for Americans,” *Inquirer*, December 7, 1914; “A Textbook of the War,” *Publisher’s Weekly*, March 13, 1915; “A Primer of the War for Americans,” *New York Times*, December 27, 1914. UPT 50, W585, Box 4.

¹⁷⁰ Cooper and Ledger, 118.

¹⁷¹ Agnes Repplier, *J. William White, M.D.: A Biography* (Boston and New York: Houghton Mifflin Company, 1919), 42.

¹⁷² Repplier, 42-43.

smoke cleared all parties were having lunch and arguing about on which “state” they should stand for the second round of fire, this first producing no tangible result.¹⁷³ In all accounts, both men return to Philadelphia unharmed, but very much in the public eye.

White’s dueling days pique interest not simply because they represent a wonderfully anachronistic historical curio. The duel itself tells us something about the man, and also about his rather peculiar role in the Muybridge years at Penn. Moreover, it offers a strange link to the zoopraxographer, one that I think is worth taking seriously. We recall that Muybridge, prior to his arrival on the East coast, had been found to have committed “justifiable homicide” in his shooting murder of Major Harry Larkins. That was a shot that hit its mark, a bell that couldn’t be un-rung. Thus Frampton’s wonderfully poetic assessment of Muybridge’s subsequent relationship with the concept of time, which, having been “outside of it” (in passion, or *ex-stasis*), Muybridge attempted to analyze and make malleable: “I submit that that brief and banal action, outside time, was the theme upon which he was forced to devise variations in such numbers that he finally exhausted, for himself, its significance. [...] So that we might add, in our imagination, just one more sequence to Muybridge’s multitude, and call it: *Man raising a pistol and firing.*”¹⁷⁴ On the one hand, this incident was a crystalline, frozen moment, which becomes in Frampton’s mind the seed of subsequent obsession, on the other, an event almost hyperbolic in its pageantry and defense of codes of honor (and dress), the particulars of which drift away somewhere behind a cloud of smoke. Strange chiasmus. Yet the duel seems a ready-made analogy for the almost shadowy role that White would play during Muybridge’s stay at Penn: an element of the milieu more gaseous than solid, but no less integral for that.

¹⁷³ “Shooting High to Save Honor,” *Record*, April 14, 1880; “The City Troop’s Honor,” *Item*, April 18, 1880. UPT50 W585, Box 1.

¹⁷⁴ Frampton, 79, emphasis in the original.

We find in White's papers and scrapbooks a litany of clippings dealing with his belief in the importance of exercise, athletics, and physical education. In the early 1880s he was already pressing the University to build a gymnasium and focus on physical education, and his medical work was parleyed into the push for a fuller athletic experience for those outside of the college setting. In December of 1884, just after Muybridge's arrival, Penn officially founded its Department of Physical Education, with White as its first director. The department was modeled in no small part after Harvard's and the work of Dudley Allen Sargent.¹⁷⁵ Although Sargent's Gymnasium, as well as his "system," were rather unique at the time, they betrayed a curious melting-pot approach to influence, a point hammered home by Sargent himself at an 1889 conference on "physical training."

What America most needs is the happy combination which the European nations are trying to effect: the strength-giving qualities of the German gymnasium, the active and energetic properties of the English sports, the grace and suppleness acquired from the French calisthenics, and the beautiful poise and mechanical precision of the Swedish free movements, all regulated, systematized, and adapted to our peculiar needs and institutions.¹⁷⁶

The balance between the American *filter* and the various European *elements* is hardly surprising, and we will shortly see this theme arise in the rather Whitmanian poetry of Penn's 1880s

¹⁷⁵ Sargent began at Harvard in the Fall of 1879 and continued work there in various capacities until 1919, five years before his death. For an overview of his life, work, and role as physical education catalyst, see Thomas J. Finnegan, "Dudley Allen Sargent: The Apostolic Entrepreneur of the Values of Physical Education for Men and Women in the Curriculum of Higher Education," PhD Dissertation (Drew University, 2000), spec. 36-60. N.B. a letter undersigned by Sargent about the "brutal, demoralizing" effects of American Football, and co-signed by one John Williams White, should not be confused with the J. William White of Penn. Also see Shannon L. Walsh, "Dudley Allen Sargent's Classed and Classing Fitness: Nature, Science, and Mimetic Exercise," in *Eugenics and Physical Culture Performance in the Progressive Era: Watch Whiteness Workout* (Cham, Switzerland: Palgrave Macmillan, 2020): 57-89.

¹⁷⁶ Dudley Allen Sargent, "The System of Physical Training at the Hemenway Gymnasium," in *Physical Training: A Full Report of the Papers and Discussions of the Conference held in Boston in November, 1889*, ed. Isabel C. Barrows (Boston: George H. Ellis, 1890), 76. For Pierre de Coubertin's remarks, which are of interest to this chapter as well as in chapter four's focus on Olympic filmmaking, see 112-14.

undergraduate body, as well as the disposition toward nude bodies with respect to the rise of the modern Olympics and late-nineteenth century sculpture.

Of course, Sargent's call to action also places the United States in a paradigmatic position of control. The buzzwords of discipline and, perhaps, punishment—regulation, systematization—are appended in terms of the “needs” of different institutions and gymnasia, but it is hard not to read these suggestions without concluding that American democracy is the tool capable of managing the various sporting “successes” of imperial powers. *E pluribus unum*, indeed: from many admittedly accomplished sources, one system. It appears, therefore, that the ethos subtending Muybridge's work with athletes—for Sargent as well as J. William White—was both controlling and contradictory. Sargent speaks of grace, suppleness and beauty, as well as Sweden's “free movement cure,”¹⁷⁷ yet also of mechanization, precision, regulation, activity. Channel that which flows, but not without the help of a unifying grid.

Such contradictions are foundational to the changes undergone in sport and physical culture in the wake of American industrialization and technological revolution. As John R. Betts summarizes things, “sport in nineteenth-century American was as much a product of industrialization as it was an antidote to it. While athletics and outdoor recreation were *sought as a release from the confinements of city life, industrialization and the urban movement was [sic], of course, greatly enhanced by the revolutionary transformation in communication, transportation, agriculture, and industrialization.*”¹⁷⁸ In terms resonant with Sargent's language,

¹⁷⁷ This approach, one that paired light gymnastics and calisthenics with massage, and which was ultimately swept up in a “battle of the systems”—of which Sargent played no small role—was concretized by Pehr Henrik Ling. For a late-nineteenth century discussion of the Swedish approach, see Henric Sparre, “Swedish Movement Cure,” *Medical and Surgical Reporter* 65, no. 11 (1891): 414. On the “battle of the systems,” see Finnegan, 19-20; 41-42; 128-29.

¹⁷⁸ John R. Betts, “The Technological Revolution and the Rise of Sport, 1850-1900,” in *The Sporting Image: Readings in American Sport History*, ed. Paul J. Zingg (Lanham, MD, and London: University Press of America, 1988), 187, emphasis mine. On Muybridge and the Lathams (looking ahead to the next chapter), see Betts, 183-84.

fin-de-siècle sport is thus fundamentally attached to these socio-economic changes while also standing as “a direct reaction against the mechanization, the division of labor, and the standardization of life in a machine civilization.”¹⁷⁹ It might be best, then, to consider this sporting milieu less as a contradictory system than as a regulatory regime containing opposing energies. Across news items that discuss White’s insistence on physical fitness there is often a curious interplay between exercise as mechanizing and disciplinary—thus a somewhat duplicitous extension of industrialization to a sphere said to be “outside” of work and the city’s hustle and bustle—and exercise as fundamentally separate from these concerns—hence diversionary. Toward the close of the 1880s, a brief piece in the *Press* highlighted the personal approaches to exercise by White and other eminent Philadelphians; although the discussion of these “City Men at Exercise” is mainly interested in shining a light on august members of the city’s upper crust as health and fitness exemplars, the article’s sub-header is nonetheless instructively ambiguous: “Long Walks for Those Who Will Not Ride – Dumbbells Indoors and Healthy Movements in Open Air. *Diversions of Daily Life.*”¹⁸⁰ Swimming, horseback riding, weightlifting, bowling, hiking, long strolls—it seems that these at once offered an escape from the “confinement” and prescription of the rapidly changing city and served as a centripetal fitness perimeter, spinning bodies back to the assembly line or office with renewed strength and vigor.

These were also among the last years prior to a veritable “spinning” revolution. The Bone Shakers and Velocipedes of postbellum America were extremely difficult to ride, and the “Ordinary” bicycle or “Penny Farthing” of the 1870s was even more dangerous given its increased speed and high center of gravity. Richard Harmond has suggested that although the “modern” or

¹⁷⁹ Betts, 187.

¹⁸⁰ “City Men At Exercise: How Well-known Philadelphians Seek to Regain Good Health,” *Philadelphia Press*, March 31, 1889, emphasis mine. UPT50, W585, Box 1.

“safety” bicycle of the 1880s was not as democratic or unifying a mechanism as some at the close of the nineteenth century claimed it to be, once the thrill of speed was tempered by effective safety measures cycling did offer a healthy and efficient blend of exercise and transportation that cut across class separations.¹⁸¹ This “freemasonry of the wheel,” which perhaps petered out when its more “escapist” bent no longer found the same purchase absent the misery of economic depression, nonetheless offered for a time “a new and diverting set of interests.”¹⁸² What seems certain is that the bicycle boom of the 1890s represents a fusion of diversion and regeneration that appealed greatly the medical field of the day, offering a nigh-perfect technology to remedy the effects of inactive lifestyles and deteriorating bodies.¹⁸³

As such, the decade prior functioned to create a sort of sporting and fitness Wild West, a milieu in which the drive to spread awareness—and regulation—of the benefits of exercise was distributed across myriad potential sources for physical *divertissement*. The bicycle of the 1890s becomes the gift-wrapped State solution to American civilization’s health and productivity problem, the perfect vector on which to fasten such concerns. An Althusserian would refer to cycling in this period as an exemplary form of soft power, and not without reason. Witness the repeated claims about “renewal” and (momentary) “escape”; the satisfaction of both the clergy and the Progressive reformers; and the dual benefit of muscular development and auto-transportation.¹⁸⁴ We know of course that there will always be potential and provisional modes of

¹⁸¹ Richard Harmond, “Progress and Flight: An Interpretation of The American Cycle Craze of the 1890s,” in *The Sporting Image: Readings in American Sport History*, ed. Paul J. Zingg (Lanham, MD: 1988), 240.

¹⁸² Harmond, 240-41.

¹⁸³ Harmond, 234: “The medical men of the 1880s and 1890s concluded that exercise was essential to offset the physical debilitating effects of the sedentary life. Hence, they urged Americans to compensate for the missing muscular effort of their forefathers with various forms of artificial activity. And most doctors agreed that among the best of such activities was cycling, for it exercised not only the legs but also the upper parts of the body and, performed regularly and moderately, strengthened the heart and lungs.”

¹⁸⁴ See e.g. Harmond, 236-42.

resistance to such power, some less successful than others, some Pyrrhic in their ultimately illusory status as “separate” from state control. But the situation in the final few decades of the nineteenth century was, at depth, one that saw massive turnover with respect to exercise in various forms, and with various levels of control and surveillance. Cycling in the 1890s not only reconstituted hodological space generally, opening up potential pathways, it also fundamentally adjusted the gender dynamic of sport and athleticism in America. The Safety Bicycle, unlike the Bone-Shaker or the asymmetrically-wheeled vehicles of the late 1870s, was not ipso facto “construed as manly,” unless “under certain conditions, such as when ‘scorching’ (speeding), or participating in strenuous 100-mile outings.”¹⁸⁵ Thus middle-class women latched on to this “fad” and changed their mode and drift of transportation, their manner of exercise, and their sense of escape.¹⁸⁶ There followed a complex argument over the proper “costuming” of the bicycling woman—with ultimately positive results—and, more important for our purpose here, the “[beginning of] the widespread participation of women in outdoor athletics.”¹⁸⁷

Therefore, when in 1884 White was tapped to be the first director of the University’s Department of Physical Education, his role was not simply one of establishing a particular and time-honored method of physical training. In a very real sense, his position also required of him to address a rapidly changing sporting milieu and to synthesize various of its elements locally. The

¹⁸⁵ Steven A. Reiss, “Sport and the Redefinition of Middle-Class Masculinity in Victorian America,” in *The New American Sport History: Recent Approaches and Perspectives*, ed. S.W. Pope (Urbana and Chicago: University of Illinois Press, 1997), 180-81.

¹⁸⁶ Reiss, 181.

¹⁸⁷ Harmond, 235. On the shift in women’s dress vis-à-vis the introduction of the Safety Bicycle, Harmond reports, “the strongest objections centered on the bicycle costume which, in the opinion of one typical critic, invited improper remarks from ‘the depraved and immoral.’ If some guardians of public virtue cried out in alarm, however, their protests had little effect on the ladies or, for that matter, the general public. Moreover, doctors and leaders of the women’s rights movement, enthusiastic cyclists, doffed their confining whalebone corsets, and donned shorter dresses, split skirts and even bloomers. By doing so these riders conquered their inhibitions, improved their health, and enlarged their sense of physical freedom. Without planning it that way, they also advanced the cause of dress reform by making a rational, freer-flowing garb more commonplace” (235).

“busy surgeon,” who would appear in Eakins’ famous 1899 painting *The Agnew Clinic*—applying a bandage to the patient while Dr. Agnew holds court frame left—was thus doubly busy during this time (1884-87), “labour[ing] unceasingly, and without salary, to raise the standard of athletics.”¹⁸⁸ This would be his gospel, delivered not coincidentally during Muybridge’s three-year stay. It was an extension of his previous obsession with exercise in the city, and it would inform both the motion studies and Penn’s subsequent development of athletics.

2.2.1 The Gospel of Athleticism

On the 30th of April, 1885, Muybridge gave a talk titled “New Developments in Animal Locomotion (illustrated)” as part of Penn’s Scientific Society lecture course. This address, which closed out the lecture season, was preceded by Andrew J. Parker’s lecture on “Animal Evolution.” Yet it also followed closely on the heels of White’s own talk on “Physical Culture,”¹⁸⁹ formerly titled “Physical Education.” In miniature, then, the series provides an ersatz equation for Muybridge’s animal locomotion studies, moving from Darwinian underpinnings, adding sport and athleticism, and ultimately resulting in a rendered fusion of these topics.¹⁹⁰ A report in the *Magazine* on White’s address opens thusly:

The fifth lecture in the course instituted by the Scientific Society, was delivered by Dr. J. William White, on Monday, April 13th. The subject was “Physical Culture.” After referring

¹⁸⁸ Repplier, 52.

¹⁸⁹ *The University Magazine* 10, no. 11 (February 20, 1885): 159. University of Pennsylvania Digital Archives & Records. <https://archives.upenn.edu/exhibits/penn-history/university-magazine/>.

¹⁹⁰ These comprised the second, fifth, and seventh talks. In order, the series progressed thusly: Rev. Prof R. E. Thompson, “The Relation of Ireland to England”; A.J. Parker, “Animal Evolution” (illustrated); E.H. Clarke, “Old Music and Musical Instruments” (illustrated); Chas. A. Ashburner, “Coal: How to Find It, How to Mine It, How to Burn It” (illustrated); J. Wm. White, “Physical Culture”; J. Peter Lesley, “Geological Time” (illustrated); and Muybridge, “New Developments in Animal Locomotion” (illustrated). Admission cost one dollar for course access, fifty cents for student course access, and twenty five cents for “single admission.” An original “programme” for the lecture course, found in the Penn archives, lists the dates of White and Muybridge’s talks, respectively, as the 13th and 30th of April. Elsewhere the dates are listed somewhat differently.

to the high position that athletics held in Greek and Roman economy, and showing how their intellectual greatness was in great measure the result, the Doctor brought the manner down to the present day. He said that if this much neglected matter was attended to, it was possible to reach a much higher degree of civilization. He said that mind and body were not necessarily antagonistic but complementary. He wished the men would preach the gospel of athleticism.¹⁹¹

This *gospel of athleticism*, which White had labored to convey to the public at large, was of course destined to be spread most pointedly by the young men of Penn's undergraduate body. What better apostles than these exuberant and "duty-bound" students, submitted to physical examinations yet attracted, in many cases, to athletics and exercise as a supplement to their scholastic life.

Not unlike the bicycle craze of the subsequent decade, White's "gospel" here is a slip knot of sorts: designed teleologically and with an eye toward the ultimate benefit of the University (and civilization's progress), the plan nevertheless lays out a set of experiential opportunities, with provisions for both individual and group sport, in addition to monitored muscular "training." It is difficult from our current vantage, intimate as we are with sport's inseparability from commerce and control, product and power, to address a sporting moment and milieu in which potentials are primary.¹⁹² This was a moment in which what counted as sport was not yet given, what shape and structure each sport would take was in flux, and what such experiences would do to bodies was likewise contingent. As Elliot Gorn suggests, while the middle of the nineteenth century witnessed the crystallization of certain strands that would inform sport's "larger organizational revolution" and cultural-ideological entrenchment, it wasn't until the final years of the 1800s that "sports were becoming a kind of national language or currency, a set of shared practices, values, and experiences so common as to become invisible as air."¹⁹³

¹⁹¹ *The University Magazine* 10, no. 15 (April 20, 1885): 198.

¹⁹² See Serazio, 6-18.

¹⁹³ Elliot J. Gorn, "Sports through the Nineteenth Century," in *The New American Sport History: Recent Approaches and Perspectives*, ed. S.W. Pope (Urbana and Chicago: University of Illinois Press, 1997), 56-57. Gorn speaks

Currency, of course, is the operative term. Yet White's appeal to students and faculty at Penn's lecture course seems to have raised objections less motivated by money spent—and certainly not by money gained, given White's *pro bono* labor with respect to Penn's athletics—than by the supposed separateness of athletics and academics. Despite White's injunction against the dualism of mind-body, and regardless of his Greco-Roman *exempli gratia*, someone balks: “People objected to athletics at college for two reasons. [1] They allege their incompatibility with intellectual pursuits. [2] They point to the many fatal results.”¹⁹⁴ The latter—and more concrete—imbroglio is perhaps best represented by the interest and action taken by various United States presidents around the turn of the twentieth century with respect to football injuries and the sport's moral-cultural capital.¹⁹⁵ White mostly sidesteps this discussion while doubling down on his belief that athletics are not something superadded to academic life, but integral to its development. He warns against “over training” while adducing as “*à propos* examples” a set of “literary men,” and also cites the supposed correspondence between English crew athletes' sporting endeavors with increased success in academics.

primarily here about the rise of the YMCA in postbellum America, the development of baseball as a “national pastime” and its meteoric financial rise in the 1880s, and the myriad gymnastic organizations, such as those of the Turner system which emerged.

¹⁹⁴ *The University Magazine* 10, no. 15 (April 20, 1885): 198.

¹⁹⁵ See John S. Watterson III, “Political Football: Theodore Roosevelt, Woodrow Wilson and the Gridiron Reform Movement,” *Presidential Studies Quarterly* 25, no. 3 (1995): 555-64. As Watterson makes clear, the final twenty years of the century saw both a massive growth in collegiate football's popularity *and* a growth in the sport's “brutality,” whether perceived or actual, and whether limited to the players on the field or extended to account for the fans' violent impulses. Rules changes were implemented, not without input (sometimes contradictory) from Roosevelt and Wilson. Importantly for the topic at hand, “neither [Wilson] nor Roosevelt addressed the problem of football's role in college life, but viewed football's problems almost exclusively from the standpoint of what happened on the playing field” (562).

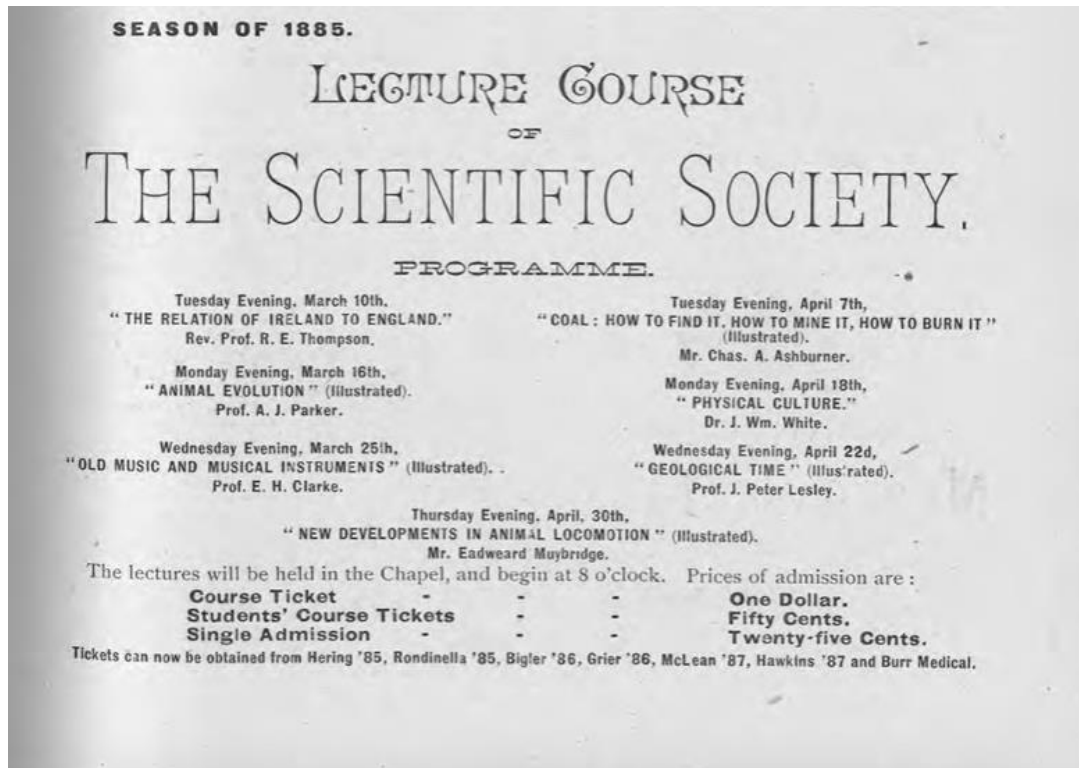


Figure 2.1 Programme with original dates for Penn's 1885 Scientific Society Lecture Course (*University Magazine*)

Such advertisements for Muybridge's lecture and the adjacent addresses by White and other faculty members dot the pages of the 1885 *University Magazine* (Fig. 2.1) Not surprisingly, we learn that "tickets can be obtained" from six or seven undergraduates, including the aforementioned Rondinella, Bigler, and Grier, all having ties to both White and Muybridge.¹⁹⁶ We also find a brief discussion of the zoopraxographer's work sandwiched between short items on football, tennis, and the 1885 class games. This particular section opens with a recommendation that "American colleges" take note of Muybridge's work, which is summarized in both scope—the animal locomotion studies dating back to 1878—and detail—the manufacturer of Muybridge's

¹⁹⁶ *The University Magazine* 10, no. 11 (February 20, 1885): 150. Although this is a brief article on the lecture course, the various advertisements in the year's *Magazine* also include the names of this "committee" with instructions to obtain tickets from them.

lenses and camera batteries, and some of the various animals examined with respect to their “methods of propulsion.”¹⁹⁷ Furthermore, the author ends by enclosing Muybridge’s own words (from his prospectus to *Animal Locomotion*) within bookended statements about collegiate athletics. Having noted that “[s]ome of our athletes have been photographed while performing feats of strength and agility,” the Penn writers leave off with an appeal: “It is hoped that athletes of other colleges may be interested in this work.”¹⁹⁸ Of equal interest, however, is the very flexibility of the Penn undergraduates’ understanding of *athleticism* in this period. Its expression was not so much gospel as incantation.

2.3 “With Every Conceivable Antic”: The Undergraduate Sporting Sensibility

Penn’s late-nineteenth century yearbooks and class photo albums are extremely instrumental to any understanding of athletics in this period. They also, rather poignantly, offer up images of many of Muybridge’s sporting models. Turning the pages of the massive and partially decomposed leather-bound 1887 class photo album, its interior somewhat faded but quite legible, I am reminded of Barthes’ *studium* and *punctum*, of the cultural “information” these photos provide and of what escapes such a reading, what “pricks” but is also poignant to me.¹⁹⁹ The language and drawings in the yearbooks themselves are likewise surprising and impactful, and as the years go by the amount of space dedicated to sport grows exponentially before settling somewhat. In truth, the 1887 class yearbook (*The Record*) is a veritable mythopoesis of athletics and the sporting

¹⁹⁷ *The University Magazine* 10, no. 16 (May 5, 1885): 215.

¹⁹⁸ *The University Magazine* 10, no. 16 (May 5, 1885): 215.

¹⁹⁹ Roland Barthes, *Camera Lucida: Reflections on Photography*, trans. Richard Howard (New York: Hill and Wang, 2010).

sensibility. Unlike the 1880 *Record*, which seems to append mentions of sport to an otherwise “traditional” yearbook collection, or even that of 1890, which retains a focus on athletics without allowing that subject to dominate the pages, the ’87 edition may easily be mistaken for a treatise on sport and play that is only occasionally concerned with other matters. Sketches and drawings of school sport are peppered throughout the volume (Fig. 2.2), all of the athletic divisions are given proper space and referred to in other sections, and the class history uses athletics for much of its narrative spine.

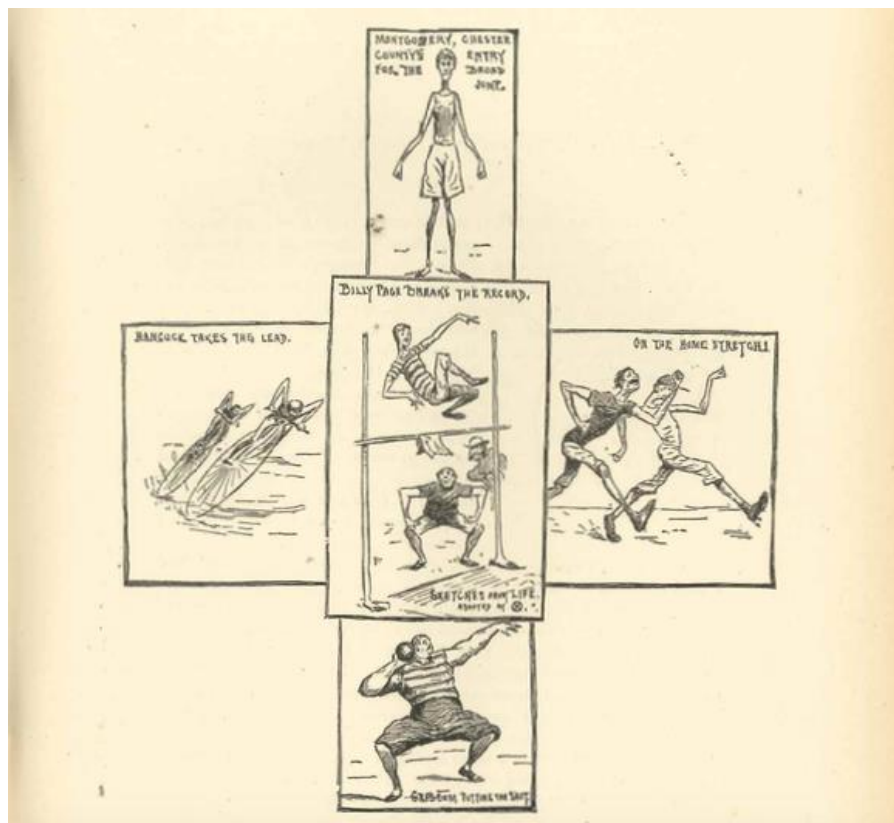


Figure 2.2 Sporting cartoons from the 1887 *Record*, including "Billy Page Breaks the Record" (center); J. William White looks on from the corner of the bar

There are also items dedicated to Penn record breakers, most of whom were observed and/or celebrated by White in recognition of their achievements, and many of whom would act as Muybridge's models. These include Frank Gummey, Thomas Latta, A.R. Cline, and J. Somers Smith, although it is unclear whether William Byrd (W.B., or "Billy") Page, national high-jump record holder and class of 1887, was photographed by Muybridge. The class orator, Oliver Huckel, sounds the keynote of this sporting theme in the '87 class poem, "A Séance in Thought Transference." It is worth reproducing a large section of the dynamic, rambling, and curiously embodied verse:

*So with their whirling and curling, with curious prancing and dancing,
Flow up your inmost souls, streaming like pennants, enhancing
Wildness and weirdness grotesque, by their rustling and bustling commingling,
Flip-flopping, somerset-dropping, the athletes come, victims out-singling,
Gliding like dead men's souls come the spirits of book-worms pedantic,
Gay, jolly jokers trip forward with every conceivable antic,—
These from the blushing Class—(of sweet innocence, very quintessence!)
Gather up here in mid-air in one mighty majestic presence,
Rushing and pushing together, and knocking and blocking each other,
Vibrating, gyrating round, but fast concentrating together,
Blending and taking on form, yet tossed as a wind disturbed feather.
But what strange metamorphosis that!²⁰⁰*

What strange metamorphoses, indeed, yet they should hardly surprise us, coming as they do from a sort of group ethos the tenure of which (1884-87) overlaps almost directly with both Muybridge's stay at Penn and White's official role as the school's chair of Physical Education.

The poem's imagery of and allusion to athletics ("somerset [somersault]-dropping, the athletes come"; "rushing and pushing," "knocking and blocking") stand out, of course. These make up the denotative charge of the verse, as pertains to sport. But the poem also evokes those other senses of sport and "sporting," perhaps archaic to our ears but perfectly apt for the late-nineteenth

²⁰⁰ Oliver Huckel, "A Séance in Thought-Transference: Introducing Composite-Photography, Metamorphoses Extraordinary, and Experiments in Cupid-and-Psycho-Physics," in the *Record* [1887], 41, emphasis in the original.

century: merriment, mirth, (literary) playfulness, theatricality... The penultimate line above-cited even manages to suggest, fortuitously perhaps, sense 5a., “Something tossed about by natural forces, esp. the wind or waves, as if a plaything.” The passage is of course also homoerotically charged, and thus we might append the obsolete sense of sport as “amorous play” to a passage that is quickly becoming more and more polysemous. What I find most intriguing about “A Séance,” though, in the context of sport, is the sort of push-pull between athleticism as a standardized pursuit and as an expression of wildness, weirdness, grotesquerie. Not unsurprisingly, this tension is paralleled by the author’s rapid-fire shifts from individuality, identity and subject-hood, to the dissolution of self: metamorphosis is not restricted here to an individual’s changes—it also encompasses the “commingling” and “concentrating” function of athletics, the always provisional submission to a larger potential “blending.” In Simondonian terms, the aforementioned passage and its suggestiveness with respect to athletic experience are ontogenetic through and through. In other words, “being does not have a unity of identity, which is that of a stable state wherein no transformation is possible; being has a *transductive unity*, i.e. it can phase-shift with respect to itself, it can overflow itself on both sides from *its center*.”²⁰¹ *Being* here may be placed *sous rature* or let go of in favor of becoming—it matters not. What matters is that any relation is as “real” as the terms or individuals it relates, as James and Whitehead would argue. Moreover, as Simondon reminds us, “relation can never be conceived as a relation between preexisting terms,” because the system or “regime” of the relation itself, no less real than its elements, does not emerge from an interaction between static, fully individualized beings, nor is it separate from the processual experience of each entity.²⁰²

²⁰¹ Simondon, *Individuation*, 12, emphasis in the original.

²⁰² Simondon, *Individuation*, 352.

Perhaps the most unique of Simondon's expressions deployed to describe such individuations is that of the "forces of the future." He uses this phrase to describe technological individuation, a point which I will return to below; however, the forces of the future also act on and through individuating beings: "the individual must be a bearer of tensions, tendencies, and potentials, and reality, and this reality it bears must be structurable but not yet structured for the interiority group to be possible; the interiority group emerges when the forces of the future harbored by several living individuals lead to a collective structuration."²⁰³ Brian Massumi's treatment of Simondon's future forces is illustrative here. For Massumi, speaking specifically about technical invention, the observable multifunctionalities of elements in a relation, prior to these individuals' collision, "were nowhere. They are not to be found in the past. It is when the relation kicked in that they were determined, by that very event, to *have been* the potential for what has come. If the potential was not effectively there in the past, there is only one place it could've come from: the future."²⁰⁴ Such a perspective allows Simondon, in a fashion different from that of Deleuze,²⁰⁵ to fuse both the transcendent and immanent charges of the collective: transcendent because from a different phase and time (the future), immanent because reliant on the metastable elements of the unfolding relation.

The 1887 class poem also rings, not surprisingly, of Whitman, no stranger to the wrestling match between transcendence and immanence, and whose interminable great poem of metamorphosis and ontogenesis—"always the procreant urge of the world"—added a novel,

²⁰³ Simondon, *Individuation*, 333.

²⁰⁴ Massumi, "'Technical Mentality' Revisited," 25.

²⁰⁵ On Deleuze's "transcendental empiricism," see Miguel de Beistegui, "The Vertigo of Immanence: Deleuze's Spinozism," *Research in Phenomenology* 35 (2005): 77-100.

electric charge to the very word “athleticism.”²⁰⁶ Whitman’s artists “to come,” those myriad “orators, singers, musicians,” would be “a new brood, native, athletic, continental, greater than before known.”²⁰⁷ Whether focused on labor or play, the subjects of his hymns make up the very *stuff* of the America he seeks to “define,” with “her athletic Democracy.”²⁰⁸ Returning to the above mention of homoeroticism, to which we might append other lines from “A Séance”—“Majestic in mid-air above us in his gladness and glory and pride / Stands this composite *Man of the Class*, with his sub-stratum Cupid inside...”—what arises, perhaps, is in fact less explicitly homoerotic and more enigmatically queer.²⁰⁹ In other words, Whitmanian. Writing specifically about Whitman’s “regimes of touch,” Tripp Rebrovik cautions against both the “anachronistic” appellation of Whitman (and his poems) as homosexual and the suggestion of the American bard as heteronormative or hypervirile. Rather, Whitman’s “rejection of masculinity based in authority and patriarchal domination [...] gives way to a queer re-signification and subsequent pluralization of masculinity as a practice of sympathy and comradeship.”²¹⁰ In a not dissimilar vein, Peter Coviello has described Whitman’s writing on sex, children, and war as evincing not “heterovirility” but “a species of queer generation: a style of queer world making and queer future making.”²¹¹ I want to suggest that the Séance’s material and its syntactical playfulness are

²⁰⁶ Walt Whitman, “Song of Myself,” in *Leaves of Grass and Other Writings*, ed. Michael Moon (New York and London: W.W. Norton & Company, 2002), 27, line 45.

²⁰⁷ Whitman, “Poets to Come,” in *Leaves of Grass*, 14, lines 1-3.

²⁰⁸ Whitman, “To Foreign Lands,” in *Leaves of Grass*, 5, line 2.

²⁰⁹ Huckel, “A Séance in Thought Transference,” 41.

²¹⁰ Tripp Rebrovik, “A Queer Politics of Touching: Walt Whitman’s Theory of Comrades,” *Law, Culture and the Humanities* 16, no. 2 (2017): 328.

²¹¹ Peter Coviello, “Whitman’s Children,” *PMLA* 128, no. 1 (2013): 84. By way of clarification: “The war, as we shall see, finds Whitman turning anxiously toward an unwritten, pending future, and it prompts in him a complex, eroticized regard for that future as a kind of repository, one seeded with possibilities he intuits out on the edges of consciousness and embodied experience in the war but not quite articulable there. That future is something he is eager to parent, and sex is on the scene of imagined generation. Yet Whitman shows us how an investment in futurity, even one routed through the idea of children, may not be as homophobic, or as normative, as we now believe it to be. Walter Whitman Millis is one emblem, and a fit one, of the weird, harrowing style of queer generation Whitman begins to imagine in the war” (75). For Coviello, both children named after the poet (in this case by William H. Millis, whom Whitman

representative of such (potential) queer future-making. More to the point: the poem, as well as the Whitmanian influence which perhaps props it up, are inseparable from the queerness of sport and athleticism in the period.

But séances are, of course, primarily concerned with the evocation of—or intrusion by—the past, delivered or channeled via a medium (milieu). We might therefore read Huckel et al’s poem as a conjuring of “past” forms of homosocial relations and homoerotic masculinities as well as a future-directed “procreant urge,” as Whitman would have it. This is not to say that these *queer sporting future(s)* were realized in full. However, their syntax was explored on the page as on the fields and spaces of play. To look away from that fact is to substitute for plurality and exploratory experience a post factum understanding of athletics as fundamentally normative and rigidly structured, or to suggest that the queerness of sport in the period was marginal or insignificant. It is, in other words, to do away with middles and milieux, and to gloss the complexities of measuring. Callois’ structuralist approach to play in Chinese culture, albeit reductive, remains curiously suggestive here. For Callois, *paidia*, or childish play/sport, needn’t only shift into *ludus*, or play-as-hobby, as in much of the West. He suggests that in the case of China, *paidia* more commonly metamorphosed into *wan*, which “basically designates all kinds of semiautomatic activities which leave the mind detached and idle, certain complex games which are part of *ludus*, and at the same time, nonchalant meditation.”²¹² Moreover, that term’s own etymological elasticity permits, among other senses, “carefree and frivolous diversion such as [...] to frolic, to romp, to

met in an army hospital) and men who referred to Whitman in letters hence as, for example, “your Loving Soldier Boy,” are part of this vision of Whitman “labor[ing] to dislodge sex from its narrow enclosure in dyadic heterosexuality and the reproductive family,” or “seek[ing] to release sex into every register of sociability, to saturate the social field with the adhesive vibrancy of desire” (74-75).

²¹² Callois, 33.

trifle, etc. It is [also] used to describe casual, abnormal, or strange sex practices.”²¹³ Callois is careful to point out, as does Huizinga, that *wan* is not the sole term in Chinese to denote sport and game-playing; although it may be that culture’s “most important,” “games of skill” are still most frequently referred to by a word “equivalent of the Greek *agon*.”²¹⁴ In any case, “the example of the word *wan* shows that the destinies of cultures can be read in their games.”²¹⁵ This may be overstating the point. However, there certainly can be read potential destinies in a culture’s sporting sensibility and its linguistic descriptors of said, irruptions of possible future-making. Huckel’s “Metamorphoses Extraordinary, and Experiments in Cupid-and-Psycho-Physics” comprise a curious yet profound example of one such moment and milieu of contingent paths.

2.4 R. Tait McKenzie: *mens fervida in corpore lacertoso*

The foregoing Latin motto, “an eager mind in a lithe body,” belongs not to Muybridge, nor to J. William White, but to one R. (Robert) Tait McKenzie, referred to as “the first person in America to hold the title of professor of physical education.”²¹⁶ In this chapter we have thus far considered many milieux, many media(tors), many *middles*. If we are to take a sort of long view of Muybridge’s life and work at Penn, McKenzie would stand as the end point, or extension, of such a period. In other words, his role only acquires sufficient context when situated amid the process of change with respect to athleticism, motion studies, and discourses of physical culture.

²¹³ Caillois, 34. See Johan Huizinga, *Homo Ludens: A Study of the Play-Element in Culture* (London: Routledge & Kegan Paul, 1980), 28-45.

²¹⁴ Huizinga, 32.

²¹⁵ Caillois, 35.

²¹⁶ Cooper and Ledger, 202.

Muybridge and White, each with their own harnessing of forces (and discourses), inaugurated much of this process on a local level, with national repercussions. McKenzie, upon arriving at Penn from his tenure at McGill University in Montreal, would expand the process—for good or ill.

If we are to believe McKenzie’s own “sporting” origin story, “he was embarrassed about his delicate physique but was inspired by talented acrobats of a travelling circus.”²¹⁷ Thus the self-describing motto, *mens fervida in corpore lacertoso*. McKenzie’s interest in acrobatic movement and performance would pair with his early artistic aptitude, a fusion that would reach its most express end in the numerous sculptures he crafted focusing on athleticism, many of which would be commissioned or obtained for presentation at various Olympic Games. In the late 1800s, his rise through the ranks at McGill prefigures much of what would come to fruition in his time at Penn, and it also parallels, after a fashion, White’s own path. McKenzie entered medical school at McGill in 1885, the year after Muybridge began his work on *Animal Locomotion*. As an undergraduate “he was an assistant in the gymnasium,”²¹⁸ at that time led by James Naismith, who only a year later would invent the game of basketball in Springfield, Massachusetts.²¹⁹ Despite his “frail” physique, McKenzie also “excelled in football, gymnastics, and track and field” at McGill, before he “replaced [...] Naismith as Instructor of Gymnastics in 1890, and became [the school’s] medical director in 1893.”²²⁰ According to Cooper and Ledger, this position—“medical director of physical training”—was a “post created just for him,” and he used it to, among other things,

²¹⁷ As reported in Greg Reid and Ian F. Jobling, “R. Tait McKenzie: Inspirational Sculptor and a Pioneer Advocate of Physical Activity for People with Disabilities,” *International Journal of Disability, Development and Education* 59, no. 3 (2012): 232.

²¹⁸ Cooper and Ledger, 202.

²¹⁹ Reid and Jobling, 233. McKenzie and Naismith grew up in the same town, and were apparently friends before their time together at McGill.

²²⁰ Reid and Jobling, 233.

impose compulsory medical examinations for students entering Canadian colleges.²²¹ It would not be the last time he would move the needle on compulsory exams for students, nor would it be the only time that such a move was met with, at best, mixed feelings from undergraduates. Both White and McKenzie seem to have generated a sort of rhythmic relationship with Penn's undergraduate students, in which the experiential opportunities afforded by these physical educators were tempered by the necessities of examinations, tests, and measurements.

By 1904, McKenzie had parleyed his knowledge and clout in the burgeoning field of physical education with an increased mastery of sculpture, and he had already attended at least one iteration of the then-nascent modern Olympiad movement. His shift from McGill to Penn seems to have been effected in no small part by White himself, "who had heard him lecture."²²² In May of 1904, McKenzie received a letter from C.S.W. Packard detailing for him White's attempt to influence the board of trustees on the matter. As Packard put things, "I am sending you to-day a letter received from Dr. J. William White, which he asked me to forward to you and which I hope may influence you in allowing me to present your name to the Trustees of the University for the Position of the Director of Physical Education."²²³ On 9 June, Packard notifies McKenzie of his election to the position, and makes clear that his presence in Philadelphia was needed most expressly to take care of the "fitting out of the gymnasium."²²⁴ It will be recalled that White's own herculean labor to obtain for the university a gymnasium was finally put to rest around this time, after decades of lobbying and two years of construction and development. Per Repplier, the day of

²²¹ Cooper and Ledger, 202.

²²² Cooper and Ledger, 202.

²²³ G.S.W. Packard, letter to R. Tait McKenzie, May 25, 1904. UPT50 MCK37, Box 5, Folder 36.

²²⁴ G.S.W. Packard, letter to R. Tait McKenzie, June 9, 1904. UPT50 MCK37, Box 5, Folder 36.

the gymnasium's presentation to the school was marked by a speech from McKenzie, newly minted as Penn's director of Physical Education and professor of Medicine:

Provost Harrison accepted the new building in the name of the trustees, and Dr. R. Tait McKenzie, sculptor, and Director of Physical Education, made an admirable address. The relations between this keen and brilliant young Canadian and Dr. White were of the friendliest character. Six months after the opening [...], Dr. McKenzie wrote to Dr. White: "What your advice and friendship have meant to me in this trying year of strangeness and pioneer work I need never tell you. If you are a telepathist, you must have felt it. I am not likely ever to forget, and I hope I may yet have a chance to repay it in small part, leaving always a debt that I am glad to owe."²²⁵

White's own words at the address are curious yet not surprising. He suggests that "It should be clearly understood that the relation of this present undertaking to competitive athletics is a collateral one—in a sense almost accidental."²²⁶ Now that "this dream of years has become a substantial fact," White opts to speak less about the benefits of the new facilities for the school's collegiate teams—which he followed extremely closely and always rooted for, to the point of obsession—and more to the over-arching goals of exercise and the varieties of athletic experience.²²⁷

For his part, McKenzie spoke on the occasion of the gymnasium's opening of the "turbulent, independent way" of Penn's "athletics sports," which were "always strong and vigorous" yet often unfolded in an only passing acquaintance with more scientific and "hygienic"

²²⁵ Replier, 117-18.

²²⁶ J. William White, Address at the Formal Opening of the Gymnasium of the University of Pennsylvania, December 14, 1904. UPT50 MCK37, Box 6, Folder 42.

²²⁷ White's scrapbooks are jam-packed with even the most minor mention of Penn (and other college) sports, but his summer vacation diaries add an additional (and humorous) valence to this "fandom." A particularly rich entry: "Friday, July 7. This morning we got the news of the boat races and Pennsylvania's victories in the four-oared and eight-oared contests. I tore the papers open on the way to the beach, read the headlines and then took the news to Stockton and Letty who had gone on ahead. While in bathing we gave three long 'Hoorays' for Pennsylvania, and repeated them. The boatman is now satisfied that we are escaped lunatics. We needed this victory [...] to demonstrate that *that* [last year's victory] was not accidental. Anyone who doubts now that we're the stuff is a candidate for an asylum. Harvard, Yale, and Princeton are mere 'prep schools'—athletically speaking." UPT50 W585, Box 5, Folder 42.

matters.²²⁸ Not unlike White, he maintains that although the sports in the “public eye” seem the logical target for such gymnasia and training facilities, in actuality the “average” student is the aim of the enterprise. (The word *average* will soon take on significant meaning in McKenzie’s sculptural work as well as his physical education). Three years later, in 1907, McKenzie would hold the title of “Professor of Physical Therapy,” becoming “one of the earliest to hold that appointment in a major U.S. medical school.”²²⁹ During the years between his accession to the split role of physical educator/therapist and the outbreak of the First World War, McKenzie continued to shape the University’s position with respect to the management and treatment of the health and physical fitness of its undergraduate body, and he also began to produce more sculptural work, focused almost exclusively on athletic endeavor.

As a result, McKenzie enters into the domain of “sports media” in a peculiar double sense. Through his therapeutic work at Penn, including “the use of exercise for those with a physical disability [which] was pioneering and the subject of many of his publications,”²³⁰ as well as the general shift from novel theories of the value of physical education to its practice, McKenzie in 1909 published *Exercise in Education and Medicine*, “regarded by the founders of sports medicine and historians of physical education as a classic.”²³¹ This textbook, only the second of its kind, thus becomes in effect the starting point for all future treatises on the matter, using sketches of the exercises in question as they progress and introducing fully the notion of “‘dosage’ essential in the use of therapeutic exercise.”²³² McKenzie therefore quite firmly *mediates* the accepted stance with

²²⁸ R. Tait McKenzie, Address at the Formal Opening of the Gymnasium of the University of Pennsylvania, December 14, 1904. UPT50 MCK37, Box 6, Folder 42.

²²⁹ John F. Ditunno Jr. and Richard E. Verville, “Dr. R. Tait McKenzie: Pioneer and Legacy to Physiatry,” *PM&R* 6, no. 10 (2014): 867.

²³⁰ Reid and Jobling, 235.

²³¹ Ditunno Jr. and Verville, 867.

²³² Ditunno Jr. and Verville, 868.

respect to the treatment of injury (or lassitude) as well as the prescription for exercise programs. Such decisions, likewise made or adopted at other sites both domestically and internationally are, of course, inseparable from questions of discipline, control, and biopower. At the same time, the notoriety gained through his sculptural work places McKenzie squarely in the middle of the fields of (fine) art and (sport) science.

It is curious to note that McKenzie's sculptures, especially those made in the early 1900s, were received with mixed feelings depending on one's vantage. As Reid and Jobling report, "[a]rt observers, then and later, were critical of McKenzie's sculptures because of the focus on anthropometric presentations (*The Sprinter* [1902] and *The Athlete* [1903]) but they were more positively viewed by the athletic community."²³³ Anthropometry (Gk. *anthros*, man + *metron*, measure) in effect offers McKenzie, in his earlier work, a heuristic through which to sculpt a quite literal *model* figure, one based on the average measurements of highly effective athletes.²³⁴ This is perhaps not a far cry from Muybridge's utilization of the Penn amateur "record holders" for motion studies, although the analogy is inexact. Furthermore, the grid background for *Animal Locomotion* was itself a product of anthropometric movements, with the anatomist Dr. Leidy and other Commission members soon "becoming founding members in 1889 of the American Anthropometric society."²³⁵ In any case, in this early phase of his sculpture McKenzie relies on a method which, by nature, effaces or collapses difference, subsuming all that we might otherwise consider contingent or distinct under the aegis of "normality." If there is something of an *uncanny*

²³³ Reid and Jobling, 234. See Jean S. McGill, *The Joy of Effort: A Biography of R. Tait McKenzie* (Bewdley, ON: Clay Publishing, 1980).

²³⁴ See Reid and Jobling, 233.

²³⁵ Braun, *Eadweard Muybridge*, 195-96. Braun makes clear that questions of race and racialization are inseparable from the *fin-de-siècle* concern with anthropometry: the Society was "devoted to a subdiscipline of anthropology that defined racial difference by the measurement of physical disparities such as skull size. For them, [Ben] Bailey would have been the perfect subject. Not only was he a black man, but he was a boxer—having a body with the kind of overdeveloped musculature that defined their notion of the 'primitive'" (196).

valley effect to this form of sculpture, it perhaps arises from the rigid adherence to measurement and averaging. The anthropometric sculpture represents everyone and no one. It is pure data made aesthetic. It is interesting to note how frequently artistic images of “averages” pop up in Penn’s turn-of-the-century sporting situation. As a sort of frontispiece to the 1887 *Record* we find a composite photo-realistic drawing of the “average” class graduate. McKenzie’s papers also include prints of Sargent’s statues of “The Typical Americans,” male and female, which were “made from the medium measurements of several thousand students” from twenty American schools.²³⁶

While this “averaging” impulse is inseparable from a *fin-de-siècle* obsession with measurement and efficiency, its sculptural connections are as old as the ancient Greeks. In the mid 1910s, F.W.G. Foat would devote plenty of space in an article appearing in the *Journal of Hellenic Studies* to the question of how anthropometric, in fact, sculptures of classical Greece may have been. In effect, Foat set out to prove that “tradition in the Greek practice is actually expressed in ratios reducible to a scheme. This, at least, it is in part my object ultimately to show.”²³⁷ Foat finds in Da Vinci a through-line between the ancient Greek *analogia* (αναλογία) of Polykleitos and Vitruvius, and the obsession with *proportion* in the Renaissance and beyond, although Da Vinci perhaps “fail[ed] to find any more of the discoveries of the Greek masters than Vitruvius and an odd literary note or two had indicated.”²³⁸ This through-line, or pivot, nonetheless leads to a renewed reliance on contemporary practice: “observers may as well fall into line with the Anthropometric Committee of the British Association, and employ modern methods of taking dimensions of the human body, in terms capable both of graphical and numerical statement, fit to

²³⁶ UPT50 MCK37, Box 19, Folder 22.

²³⁷ F.W.G. Foat, “Anthropometry of Greek Statues,” *Journal of Hellenic Studies* 35 (1915): 230.

²³⁸ Foat, 227.

be submitted to the analyses used in general biometrics.”²³⁹ Foat’s final plate image in his treatise is a sculpture by R. Tait McKenzie, *The Athlete*, which he claims “was composed on the average proportions of 400 Harvard students, athletes and others. It was intended by the sculptor to be a norm or canon.”²⁴⁰ Elsewhere, McKenzie occasionally clarified the anthropometric and “averaging” terms of his early sculptures. *The Sprinter*, the other of the two early (and sometimes criticized) works, is addressed in a 1934 radio interview titled “Sports in Art.” The transcript offers the following explanation by McKenzie: “I decided to portray a sprinter crouching, waiting for the crack of the pistol. The question as to what type of figure was best suited for sprinting was being constantly debated and I decided to portray what might be considered an ideal sprinter. I procured the measurements of seventy-four of the fastest American sprinters.”²⁴¹ Not unlike Marey and Demeny’s tests performed at the 1904 Olympics or Muybridge’s own sporting experiments,²⁴² McKenzie thus sought to analyze and render the most “effective” means at the athlete’s disposal while conveying the emotion of sport.²⁴³

Across the pond from Penn, in the United Kingdom, these very questions of anthropometry, idealized—often Greek—sculpted bodies, and the rendering of nude or partially clothed figures were being debated not just by the Committee of the British Association, but in a social milieu that paired physical culture and the fine arts. As Kate Nichols reports, London’s Crystal Palace in the

²³⁹ Foat, 237.

²⁴⁰ Foat, 256. McKenzie’s own notes for his collection of athletic sculpture corroborate this: “The proportions of the ideal college athlete modelled originally for the Society of College Gymnasium Directors based on measurements and observations of Dr. Dudley A. Sargent of Harvard University.

²⁴¹ Program of “Sports in Art,” NBC-WJZ Network, March 2, 1934 (Transcript). UPT50 MCK37, Box 7, Folder 8.

²⁴² See Braun, *Picturing Time*, 204-06.

²⁴³ The program continues, in fact, with McKenzie discussing the “greatest contribution made by any athlete towards the perfection of form,” to wit the “discovery” in 1888 by Charles Sherrill of Yale that placing one’s feet behind the starting line and using the hands to “stoop” at the line resulted in a much more successful “push” to start the race. McKenzie here speaks both teleologically (“perfection of form”) and in terms of contingency, making clear that this method was perhaps arrived at accidentally and seemed “apparently unfavorable” before its genesis.

second half of the nineteenth century became a site which “attempt[ed] to combine leisure and learning across its exhibits and attractions. The gardens thronged with sculpture, and sporting activity was not just limited to the grounds.”²⁴⁴ Amid such discussions of decorum and desire— anxiety about the nudity, desire to emulate the idealized body—it was regularly reiterated that the Greek sculptures were based in anthropometry, “identified as accurately representing the bodies of ancient Greek people” and likewise linked to the idea of “European (and regularly British) biological heritage.”²⁴⁵ Furthermore, the Palace ultimately became the location for Eugen Sandow’s School of Physical Culture, opened in 1899, two years after his initial school in Picadilly.²⁴⁶ Just five years earlier Sandow had posed and flexed his muscles for W.K.L. Dickson’s camera in the Edison Black Maria studio, part of a publicity bonanza that would lead to his 1898 founding of *Physical Culture* magazine.²⁴⁷ As Nichols explains, Sandow’s achievement was to harness the museum space and gymnasium as a locus wherein a renewed focus on the body beautiful, the future of the British “race,” and a mixture of physical and mental education could fuse.²⁴⁸ As it happens, among the sculptural athletic models and references found in McKenzie’s papers we find folders dedicated explicitly to the cinematic strongman, with numerous still photos of Sandow flexing his famed muscles.²⁴⁹

²⁴⁴ Kate Nichols, “‘Manly Beauty and Muscular Strength’: Sculpture, Sport and the Nation at the Crystal Palace, 1854-1918,” in *After 1851: The Material and Visual Cultures of the Crystal Palace at Sydenham*, eds. Kate Nichols and Sarah Victoria Turner (Manchester, UK: Manchester University Press, 2017): 99.

²⁴⁵ Nichols, “Manly Beauty,” 100; 102.

²⁴⁶ Nichols, “Manly Beauty,” 104.

²⁴⁷ Later named *Sandow’s Magazine of Physical Culture*. Sandow’s magazine(s), the first to focus explicitly on “body-building,” then a novel term, would fold after eight years. Bernarr Macfadden’s *Physical Culture* magazine, founded 1899, would have a much longer shelf life and a larger impact. See Andrea Dale Lapin, “A Body of Text: *Physical Culture* and the Marketing of Mobility,” PhD Dissertation (University of Pittsburgh, 2013), spec. 115-39.

²⁴⁸ Nichols, 105-07.

²⁴⁹ UPT50 MCK37, Box 19, Folder 19.

2.4.1 Bodies Broken, Averaged, and Rebuilt

As ever, these questions of the body *built* and the body *beautiful* rarely unfold in linear fashion; the more familiar pattern, at least since the American Civil War, is a sort of diastolic-systolic pressure system. Wars wreck bodies (and minds), necessitating novel means of rehabilitating, novel means of rebuilding. Whitman's experience with the war wounded would seep into his poetry, as well as his collection of observations, *Specimen Days*: "Poor youth, so handsome, athletic, with profuse beautiful shining hair. [...] Little he knew, poor death-stricken boy, the heart of a stranger that hover'd near."²⁵⁰ The Boer War (1899-1902) would spark a "debate about the deterioration of the [British] 'national physique' [...] after a large number of military recruits were rejected from serving [...] resulting in the appointment of a government Interdepartmental Committee on Physical Deterioration, reporting in 1904."²⁵¹ This would play directly into Sandow's purpose. McKenzie, too, would become directly imbricated in the wartime effort, taking leave from his academic duties in 1914 to join the British Royal Medical Corps in England, where "his duties were physical training of soldiers and medical treatment of the wounded."²⁵² It is unclear whether McKenzie and White were ever stationed together while in Europe. White's scrapbooks make clear that the two men volunteered at the same time, to general public fanfare.²⁵³ News reports of White being "under fire" in France during 1915 suggest that his work at the "American Ambulance" was as perilous as it was restorative.²⁵⁴ In July of that year, a

²⁵⁰ Whitman, "Some Specimen Cases," in *Leaves of Grass*, 777.

²⁵¹ Nichols, 104.

²⁵² Reid and Jobling, 234. McKenzie never became an American citizen.

²⁵³ E.g., "J. William White and Tait M'Kenzie War Volunteers: Noted Physicians Offer Their Services as Surgeons to the British Government and Its Allies," *Evening Ledger*, October 22, 1914; "J. William White Offers to Serve British in Field: Noted Surgeon and R. Tait McKenzie Await Summons," *Philadelphia Inquirer*, October 22, 1914; "Noted Phila Surgeons Offer to Aid Britain," *Press*, October 23, 1914. UPT50 W585, Box 4.

²⁵⁴ "Dr. J. William White Gets Under Fire at Reims," *North American*, July 25, 1915. UPT 50 W585, Box 4.

journalist toured the American Ambulance site with White and reported, among other things, on the group's project of "Restoring Human Wrecks" (the journalist's phrase).²⁵⁵ For McKenzie, the experience would allow him to parlay his experiments in physical therapy into the more express purpose of treating destroyed bodies. 1918's *Reclaiming the Maimed: A Handbook of Physical Therapy*, and 1919's *Functional Re-education of the British Soldier* mark the true onset of what we might call his late-career, where rehabilitation and the study of disability take prominence over more "preventative" means. In *The Functional Re-education of the Wounded*, McKenzie appends to his treatment of how to maintain injured individuals' "self confidence" a set of images of rehabilitation in practice. Although these are not sequenced (nor are they uniformly photographed head-on), the images include the black grid-work background that became integral to Muybridge's project at the behest, probably, of Joseph Leidy.²⁵⁶ Reid and Jobling astutely point out that McKenzie was thus a central, if oft-overlooked, catalyst in what would decades later become the Stoke Mandeville Games for the Paralyzed, formed in 1948 by Ludwig Guttman.²⁵⁷ These Games would be renamed the Paralympics in the 1960 Rome Olympiad, which will be among the filmed Games discussed in chapter four.

McKenzie's sculptural media changed, as well. For one thing, he was more inclined after the war to produce pieces dealing with soldiering and the call to duty, being "commissioned by many agencies and communities to sculpt war memorials in several countries."²⁵⁸ His athletic work also gains considerable diversity, perhaps due in part to the loosening of anthropometric strictures.

²⁵⁵ Fullerton L. Waldo, *Public Ledger*, July 25, 1915. UPT50 W585, Box 4.

²⁵⁶ Braun, *Eadweard Muybridge*, 193. For Braun, Leidy's participation in the Ethnological Society of London makes it most "likely [that] he was the committee member who suggested using the grid. He and fellow members Harrison Allen, Pepper and Dercum would all be founding members in 1889 of the American Anthropometric society." The individual grids in *Functional Re-education* are significantly larger, likely 1' by 1'.

²⁵⁷ Reid and Jobling, 240.

²⁵⁸ Reid and Jobling, 234.

The Flying Sphere of 1920 is a bronze sculpture displaying a nude male athlete in what appears to be the final phase of a shot-put throw, his eyes gazing past the outstretched left hand toward the “sphere’s” arc, left leg firmly planted. Ditunno and Verville claim that *The Flying Sphere* was “modeled from a study in motion by Muybridge,” an assertion supported by Penn’s digital image archive.²⁵⁹ Other sources suggest that the figure is “idealized, a composite of studies of numerous athletes.”²⁶⁰ Plate 310 of *Animal Locomotion*, “Putting the shot,” features an athlete (the aforementioned Frank Gummey, ’87) not dissimilar to the figure in *Flying Sphere*, yet there are two notable inconsistencies. In the main, Muybridge’s shot-putter is right-handed, unlike the sculpted athlete. Furthermore, once the athlete of plate 310 lands on his plant leg, his outstretched arm has lowered, and his left leg has not “kicked up,” which would have jibed with the streamlined posture from McKenzie’s work. Plates 313-14, “Heaving 20-lb. rock,” perhaps come a bit closer in certain frames to *Flying Sphere*, yet the model (a Dr. Jacob Schell) is once again right-handed. And plates 315-16, likewise titled “Heaving 20-lb rock,” present a left-handed athlete (George Brinton, ’88) who, in certain frames, seems a dead ringer for McKenzie’s athlete, except for the fact that his plant leg is incorrect (both in terms of likeness to the sculpted figure and the proper shot-put posture).

Did McKenzie fuse these various image sequences, borrowing from each? Did he simply select one still and pivot from it where he saw fit, or evoke from the battery of images (profile, angled, “down-the-line”) a frozen moment? In the case of *Flying Sphere*, it turns out that we have a bit more information to go on. The athlete featured in plates 315-16, “Heaving 20-lb. rock,” was

²⁵⁹ Ditunno and Verville, 868.

²⁶⁰ See e.g. “The Flying Sphere,” National Gallery of Canada, accessed February 27, 2021, <https://www.gallery.ca/collection/artwork/the-flying-sphere>.

one George Brinton, Penn class of '88.²⁶¹ Brinton's name is peppered throughout the 1887 *Record's* sporting sections as well as the University's archival pages, as his track-and-field records, both collegiately and inter-collegiately, earned him standout status; in 1885-86 he also served as director of the recently reorganized Penn Athletic Association.²⁶² Not unlike Penn athletes such as Gummey, Percy Madeira, and A.R. Cline, Brinton's athletic achievements made him a target for Muybridge's studies, and he also appears in plate 309, "Throwing the hammer," given his records at Penn and at intercollegiate meets.²⁶³ McKenzie's sculpture was commissioned by Jasper Brinton, George's brother, and "McKenzie worked from photographs of Brinton, probably those taken by Muybridge for *Animal Locomotion*."²⁶⁴

George had in fact died young, at the age of 22, having "contracted pneumonia" during work at Pennsylvania's Bethlehem Iron Works.²⁶⁵ There is thus a peculiar poignancy to his immortalization in McKenzie's *Flying Sphere*, which, in a way, brings us back to questions about Muybridge's own *finessing* of his sequences (Figs. 2.3-4).

²⁶¹ Formerly class of '87.

²⁶² See "George Brinton," Penn University Archives & Records Center, accessed February 28, 2021, <https://archives.upenn.edu/exhibits/penn-people/biography/george-brinton>. Many thanks are due here to Jim Duffin and Timothy Horning at the Penn University Archives & Records Center, for providing me with information on some of these models which either corroborated or corrected my assumptions.

²⁶³ Penn's digital archival notes incorrectly label this as "plate 30."

²⁶⁴ "George Brinton."

²⁶⁵ "George Brinton."



Figure 2.3 McKenzie's *The Flying Sphere* (1920)

Image enlargement from Kozar, 73



Figure 2.4 Frame from Muybridge plate 315, "Heaving 20-lb. rock," model George Brinton, Penn '88

Image enlargement from Penn University Archives & Records Center

Unless McKenzie was working based on photographs not included in *Animal Locomotion*, and which featured Brinton using a different plant-leg, the sculpture seems to mimic specific frames from plates 315-16 while adjusting the figure to the “correct” landing form, such as that seen across the adjacent sequences. We recall that Doane and Braun, among others, have called attention to the ways in which Muybridge’s work—unlike that of Marey—is haunted by its

absences, its inconsistencies.²⁶⁶ This may be due to carefully rearranged sequences in an attempt to “narrativize” movement; series which impel us to consider imagined frames that border, or *frame*, the looped action; or simply the problem of inter-frame temporality, which Muybridge often played fast and loose with. In all of these instances, for Braun, there is something that is “inconsistent with what we understand to be a scientific analysis of locomotion.”²⁶⁷ McKenzie’s *Flying Sphere* becomes, in a slightly different sense, another of Muybridge’s phantoms, another element to have evaded or “escaped” his battery. The sculpture is a novel version of the motion study that subtended it, both more and less “proper,” more and less “normal.” It is at once a return to the zoopraxographer and a correction of his—and Brinton’s—sporting expression.

If this gets us thinking once again about the extended process of bodily mediation at Penn and beyond, of which Muybridge was a central if not unambiguous force, it also aligns with McKenzie’s renewed post-War interest in the (often lengthy) processes of recovery and rehabilitation, as well as the auxiliary notions of correction and normalization. It is curious to note, however, that many of his late athletic sculptures both eschew the earlier anthropometric impulse and move away from the focus on a sole sporting individual. *The Joy of Effort* (1912), a circular bas-relief commissioned by the US Olympic Committee for that year’s Summer Games in Stockholm, already exhibited this tendency, which would be repeated in 1932-33’s *Three Punters*. In each “medallion,” three athletes are frozen in similar, yet distinct, dynamic poses. *Brothers of the Wind*, from 1925, features eight speed skaters arrayed across a wide bas-relief frame, an almost Cinemascope Winter Olympic moment *avant la lettre*. A close look at all three of these works reveals minor distinctions between the athletes on display. Nonetheless, with very little squinting,

²⁶⁶ See, e.g., Braun, *Picturing Time*, 235, and Mary Ann Doane, *The Emergence of Cinematic Time: Modernity, Contingency, the Archive* (Cambridge, MA and London: 2002), 190.

²⁶⁷ Braun, *Picturing Time*, 247. Also see Braun, *Eadweard Muybridge*, 199-206.

the pieces come into focus as Mareysian chronophotographs, as envisioned process. The apotheosis of this approach, perhaps, is 1932's *Shield of Athletes*, the third prize winner of the Los Angeles Games art exhibition.²⁶⁸ Nearly every Olympic event is registered on the bas-relief buckler, and "inserts" of athletes in various phases of energetic motion are ringed with a 360° rendering of a complete sprint race (starting gun included). In this fashion it resembles one of Ottomar Anschütz's Electrotachyscope labels, or a chronophotographic rotating-disk.²⁶⁹ One wonders how much of this shift can be chalked up to McKenzie's loosening of the anthropometric yoke, or how much of it has to do with an increased interest in both collective sporting endeavors and modes of sculpture that emphasize process rather than the isolated frozen moment.

The interregnum saw McKenzie present speeches and lectures on the current and future states of the interplay between art and bodily athleticism. In these presentations, McKenzie appears torn between celebrating the great modern "revival" of sport, along with its artistic renderings, and offering clarion calls to artists of all stripes to look toward athletics for inspiration. In 1932's "The Athlete in Sculpture," he invoked "the revolution that has taken place during one lifetime in our ideas and habits of life. Games and sports were struggling for a place in the sun at our schools and colleges fifty years ago. Some think they now take it all and leave the scholastic side too much in the shade."²⁷⁰ (He would surely shudder at our contemporary situation in the US, nor would his steadfast dedication to amateurism endear him to modern Olympiads). In light of such a

²⁶⁸ Reid and Jobling, 234.

²⁶⁹ On Anschütz, Muybridge, and other "lesser-known" figures in the chronophotographic field of the time, including the "eminent gymnastics and fitness educator Ferdinand August Schmidt," see Deac Rossell, "Chronophotography in the Context of Moving Pictures," *Early Popular Visual Culture* 11, no. 1 (2013): 10-27. Also see Friedrich Tietjen, "Loop and Life: A False Start into Protocinematic Photographic Representations of Movement," *History of Photography* 35, no. 1 (2011): 15-22.

²⁷⁰ R. Tait McKenzie, "The Athlete in Sculpture," *Journal of Health and Physical Education* 3, no. 9 (1932): 41. This talk was first given to an audience at the International Conference on Physical Education in Summer 1932, and first printed in *Art and Archaeology*. See Andrew J. Kozar, *The Sport Sculpture of R. Tait McKenzie*, 2nd ed. (Champaign, IL: Human Kinetics Books, 1992), 31.

renaissance of the sporting spirit, then, McKenzie asks: “Why is it that this great movement has had so little expression from the painter and the sculptor?”²⁷¹ This is to effectively rephrase the call to action from his 1928 speech “Athletic Sports as an Inspiration for Art,” where he claimed that it “now remains for the modern artist to put into imperishable form the power, beauty, and virility of this great athletic revival in the midst of which we now live.”²⁷² Ultimately, McKenzie circles back to the fact that in the middle of such a renaissance, it behooves the sculptor to interpret such athleticism both on the field of play and, perhaps more importantly, outside of its bounds:

Wherever untrammelled youth is found, in camp, field, beach, or gymnasium; on land or in the river, lake, sea, or swimming pool, there should be the sculptor with his appraising eye, his cunning hand, and his will to record his impressions, if an adequate impression is to be made of this great renaissance of athletic competition in which we are living unconsciously and too often with an unseeing eye.²⁷³

Four years later Benjamin would invoke the “optical unconscious” to describe what the film camera has “discovered,” in language as applicable to newsreel sports image-making as chronophotographic studies.²⁷⁴ Curiously, McKenzie seems uninterested in discussing photo- or cinematographic engagements with athletics with respect to this optical unconscious, even though his sculptural work was aided by Muybridge’s studies and numerous sports were frequently being “screened” in the cinema. As we will soon see, he was also attached to motion picture work at Penn that was of both a sporting and military bent. In 1931 he was designated the J. William White Research Professor of Physical Education, effectively removing any of his administrative duties and allowing him to focus exclusively on sculpture. He returned to his home nation of Canada, but

²⁷¹ McKenzie, “The Athlete in Sculpture,” 41.

²⁷² Qtd. in Kozar, 25.

²⁷³ McKenzie, “The Athlete in Sculpture,” 39.

²⁷⁴ Walter Benjamin, “The Work of Art in the Age of Its Technological Reproducibility” (Second Version), trans. Edmund Jephcott and Harry Zohn, in *Walter Benjamin: Selected Writings, Vol. 3, 1935-1938*, eds. Howard Eiland and Michael W. Jennings (Cambridge, MA: Harvard University Press, 2002), 117.

once again participated, for the third time, in the Olympic sculptural competition (1932). He died in April of 1938. McKenzie left behind an outline and chapter drafts of an unpublished autobiography, which was to be titled, fittingly, *The Measured Mile*. I quite like the moving—and cryptic—final fragments from the text’s outline, which also foreshadow my discussion of the path of film through a camera in the following chapter: “Speed increases as you approach and decreases after you pass the finish. Summary and conclusions. The End.”²⁷⁵

2.5 Eternal Return: George E. Nietzsche and Penn’s Muybridge

George E. Nietzsche, who served as Penn’s Publicity Agent from ca. 1904-12 and thereafter its University Recorder (until 1944), was always coming back to Muybridge. The materials in Nietzsche’s archival collection are particularly illuminating if, at times, tempered by an overly celebratory focus on the zoopraxographer’s achievements. For example, in “Philadelphia: Birthplace of Moving Pictures,” Nietzsche suggests that “the Muybridge analyzed photographs of motion made at the University were almost perfect and that his entire output might still be transferred upon modern films and thrown upon the screen the same as any movies today [1950].”²⁷⁶ Nietzsche’s belief in Muybridge’s “near-perfect” motion studies contributed to his laboring for Penn to create “a school of dramatic art as related to the moving picture industry [...] especially since our own Edward Muybridge, in 1885, perfected his moving picture experiments at the University of Pennsylvania, and modern movies are based upon his discoveries.”²⁷⁷ He also

²⁷⁵ R. Tait McKenzie, Outline for *The Measured Mile*. UPT50 MCK37, Box 7, Folder 48.

²⁷⁶ George E. Nietzsche, “Philadelphia: Birthplace of Moving Pictures,” *Germantowne Crier* 2, no. 1 (1950): 14.

²⁷⁷ George E. Nietzsche, Letter to Harry D. Wescott, Esq., December 13, 1938. UPA9 Box 2, Folder 27.

corresponded at length with one Janet P. Leigh, whose father had served as Muybridge's lawyer in the latter's trial for murder; in effect, the communication between Nitzsche and Leigh was of a coastal and temporal nature, with each supplying the other with information and materials from the zoopraxographer's tenures in Palo Alto and Philadelphia. It appears as though at one point the two were in talks to produce some sort of "corrective" publication on the matter of Muybridge's life and work, with discussions of doing so "on screen." After Nitzsche sent Leigh "Muybridge material" and "comments regarding the eulogy honoring my father [W.W. Pendegrast]," she replied that the information was in "direct contrast [to] the description given by Ramsaye" in *A Million and One Nights*, and spoke thusly of the chance at righting the record:

My real problem now is to find a suitable co-worker in getting this material into proper shape. I wish you would feel entirely free to tell me if you think its proper place is on the screen. The world is not particularly interested in just dry mechanics, but interwoven with romance, it could be made into a wonderful moving picture.²⁷⁸

One wonders how much of this record-righting was a rejoinder to Ramsaye's blunt assertion that "Muybridge, in a word, had nothing to do with the motion picture at all," how much was concerned with the historian's version of Muybridge's crime and acquittal, and how much was due to Nitzsche's bewilderment that Ramsaye would so gloss the zoopraxographer's stay at Penn.²⁷⁹

Later in the year, Henry Louis Gibson of Eastman Kodak's Medical Division forwarded materials to Nitzsche along with a letter as urged by Leigh, writing that "Mrs. Leigh tells me that she is considering a collaboration with you to straighten out some of the misconceptions that have arisen about Muybridge and his work. This should be a valuable collaboration because she has intimate knowledge of his Western life and you of his Eastern work."²⁸⁰ Some of the information

²⁷⁸ Janet P. Leigh, Letter to George E. Nitzsche, February 15, 1950. UPA9 Box 2, Folder 28.

²⁷⁹ Terry Ramsaye, *A Million and One Nights: A History of the Motion Picture through 1925* (New York: Simon & Schuster, 1986), 21. For Ramsaye's record of the murder and trial, see 25-32; on Muybridge at Penn, see 43-45.

²⁸⁰ Henry Louis (H. Lou) Gibson, Letter to George E. Nitzsche, November 22, 1950. UPA9 Box 2, Folder 28.

shared by Leigh ends up in Nietzsche's 1950 "Philadelphia: Birthplace of the Moving Pictures," an essay-length variation on the theme of many Nietzsche-penned articles. These footnoted tidbits include clarification on the murder trial's proceedings and a perhaps apocryphal tale about "Edison [making] his first continuous strip movie on a strip film, using Muybridge's motion photographs of a running horse."²⁸¹ Sadly, the two never got around to "screening" their Muybridge retrospective.²⁸²

Nevertheless, in these various articles Nietzsche describes his work at the University upon the United States' entry into WWI, undertaken in league with McKenzie. Here, in a strange way, Nietzsche acts as a sort of liaison bringing together the efforts of Muybridge, White, McKenzie, and the Philadelphia film studio head Siegmund Lubin:

When the United States entered the War in 1917, I arranged with our Physical Director, the late R. Tate [*sic*] McKenzie, to take motion pictures showing activities designed to be useful to our troops, and analyzed by the same method employed by Muybridge. For this purpose we used internationally known athletes such as Dr. Mason, Howard Berry and Mike Dorizas. Lubin loaned us a powerful battery of twenty-four flood lights and other expensive equipment; and these University-made films were shown many times in army training camps.²⁸³

Although this particular article does not go into great detail in terms of the filmed motion studies, an item in the Nietzsche papers that appears to be a prepared statement for a publicity release gives us a better picture of the joint effort between Nietzsche, McKenzie, and US Army Medical Corps. In an attempt to translate the movements of highly successful athletes to military matters such as

²⁸¹ Nietzsche, "Philadelphia: Birthplace of the Moving Pictures," 28.

²⁸² Thom Andersen's *Eadweard Muybridge, Zoopraxographer* would be directed and screened as a Master's thesis project (UCLA) some twenty-five years later, in 1975—although one surmises it is about as far from what Leigh and Nietzsche imagined, in many respects.

²⁸³ Nietzsche, "Pennsylvania Pioneering in the Movies," 40. Howard Berry was a three sport athlete at Penn, a noted pentathlete, and future professional baseball player. Dorizas, Penn class of 1916, was nicknamed "The Big Greek," and participated in the 1908 and 1912 Olympics. In 1917 he had just earned his M.A. at Penn (1916), and would later earn his doctorate from same (1924). "Dr. Mason" is one J. Leonard Mason, M.D., who acted as a Physical Director, gymnastics instructor, and wrestling instructor at Penn starting in 1904. See *The Provost's Report for the Year Ending August 31, 1906* (Philadelphia: University of Pennsylvania, 1907), 217-20.

training, posture, gait, and the handling of injury, Nitzsche et al paired Muybridge's approach with an impulse more Mareysian, as it were. Yet they also paired their own motion picture work with reproductions of Muybridge's originals:

Mr. Nitzsche had arranged with the Bureau of Commercial Economics of Washington, D.C., to reproduce the original Muybridge pictures, of which he loaned them a collection of more than 32,000 prints [...] [A]nd since the Muybridge experiments were conducted at the University of Pennsylvania, the [...] Bureau pointed out to the Army officials the advantages which would be derived from having any new experiments along this line made at the University.²⁸⁴

For the "modern" studies, Nitzsche and McKenzie's team, which also included members of the University's Gymnastics program and its Athletic Trainer, constructed an 8' by 50' black background with a grid structure similar to Muybridge's. They apparently had their models perform in the nude, although it isn't known whether they also asked their athletes to undertake the training maneuvers while clad in military uniforms. We do know a bit more about the technical specifications of the motion picture work, however, which read as adapting the somewhat-standard 16-fps of 1917 with an aesthetic nearer to the animal locomotion sequences:

They were taken with a normal motion picture camera having a speed of about sixteen pictures to the second, and each picture then repeated seven or eight times so that when projected on the screen, they would show, first the normal motion, and second the motion of the athlete or subject, seven or eight times slower than normal; thus, the picture would show very distinctly every muscle brought into play, and every action of the subject.²⁸⁵

Furthermore, in terms of time-keeping and measurements, the crew also made use of "a specially made galbrith [*sic*] time clock" for accuracy. This was perhaps another impulse more in the vein of Marey than Muybridge, since the former's photographic work often included a time-keeping device in frame, whereas Muybridge's electrical timer, which governed the sequential exposures, was not indexed in frame (nor was it exact). Sadly I cannot source these films, despite the

²⁸⁴ "Motion Pictures taken at U. of P. for Cantonments," UPA9 Box 3 Folder 13.

²⁸⁵ Nitzsche, "Motion Pictures taken at U. of P."

suggestion that they were shown “widely” at various training camps. Nietzsche also suggests, rather off-handedly, that he was “in charge of Liberty Bond Mass Meetings, and had assigned to [him] many famous athletes and stars of the silent films, including Bill Hart, Charlie Chaplin, Douglas Fairbanks, and Mary Pickford.”²⁸⁶ Filmed excerpts from the Liberty Bond tours of Chaplin, Pickford and others are still circulating on the web, and one wonders how much—or whether—Nietzsche and Lubin had a hand in this cinematic promotion.

Nietzsche’s letters to Leigh contain some of his more candid remarks about his self-imposed championing of Muybridge and—perhaps equally so—Penn’s role in shepherding the zoopraxographer’s project. Toward the beginning of their most involved correspondence—and more than five years after his official role at the University had ended—Nietzsche clarifies his campaign, “You may be interested to know that I was one of Muybridge’s early admirers who saw the possibilities of his experiments. I wrote quite a number of articles for magazines and newspapers, and thus tried to keep for him the credit due him. In this I was fairly successful bringing Muybridge into the picture whenever possible.”²⁸⁷ (We note, somewhat in passing, the slippery syntax here of “keep for him”—to keep it *with* Muybridge or to keep it (in his stead) *for* him?) In the same letter, Nietzsche recounts yet another collaboration between Lubin and the school’s athletes, telling Leigh that Lubin’s associates “took thousands of feet of film for me of University life *and of all phases of athletics.*” But Nietzsche the recorder was perhaps more adept than Nietzsche the motion picture archivist: “This collection I had stored in a place where they

²⁸⁶ Nietzsche, “Philadelphia: Birthplace of the Moving Pictures,” 14. Nietzsche also addresses the 1917 training films in this published article.

²⁸⁷ George E. Nietzsche, Letter to Janet P. Leigh, December 30, 1949. UPA9, Box 2, Folder 28.

disintegrated and became useless, much to my chagrin.”²⁸⁸ He also, around the same time (1917), was moving forward with a film script about Muybridge’s “life and work” in league with Henry Ford’s Motion Picture Studio (the first failed attempt at a Muybridge “romance”) before WWI scrambled these plans. If Nietzsche was always aiming to place the Muybridge of Penn front and center while “repeating” certain of his approaches, there were also materials and opportunities consistently slipping out of his grasp—and ours, as it were—or into oblivion.

In 2005, the *Pennsylvania Gazette* returned again to the Muybridge origin story, albeit with a twist. Describing Penn’s Cinema Studies program as one more focused on film history and theory than production, the author suggested that while production courses were available at the school (“through the fine-arts department, however”), the more pressing matter in the early 2000s was the increase of cinema studies and visual literacy offerings.²⁸⁹ Most interesting, however, is the yarn spun about Penn’s first missed production opportunity a century prior. In 1903, none other than Ezra Pound was “costumed in flowing dress along with the other Greek maidens in the cast of *Iphigenia Among the Taurians*,” performing a run of the play at the Pennsylvania Academy of Music. As the legend goes, Nietzsche—in his capacity as the “play’s business manager”—had tapped the Lubin Co. to make a motion picture out of *Iphigenia*, which had been a “resounding success” on the stage. William Lamberton, then head of the Greek department, took umbrage. According to the *Gazette*, Lamberton asked whether Nietzsche “mean[t] to take moving pictures of this beautiful production and have it hawked around ‘Nickelodeons’ in all parts of the country?”²⁹⁰

²⁸⁸ Nietzsche puts things slightly differently in “Philadelphia: Birthplace of the Moving Pictures,” to wit: “This collection of films I had stored in one of the Dormitory basements where they became useless through carelessness and neglect, much to my consternation” (13).

²⁸⁹ Susan Frith, “Now Playing on the Big Screen,” *The Pennsylvania Gazette*, last modified January 5, 2005, <https://www.upenn.edu/gazette/0105/feature012.html>.

²⁹⁰ Frith.

Nitzsche replied in the affirmative, and Lamberton vetoed the motion. Thus the university “misses its chance to host the first film with a plot made in America,” and this event “symbolizes Penn’s past reluctance to embrace the medium that it helped to launch.”²⁹¹

George E. Nitzsche had what Valéry once referred to as the “strange mania of always wanting to begin at the beginning.”²⁹² For him, the beginning of Muybridge’s major influence on motion pictures was at Penn; and the beginning of Penn’s long flirtation with motion picture production and cinema studies was inaugurated with Muybridge. In a way, everything subsequent was retrofitted into that narrative. It is easy to see why. Although Nitzsche later gave many of the Muybridge negatives to the Eastman House, he aggregated and preserved an immense body of archival material relating to Muybridge’s tenure at Penn, as well as material generated through correspondence, publications, and visual media, all of which found the zoopraxographer as their centrifugal source, and which would be folded back in to the collection. Nitzsche was the University’s first and only “Recorder,” and in a strange fashion this links him with the world’s first and only zoopraxographer. Nitzsche’s project, although obsessed with “firsts,” was one of synthesis through and through.

As was Muybridge’s, we might say. Thom Andersen’s film dedicates its final section to “Synthesis,” in a way referring both to the filmmaker’s own synthesis of the Muybridge saga and the act of synthesizing the motion studies via optical printing and cinematic editing. What emerges, rather, when we attend carefully to Muybridge’s milieu in this period—and, more generally, the

²⁹¹ Frith. A version of this tale appears in multiple of Nitzsche’s mid-century articles on Penn’s role in the genesis of cinema.

²⁹² Paul Valéry, *Cahiers/Notebooks I*, trans. Paul Gifford et al, ed. Brian Stimpson (Frankfurt am Main: Peter Lang, 2000), 82.

various milieux (sporting, scientific, artistic) interacting in and around his project—is less synthesis than dispersion, less exhaustive analysis than a revealed network of multifarious, fluid, and oft-provisional relations. What Nietzsche could not have known was that in aiming to place Muybridge at the *beginning* of cinema’s story, he actually placed him in the middle (temporally and spatially) of such historical elements. His holdings and archival pursuits sent me outward from this center, and as a result I found an incredible amount of contextual information. Such information does not always clarify Muybridge’s project as such, but it certainly reconfigures our understanding of how these metastable elements informed one another, including in the years before and after the *Animal Locomotion* studies were undertaken.

Thus J. William White and R. Tait McKenzie, among others, emerge as sporting mediators, responding to and reshaping a certain understanding of sport and athletics which was much more elastic and mutable than traditional narratives would have us believe. And Penn’s various sporting undergraduates, the “flip-flopping [...] gay, jolly jokers,” are seen anew: as expressive bodies in the middle (milieu) of a shifting sense of athleticism—not fully regimented nor fully free, but perhaps queer—they speak to us as if for the first time, whether in the kinetic expressions of sequence photography or the exuberance of a séance that pivots, from a center, toward both past and future.

When I think of Nietzsche’s injunctions against “explanation,” or his frustration with the certainty with which we count “isolated” elements as “explaining” a continuum, I think of how much this position speaks to both the photochemical-technical array of Muybridge’s camera battery and the broader relationship between sport and the moving image in this period. If, considering these various “pushes,” one wished to preserve Simondon’s more exact description of the “associated milieu,” it would be simple to address the process whereby the technology is

individuated via an express engagement with sporting bodies. This would be closer to Simondon's discussion of the associated milieu as the "simultaneously technical and natural milieu," or "a certain regime of natural elements surrounding the technical being, linked to a certain regime of elements that constitute the technical being."²⁹³ Although the trip-wire automatic captures of Palo Alto are the most apt instances of this, examples from Penn nonetheless abound. Changes made to the structure, arrangement, and number of devices in the camera battery frequently came about with athletic display in mind.²⁹⁴ One also notes how many of the sequences vary in their general framing or aspect ratio, but also that there is often variation in framing *within* sporting sequences, as if to account for rapid kinetic shifts or the necessity of negative space to cover movement of body or implement. Furthermore, since lens length must have been, for Muybridge, a rather independent variable, studies that needed to account for such expansion and contraction (high-jump, pole vault, &c) had to either adjust camera distance, radically crop the final image, or both. Available information suggests that Muybridge primarily used Scovill cameras and Dallmeyer lenses. If Dallmeyer Co. of London did, in fact, supply him once again with lenses during his time in Philadelphia, it would follow that it was because Muybridge needed to be able to array between twenty-four and thirty-six of the same (trustworthy) lenses. Hans Christian Adam, in his introduction to a collection of Muybridge's oeuvre, suggests that the focal length of these lenses were "either 20 or 30 centimeters," and "the distance between the lateral cameras and the moving object was about 52 feet."²⁹⁵ The Dallmeyer 2A portrait lens of the period had a focal length of between 300mm and 350mm, while the 2B was somewhat shorter, at 220mm. A letter from a

²⁹³ Simondon, *Mode of Existence*, 59.

²⁹⁴ See e.g. Braun, *Eadweard Muybridge*, 196-97; Jesús Constantino, "Seeing Without Feeling: Muybridge's Boxing Pictures and the Rise of the Bourgeois Film Spectator," *Film & History* 44, no. 2 (2014): 68-71.

²⁹⁵ Hans Christian Adam, "Muybridge and Motion Photography," in *Eadweard Muybridge: The Human and Animal Locomotion Photographs*, ed. Hans Christian Anderson (Cologne: Taschen, 2010), 13.

W.M. Latham to Burk in March 1890 discusses the acquisition of four Dallmeyer 2A portrait lenses, along with caps and diaphragms, from Burk and the “Committee” in the aftermath of *Animal Locomotion*.²⁹⁶ And although the Muybridge collection at Penn houses other lenses by the likes of Zeiss and C.P. Coerz, it seems likely that sequences requiring a full battery of cameras put Dallmeyers to use, since the company had supplied him with a bevy of lenses for previous motion studies.²⁹⁷ Muybridge, for his part, speaks only of lens diameters and “equivalent focus” distances, making it extremely difficult to parse these matters.²⁹⁸

In chapter four I will return to questions of focal length, lens speed, aspect ratio, and kinetic movement in both Muybridge’s work and the cinematic experiments undertaken in official Olympic films. These are crucial technical components of the process, and they require us to look very closely at measurements and particulars. They help us to understand the associated milieu in

²⁹⁶ W.M. Latham letter to Rev. Jesse Y. Burk, June 3, 1890. UPT50 M993, Box 62, Folder 6.

²⁹⁷ See Haas, 110; Braun, *Eadweard Muybridge*, 137, 170.

²⁹⁸ One wonders how it is possible, given Muybridge’s taxonomic obsessions and the wealth of material generated about his time at Penn, that we can still be in the dark about so many lensing particulars. Braun, in *Eadweard Muybridge*, speaks about the Dallmeyer lenses being used in Palo Alto, and suggests that “originally the publication [of *Animal Locomotion*] was to be supervised by J.B. Lippincott, whose outlay of \$5,000 had made it possible for Muybridge to buy new lenses in London (these were later sold to reimburse Lippincott)” (186). This jibes with my discussion, above, of certain Dallmeyer 2A lenses being sold to what seems to be a W.M. Latham, although it is unclear if this is the Woodville Latham who will be one of the major players in the next chapter. It is clear, though, that Muybridge used different lenses for different camera arrays—and different kinetic subjects. In *Descriptive Zoopraxography*, he suggests that “slow movements are usually photographed with lenses of 3 inches diameter and 15 inches equivalent focus,” and “rapid movements are usually photographed” with certain camera batteries with “smaller lenses.” One of these portable batteries (of twelve cameras) is described as using lenses “which are 1¼ inches diameter and 5 inches equivalent focus.” One of the few (perhaps the only) mention of *focal length* comes amid a discussion of a camera battery using 13 lenses, 12 of which are effectively focused via the main lens “with a focusing screen.” All of these lenses have “the same focal length.” There is no mention of Dallmeyer lenses (or those from other brands), nor is there clarification about the camera model, whether Scovill or from a different maker. From what I can glean, Dallmeyer 2A lenses seem to correspond to the specifics of Muybridge’s 3-inch diameter lens, and the 5” equivalent focus lens may have been a smaller Dallmeyer model. Dallmeyer 1B lenses are often marked as having 6” equivalent focus. Equivalent focus is often listed during these years instead of focal length, but they are not the same. The former refers, it seems, to differences between lenses of the same focal length with respect to their “optical center,” which is rather more a theoretical measurement than a practical one (but no less crucial). As far as I know, none of the existing studies of Muybridge’s work at Penn have clarified fully the terms of his lens setups. It could also be the case that these portrait lenses were less integral to the studies than we think, despite their being sold to appease Lippincott. For more on lenses of the period, see <http://www.thedallmeyerarchive.com/Records/lensident/portrait.html>.

its specific form, or the technological individuation that is inseparable from its conditioning by the “natural”—in this case sporting—milieu it is capturing. However, this chapter has been more concerned with milieux in a thicker, more diffuse sense. As I have argued, a renewed look at the flux of sport and athletics in the years before, during, and after Muybridge’s *Animal Locomotion* work places many of the 781 plates themselves in new relief. Familiarity with these broader acts of mediation and measuring may not make the sporting bodies on display move differently, no matter how many times we revisit them. But it adjusts the force with which they move.

3.0 “Supplies of Slack”: The Latham Loop, Long Takes, and Contingency

And now the moment. Such a moment is unique. It is, of course, brief and temporal, as moments are, ephemeral, as moments are, passed, as moments are, in the next moment, and yet it is decisive, and yet it is filled with eternity. Such a moment must have a special name. Let us call it: the fullness of time.

-Søren Kierkegaard²⁹⁹

Time, like the possibility of death, is the invisible adversary of which the boxers—and the referee, the seconds, the spectators—are keenly aware. When a boxer is “knocked out” it does not mean, as it’s commonly thought, that he has been knocked unconscious, or even incapacitated; it means rather more poetically that he has been knocked out of Time.

-Joyce Carol Oates³⁰⁰

The year is 2015, and filmmaker Ryan Coogler has a problem. Coogler, the young director at the helm of *Creed*, and his cinematographer, Maryse Alberti, ASC (American Society of Cinematographers), are discussing how to preserve a sense of realism in the film’s first major fight sequence without sacrificing a dynamic and “original” approach. It has been nearly four decades since Garrett Brown ran stride for stride with Sylvester Stallone up those famed Philadelphia steps in *Rocky*’s most emblematic scene, aided by his newly minted Steadicam and a flair for experimentation.³⁰¹ In the interim, there have been no less than five other entries to the *Rocky*

²⁹⁹ Søren Kierkegaard, *Philosophical Crumbs*, trans. M.G. Piety, in *Repetition and Philosophical Crumbs* (Oxford and New York: Oxford University Press, 2009), 95.

³⁰⁰ Joyce Carol Oates, *On Boxing* (New York, London, Toronto and Sydney: Harper Perennial, 2006), 15.

³⁰¹ See Bird, ““Dancing, Flying Camera Jockeys,”” 51-53.

franchise, each offering, at best, yet another variation on the theme (and cinematography) of the first—excepting perhaps *Rocky IV*, so unabashed in its Cold War hyperbolics that its visual rhetoric at least demands attention. Ultimately, Coogler and Alberti settle on a long take Steadicam shot to capture the opening two rounds of *Creed*'s first major fight, with Alberti's camera (operated by Ben Semanoff) lunging in and out of the action, shifting between carefully framed beats and more riffing, more improvisational moves, allowing the pressure of time to be felt.³⁰² The long take—clocking in at nearly four minutes—rather predictably garners much praise in the critical sphere, referred to as a “bravura” flourish,³⁰³ one capable of “bringing the action alive,”³⁰⁴ and lauded for “up[ping] the technical ante” while forging an “immensely immersive experience.”³⁰⁵

To invoke originality is always to sound an alarm bell. This does not mean that the term “original” is never earned. Rather, it begs us consider the field within which an object or thing—whether a work of art, a single shot, a person, an idea—is said to be original, *sui generis*, one of a kind. In other words, to say that something is original, technically or stylistically, is to say as much (if not more) about what counts as making up the stuff of its contextual relief as it does about the outstanding element in question. Bracketing for the moment Deleuze's sustained inquiry into difference-in-itself and repetition-for-itself, we might point to his simplified paraphrasis of Lévi-Strauss on the two primary modes of thinking about difference and, by extension, originality:

It was Lévi-Strauss, I think, who showed you had to distinguish the following two propositions: that only similar things can differ, and only different things can be similar.

³⁰² I would be remiss, in a chapter dedicated to highlighting temporal extension and compression, not to mention that in *Creed*'s long-take “each round was a ‘movie round,’ [...] meaning it was a minute and a half instead of the full three—with a one-minute break between rounds,” as Alberti reports. Neil Matsumoto, “The Next Generation,” *American Cinematographer* 96, no. 12 (2015): 32.

³⁰³ David Sims, “*Creed* Lands Every Punch,” *The Atlantic*, November 24, 2015, <https://www.theatlantic.com/entertainment/archive/2015/11/creed-movie-review/417351/>.

³⁰⁴ Kenneth Turan, “‘*Creed*’ is a Fresh Retelling of ‘*Rocky*’ that Has Us in its Corner,” *Los Angeles Times*, November 24, 2015, <https://www.latimes.com/entertainment/movies/la-et-mn-creed-review-20151125-column.html>.

³⁰⁵ Andrew Barker, “Film Review: ‘*Creed*,’” *Variety*, November 8, 2015, <https://variety.com/2015/film/reviews/creed-review-michael-b-jordan-1201640507/>.

One proposition says similarity's primary, the other says things themselves differ, and differ above all from themselves. Straight lines are all alike, but folds vary, and all folding proceeds by differentiation.³⁰⁶

In *Dark Deleuze*, Andrew Culp picks up this thread and suggests that these two propositions are reducible to those of “dialectics—presupposing a primordial identity behind differences” and the establishment of “contraries—difference primary to identity.”³⁰⁷ Where one chooses to position difference, then, necessarily conditions what sort of charge originality will accrue in both aesthetic judgments and historiographical accounts of progress.

Returning to *Creed*'s major (extended) moment, let us consider how best to frame the much-ballyhooed long take vis-à-vis similar instances from the pantheon of the boxing film. It has been established that there exists a link, however basic, between Coogler and Alberti's performative camerawork and Brown's flourish from 1976's *Rocky*. In the main, both employ the Steadicam to great, albeit distinct, effect; both generate a type of dynamism made possible by the wearable camera technology, even if by now the experience is firmly entrenched in the film reception lexicon; and both could be referred to as the emblematic shots of their respective films. These are hardly the only examples of well-known long takes in Hollywood cinema taking place within and/or around the boxing ring. In fact, pugilism and its pageantry seem to call for elaborately staged camerawork or shots of extended duration. Scorsese's *Raging Bull* (1980) opens with a two-minute long static shot which functions as the film's title sequence. There are a number of formal elements that make this shot itself “unique” with respect to the other long takes under

³⁰⁶ Gilles Deleuze, *Negotiations: 1972-1990*, trans. Martin Joughin (New York: Columbia University Press, 1995), 156.

³⁰⁷ Andrew Culp, *Dark Deleuze* (Minneapolis: University of Minnesota Press, 2016), 19. Since part of Culp's project is to insist on the *contrary* in place of the *opposite*, and to render Deleuze (and Guattari, after a fashion) as “dark,” here i.e. to refuse “such middling compromise [which] is the greatest tragedy of Deleuze and Guattari's rhetorical presentation of what appear to be dualisms,” I cannot follow his “conspiratorial” thread very far at present. For Culp's section on cinema specifically (“The Power of the False, Not the Forces of Bodies,”) see 60-63.

discussion here—e.g. shooting at a very high frames-per-second rate, the use of a fixed camera— but it shares with them the role of an emblematic image. Scorsese and Michael Chapman, ASC frame Jake La Motta (Robert De Niro) within a grid comprised of ring-side roping, the vectors of architectural supports, and the geometric canvas itself, with the occasional flashbulb winking from out of the crowd’s haze, arcing brilliantly before being sucked back to its source-less zone. The shot is both visually resplendent—atmospheric, hypnotic, perhaps dreamlike—and narratively rich, if only in the sense of prolepsis. Robert Kolker writes: “On the stage of a cheap nightclub, in the ring, or in a domestic space, La Motta can only give or receive abuse.”³⁰⁸ This much might be true. But, as we will see time and again, La Motta is also an accomplished sadomasochist, and the film’s opening long take signals as much, with its mixture of nightmarish and repetitive motion, dreary surroundings, and the very act of *shadow boxing*.³⁰⁹ Fighting the imaginary opponent, or the (split) self?

³⁰⁸ Robert Kolker, *A Cinema of Loneliness*, 3rd ed. (New York: Oxford University Press, 2000), 212.

³⁰⁹ Cf. David Evans Jr., “Shadow Boxer,” in Robert Hedin and Michael Waters, eds., *Perfect in Their Art: Poems on Boxing from Homer to Ali* (Carbondale, IL: Southern Illinois University Press, 2003), 71:

Always move.
Dance in the light,
in the smoke. [...]

I can win
my way out—
hammer through it all.

Look at the speed,
the blurring speed.
Look at the cool head—

the head of that shadow
weaving on the wall.
Listen to it.
Listen.

The Copacabana long take in *Goodfellas* (1990) is certainly the most famed in Scorsese's oeuvre, and it makes the short list of celebrated "oners" in film history.³¹⁰ It is striking, however, that one of *Raging Bull's* other long takes—this time aided by the Steadicam, as was the Copa shot—is rarely spoken of with anything close to the same reverence. The fight scenes in *Bull* are of course highly stylized, and each fight sequence, whether of a single match or a montage of bouts, foregrounds its own distinct formal signature via specific lensing, quality of camera movement, or editing practice.³¹¹ Coverage of the bout in question here, a title fight between La Motta (as challenger) and Marcel Cerdan, begins with a medium two-shot of La Motta and his brother Joey (Joe Pesci), the former warming up by pummeling the latter's cushioned midsection while two other cornermen look on. Once the fighter's ceremonial hood is fashioned into place, Scorsese opts to weave backward with the Steadicam through the labyrinthine arena tunneling, the wider-than-normal lens causing the interior's piping and sharp corners to warp snugly around La Motta and his team, the space at once claustrophobic and almost prescriptive as pertains to the

³¹⁰ See, e.g. John Gibbs and Douglas Pye, "Introduction 1: The Long Take—Critical Approaches," in *The Long Take: Critical Approaches*, eds. John Biggs and Douglas Pye (London: Palgrave Macmillan, 2017), 9. In the words of Gibbs and Pye, "Beginning in the 1970s, the introduction of the Steadicam was decisive in making possible virtuoso long takes with elaborate camera movement that would have been impossible a few years before (among the most frequently cited examples shot on film are Stanley Kubrick's *The Shining* (1980), Henry and Karen's entry into the Copacabana nightclub in Martin Scorsese's *Goodfellas* (1990), and the opening of Robert Altman's *The Player* (1992)." Although the Steadicam certainly allowed for *novel* or transformed uses of the long take and embodied camera movement, it should not be reduced to a tool capable of improving on or rendering obsolete antecedent approaches to the traversal of cinematic space. Anyone familiar with the opening of Welles' *Touch of Evil* (1958)—which, it merits mention, Gibbs and Pye certainly are—will agree. Also see Bird, "Dancing, Flying Camera Jockeys," 60-61, for a nuanced discussion of how certain "additional components" affecting or attached to the Steadicam or Panaglide in this period (1972-85) make clear the mutability (and fallibility?) of the device.

³¹¹ That *Raging Bull's* fight scenes operate via a sort of game-logic, whereby Scorsese and Chapman impose formal "strictures" within which they can then play—not unlike, perhaps, the different *styles* of fights and fighters, or the retrospective narration of a fight itself—seems obvious enough, but it is an observation supported by Chapman across multiple interviews, including the following excerpt from the film *Visions of Light* (1992): "We had about, God I don't know, *dozens* of fights, and we had a different style for each one. And [...] one was all gonna' be like *this* and like *this* [mimics framing from head-on and side profile], and like *that* with a fairly long lens, one was gonna' be all following him around; one was gonna' be all Steadicam—he [the operator] started in the dressing room, he walks all the way with him [to the ring], we lit the whole thing and he stands on a big crane and the crane lifts him up in the air and all that. It was great fun...it was wonderful fun." *Visions of Light*, dirs. Arnold Glassman, Todd McCarthy, and Stuart Samuels (AFI, 1992).

ritualized entrance. Up and into the arena proper and we are treated to a sweeping horizontal pivot of nearly 180°, a move paralleled rather markedly by a two-fold swelling of both the crowd and the non-diegetic score. From here the camera, after tracking the group through the onslaught of rowdy fans, leaves the fighter and his seconds to obtain a slightly higher and more removed vantage from just above ringside. While the move does not totally “let go” of La Motta—it is more of a reframing than a shift in target, perhaps—there is still a curious link to the logic of the Copa shot, wherein the take ends with a sort of release and re-approach to its protagonists. If there is a rhythm here to be read across the two shots, it is of characters entering an overwhelming and “magical” space, getting lost within its clamor, and ultimately settling in to the new environment.³¹²

If the ring entrance *plan séquence* from *Bull* evokes the rhythms and kinetic shifts of a (rather tame) roller coaster ride, watching the opening shot of Brian de Palma’s *Snake Eyes* (1998) might be likened to riding a malfunctioning tilt-a-whirl.³¹³ With far too many narrative beats, camera moves, and reframings to deal with here (to say nothing of the hidden cuts),³¹⁴ we can

³¹² It is worth pointing out here that both examples of the Scorsese long take also share a fascination with an exposure to a “novel” space and experience, deriving much of their charge from the characters’ entrance to a world of overwhelming sense experience. In terms of boxing, there is certainly much to be said about the function of ritual entrances and the mutual acceptance by fans and participants that a space has been “made” magical, sacred, or (at least) juridical as pertains to the temporary aegis of the officiating crew. On the link between sporting entrances of the ancient past and those of today, see Dombrowski, 21: “The athletes would make a grand entrance in front of the fans through a tunnel (*krypte esodos*) passing from darkness into the light of the public area to the roar of the crowd. As [Stephen] Miller aptly puts the point, ‘The moment is dramatic—and magical. Athlete and spectator transcend their usual selves. For a few moments everyday life is left behind.’ Contemporary athletes and fans do not have to try hard to recreate this magic in their mind’s eye.”

³¹³ See Tom Gunning, “The Cinema of Attractions: Early Film, Its Spectator and the Avant-Garde,” in *Early Cinema: Space, Frame, Narrative*, ed. Thomas Elsaesser (London: BFI, 1990), 59-61. We may point here to Gunning’s seminal essay not only in terms of *Snake Eyes*’ instance of a re-emergent cinema of “tamed attractions,” perhaps (61), but also for his insistence on the fairground metaphors favored by Eisenstein in his own use of the term: “Then, as now, the ‘attraction’ was a term of the fairground, and for Eisenstein and his friend Yutkevich is primarily represented their favourite fairground attraction, the roller coaster, or as it was known then in Russia, the American Mountains” (59).

³¹⁴ Is it still a “long take” if it is stitched together from a series of (admittedly also long) takes? If the viewer isn’t aware of the patchwork? The importance of these question isn’t matched by the space given here for my response at present, but for now I am including the *Snake Eyes* “shot” as a long take for its thematic ties to the previous shots as well as its stylistic links to the other Steadicam examples.

restrict our observations to the following: de Palma and Stephen H. Burum, ASC use the Steadicam—operated by Larry McConkey, he of the aforementioned *Copa* long take—to craft a twelve-minute shot of byzantine structure, one which takes place in and around an Atlantic City arena at the onset of a boxing match. As this chapter will soon turn to technological developments as well as the logics of spectator desire (next to the ring, at the cinema) vis-à-vis capturing/witnessing what we might term *decisive moments*, it is of interest that *Snake Eyes*' long take in fact dedicates very little of its duration to the events in the ring. That is to say, much of the twelve minutes leading up to an assassination—and a knockout—which kickstarts the film's conspiracy restricts our ability to see what is happening in the pre-fight solemnities and the fateful first round. We witness the antics and reactions of various ringside figures, and we sense the pressure of time building to an anticipated event. But de Palma seems ever to be directing his camera away from or across the ropes. In a sense, this is yet another peculiar ornament of form in a shot which revels in excess.³¹⁵ It will also set up the “game” of the narrative to come, which will involve a sort of visual reconstruction project not unlike the aural situation from the director's own *Blow Out* (1981). Immaculately structured, not unlike the long take from *Creed*, but also quite antithetical—or contrary—to the latter in terms of function. The camera rolls and rolls, but what do we (not) see? Here the decisive moment is, for now, passed without being made present. Always already past, it will fall to other “shots”—of the TV broadcast, in this case—to fill in the blank.

The films put forth here as a representative grouping, on the one hand a logical through-line of elements (technical, thematic) from *Rocky* to *Creed*, on the other a kind of *set* notable,

³¹⁵ See Kristin Thompson, “The Concept of Cinematic Excess,” in *Narrative, Apparatus, Ideology: A Film Theory Reader*, ed. Philip Rosen (New York: Columbia University Press, 1986), 130-42. There is still much to be appreciated in Thompson's treatment of excess as “perceptual play” and the frustration of apparently “motivated” technique, not least vis-à-vis moving images which consistently develop experimental approaches to render and convey sport experience, but not always to “simplify” or merely reproduce it.

despite these similarities, for their radical disparateness, return us to questions of originality and differentiation. Genera if not yet *generic*—are these all “fight pictures”?—but a bit unwieldy in their specifications. Excepting *Creed*, I have arrayed the films above in terms of their release dates. Why? It certainly seems the obvious choice, the move to track or trace across a temporal sequence, and not for want of reasons is it the standard model for histories of film style. Yet this approach is also necessarily grounded in the belief that were we to go back far enough we would locate an inaugural event that might explain or at the very least condition the rest of the series. There must be an origin story, after all.

There *is* a simple opening act which kicks off this narrative, known—in however abridged a form—by nigh everyone who has taken a course in film history: the Latham Loop technique was arrived at in response to the desire (aesthetically, economically) to film entire rounds of boxing without missing any of the action. By rearranging camera and projection systems such that the intermittent movement no longer produced too much strain on the feed reel but rather operated in between slacked loops of celluloid film, members of the Latham enterprise radically increased the amount of film stock that could pass through the gate without stopping. The Loop in 1895 had a hand in generating what might be called the first “long take” in cinema, the snare shot which signaled the rise of the feature film and is reflected (rehearsed), time and again, in shots that survey the ring and its environs in the face of the contingent. It also led shortly thereafter to what is sometimes referred to as the first “feature film” in cinema’s history,³¹⁶ a nearly two-hour long rendering of a high-profile prize fight, titled *The Corbett-Fitzsimmons Fight* (1897). And while Woodville Latham’s patent, US No. 707,934, would be granted long after the Latham Loop had

³¹⁶ Luke McKernan, “Sport and the First Films,” in *Cinema: the Beginnings and the Future*, ed. Christopher Williams (London: University of Westminster Press, 1996), 111.

made its way into a range of different cinematic systems (1902), its language still serves to generate new insights on the philosophical problems of cinematic temporality as well as the theoretical purchase of cinematic technology and materiality. Latham's assertion that the Loop method, structuring and maintaining the "supply of slack" above and below the gate, means that the "machine" could theoretically thus support a film strip of infinite span ("any desired length") makes clear its centrality to any discussion of the long take and film's imaging of contingency.³¹⁷ In this chapter I would like to hold in suspension two critical approaches, not necessarily placing them at odds with one another or even considering them dialectically. There is much to the claim that boxing films and the Latham Loop "created" cinema as we (think we) know it—this will be the position taken by Luke McKernon—and that the genre thus consistently rehearses that foundational event; we can also marshal plenty of evidence for the case that the boxing film's originary status is at best accidental, and so far removed from the aforementioned films in mode and stylistic "sophistication" as to barely register in the discussion. McKernan's postulate is admirable in that it holds fast to the role played by sport in "creating" cinema without losing sight of the complex factors in the late Victorian era that contributed to the warp and woof of the moving image. But to place boxing in the subjective position of creator, of an entity that *conditions* cinema or aspects of it, might actually be to swing too far to the other pole in terms of how we theorize the relationship between athletics and cinematic technology. An analogy to the loop itself follows: too little slack, and the tension snaps the strip; too large a loop, and we have a very messy reel of celluloid. Put otherwise, we are once again considering sport and the moving image as metastable fields which interpenetrate and are each changed by the relation. And the Latham Loop's

³¹⁷ Woodville Latham "Projecting Kinetoscope," United States, 707,934, Filed June 1, 1896, Issued August 26, 1902, <https://patents.google.com/patent/US707934A/en>.

emergence is at once integral to such a mutual coming-into-being and more diffuse in its historicity.

“What is found at the historical beginning of things is not the inviolable identity of their origin; it is the dissension of other things. It is disparity.”³¹⁸ For Foucault, in other words, the origin tempts us with the “essence of things” while causing all sorts of “accidents” and “minute deviations” to fall into the shadow which it casts. As in the previous chapter, an admixture of media archaeology and the genealogical requires us to be mistrustful of the “distant ideality of the origin,”³¹⁹ asks us not to rid ourselves of the foundation but rather to see in it an event already different, *differential*, untethered. It is tempting to cast the Latham Loop as a technological “leap” which sent cinema—thanks in part to sport—down its ultimate path; it is equally tempting to see in the aforementioned long-takes a progressive through-line in “originality” wherein these “bravura” shots travel a linear path in film style, finding the static long takes of 1890s boxing bouts as their first iterations. Hence the decision here to consider these objects as a set: there can be sequencing—there must, to an extent—but within the set a shift in perspective allows for the consideration of novel configurations and, perhaps, exponentiality through repetition.

Is this what Deleuze means when he says, of repetition, that “This is the apparent paradox of festivals: they repeat an ‘unrepeatable.’ They do not add a second and a third time to the first, but carry the first time to the ‘nth’ power”?³²⁰ His approach to the initial or the inaugural here is quite profitable when read next to Foucault, since it preserves a sense of originality without casting that instance as a static entity that subtends all subsequent iterations and remains

³¹⁸ Michel Foucault, “Nietzsche, Genealogy, History,” trans. Donald F. Bouchard and Sherry Simon, in *The Foucault Reader*, ed. Paul Rabinow (New York: Pantheon, 1984), 79.

³¹⁹ Foucault, “Nietzsche, Genealogy, History,” 80.

³²⁰ Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 1. Among the other early citations of repetition and the “exponential” are “Reflections, echoes, doubles and souls.”

stubborn in its singularity: the origin “repeats in advance” all of its repetitions, predicts but is changed by what follows. And we could do worse in terms of equivalences to the pugilistic prizefight than to invoke the festival. Oates, in *On Boxing*, puts things this way: “The fighters in the ring are time-bound [...] but the fight itself is timeless. *In a sense it becomes all fights, as the boxers are all boxers.*”³²¹ She wisely adds: “By way of films, tapes, and photographs it quickly becomes history for us, even, at times, art.”³²²

3.1 How We Got to US Patent #707,934: The Lathams *et al*

Although this chapter does concern itself with the passage of time, the long take, and boxing, it actually focuses very little or tangentially on takes of great length, or on “bravura” movements through space, covering much distance, or on bouts which seem to give new meaning to endurance. Rather, we are primarily interested in a very small material strip of film, perhaps three inches in length, or, rather, in how this strip—any strip—is folded, “looped,” and how such adjustments alter or introduce novelties into our relationship to cinematic time.

Unspooling this strip of film is no small historiographical matter, however. What is incontrovertible is that on 4 May 1895, Latham sons Gray and Otway, whom Ramsaye dubs “two gallants from Virginia,”³²³ arranged for the filming of a boxing bout between Charles Barnett and Albert “Young Griffo” Griffiths atop Madison Square Garden.³²⁴ The camera/projection system

³²¹ Oates, 15, emphasis mine.

³²² Oates, 15.

³²³ Ramsaye, *A Million and One Nights*, *passim*. Ramsaye spells the first name Grey, with an *e*, but most sources use Gray.

³²⁴ Deac Rossell, “A Chronology of Cinema, 1889-1896,” *Film History* 7, no. 2 (1995): 133; Charles Musser, *The Emergence of Cinema: The American Screen to 1907* (New York: Charles Scribner’s Sons, 1990), 95-96; Samuel

for the fight, dubbed the Eidoloscope—formerly the Panoptikon, by virtue of its “widescreen” capabilities—utilized a 51mm film gauge and a 4-perforation (henceforth “perf”) method.³²⁵ The lost film, *Young Griffo v. Battling Charles Barnett*, ran somewhere around four minutes in length, further separating itself from preceding films by virtue of its inclusion of what became known as the Latham Loop, “allowing continuous filming for eight minutes instead of the one minute separate rounds previously.”³²⁶ To clarify: it seems that the first three rounds were one minute in length, the fourth round two minutes, and the time between rounds totaling three minutes. As such, the Latham camera rolled for eight continuous minutes (around 1,000 feet of exposed film) before the end of the bout.³²⁷ *Griffo-Barnett* is thus the aforementioned long take which gets pride of place in the Loop narrative. Just under two years later, on 17 March 1897, former members of the Latham enterprise would film a highly anticipated and publicized prize fight between Bob Fitzsimmons and “Gentleman” Jim Corbett, pairing the loop method with a novel camera system (the Veriscope) to allow for continuous filming of between six to eight minutes before reloading; the three cameras attending the Corbett-Fitzsimmons fight thus captured the bout “uninterrupted,” resulting in a staggering final product of “11,000 feet of film, running nearly two hours.”³²⁸

Hawley, *The Fight that Started the Movies: The World Heavyweight Championship, the Birth of Cinema and the First Feature Film* (Conquistador, 2016), 161-65; and Dan Streible, *Fight Pictures: A History of Boxing and Early Cinema* (Berkeley, Los Angeles and London: University of California Press, 2008), 45-47.

³²⁵ Rossell, “A Chronology of Cinema,” 133; Musser, 94-99.

³²⁶ McKernan, “Sport and the First Films,” 110.

³²⁷ See Hawley, 162.

³²⁸ Streible, 60-62. For information on the amount of film “on hand” and (possibly) the total available and/or exposed film spread between the three Veriscope cameras, see Hawley, 231: “[Enoch] Rector had negotiated the purchase of 300,000 feet of custom-made stock from Eastman-Kodak at the end of December [1896], enough to film the fight and make prints. [...] The film they would use, *sixty thousand feet or nearly eleven and a half-miles*, was more than double what Rector had taken to Langtry [TX, to film a bout between Fitzsimmons and Peter Maher (Feb. 1896)]. Half was coated with Eastman’s most light-sensitive emulsion for use under an overcast sky. The rest was of somewhat-lower sensitivity for filming in direct sun. Whatever the weather, sunny or cloudy, Rector would have enough of either stock to film twenty-five rounds of action in duplicate, including the one-minute rest in between.”

The massive increase in the length of film stock—in terms of capacity, footage per take, and total yield—ultimately all comes back to those few inches of celluloid which at any given moment are looped near the camera gate. The process of generating and fine-tuning this loop method unfolded through the intervention of many hands, as the *fin-de-siècle* relationship between boxing and cinema would spawn innumerable camera and projection systems. In unpacking this interaction of metastable systems, which Vogan refers to as boxing and cinema’s “symbiosis,” it is necessary not just to enumerate stepping stones on the way to a “perfected” technological system with easily identified contributors and inventors, but also to examine the contingency of the process itself as well as competing claims of provenance and import. A year prior to *Griffo v. Barnett*, in 1894, the newly minted Kinetoscope Exhibition Company—made up of Otway, Grey, Samuel Tilden and Enoch Rector—had already been experimenting with novel means to capture boxing on film.³²⁹ In Ramsaye’s purple prose, “it was the interest of the blithe Lathams which started the motion picture along the sporty primrose path.”³³⁰ In analyzing this “sporty” path, it is interesting to consider that from the start the Lathams appear consistently to place an emphasis not just on the temporal potentials of cinema, but the spatial as well—in a dual sense. Along with the drive to allow for longer continuous filming and projection that would result in the Latham Loop, the Kinetoscope Co. played around with different magazine capacities, film gauges, and aspect ratios. As Musser reports, “[i]t may have been Otway Latham who proposed a solution” to the problem of pugilistic contingency,³³¹ and Ramsaye suggests that “Rector, working at the Edison plant, tripled the scope of the Kinetoscope, getting a capacity of one hundred and fifty feet of

³²⁹ Streible (29) adds J. Harry Cox as a “financial partner,” alongside Tilden, to a “group of speculators [who] lobbied Edison for the right to build a camera and viewer capable of holding longer strips of celluloid” prior to the company’s official formation.

³³⁰ Ramsaye, *A Million and One Nights*, 108.

³³¹ Musser, 82.

film.”³³² Dan Streible, for his part, paints a picture of Rector and W.K.L. Dickson, twin technicians, operating in the “previously secret research labs,” emerging ultimately with a kinetograph equipped with 150-foot magazine capacity.³³³ Throughout the following years, as we will see, the members of the Latham & Lambda Co. orbit would continue tweaking their cinematic canvas, as it were, experimenting with negative sizes of up to 63mm and aspect ratios of 1.7:1 and 1.85:1, the latter an almost 30% increase in relative frame width from the standards of the period.³³⁴

Whatever the case may be, the group would film two primary bouts in the summer of 1894, capitalizing on the increased reel capacity. By utilizing the 150-foot reel and somewhat drastically slowing down the frames-per-second rate, Dickson and William Heise filmed a six-round bout between Michael Leonard and Jack Cushing.³³⁵ It is always an uphill battle to parse early-cinematic frame rate concerns, not least since the shorts were not always projected or shown at the same speed with which they were photographed. However, the fact that Dickson and Heise were the cinematographers on *The Leonard-Cushing Fight* clarifies things somewhat. The Black Maria allowed for films of “approximately 40 frames per second,”³³⁶ a figure quite close to Edison’s desired standard of 46-fps. An 1895 *Leslie’s Monthly* article, “Wonders of the Kinetoscope” (penned by Dickson’s sister, Antonia), describes the functioning thusly: “As soon as the shutter closes the film is jerked forward one inch to await the reopening of the shutter, the process being

³³² Ramsaye, *A Million and One Nights*, 108.

³³³ Streible, 29.

³³⁴ See Leo Enticknap, *Moving Image Technology: from Zoetrope to Digital* (London and New York, Wallflower Press, 2005), spec. 47-49. SMPTE would adopt the 1.33:1 aspect ratio in 1917; Enticknap suggests that Dickson’s “aesthetic” specifications and Edison’s controlling interests fused to arrive at this width, which was unofficially standardized in 1899. See Rossell, “A Chronology of Cinema,” 120, with respect to George Eastman’s U.S. Patent No. 306,284, “the first samples [of which] Eastman celluloid film seem to have been shipped to W.K.L. Dickson of the Edison Laboratories in July or August 1889.”

³³⁵ Musser, 82. Heise, though considerably less well-known than Dickson, acted as his assistant beginning in 1890; and, in the words of Musser, “Dickson and Heise kinetographed over seventy-five motion pictures in 1894,” including such favorites as *The Boxing Cats* and Annabelle’s various “dances” (78).

³³⁶ Musser, 78.

repeated *forty-six* times a second.”³³⁷ A few short years earlier, in 1891, *Harper’s Weekly* likewise hammered home the importance of this frame rate, seeming to speak for Edison in a kind of free indirect style: “A point of the utmost importance is this: *only one forty sixth of a second* can be allowed for the whole process of taking a photograph *and for also moving the band along a certain distance*, so that it will be ready for the next impression.”³³⁸ The terms “forty six” and “46” appear frequently in the *Harper’s* article, and there is also mention of Edison’s belief that “for some forms of motion it might be necessary to get a still greater number.”³³⁹ Dickson’s own notes and missives sometimes adhere to the 40-fps mark, notably the suggestion “Taking camera – 40 pictures a second” in “Notes or Facts re the Pioneer Days” of 1889,³⁴⁰ but in *History of the Kinetograph* he does specify that “one-forty-sixth part of a second” is the standard operating procedure.³⁴¹

Samuel Hawley questions this fps mark, and he also injects Rector more firmly into the *Leonard-Cushing* equation. According to Hawley, “With Otway tied up managing the Tilden Company’s New York office, Enoch Rector would have taken the lead when it came time to film the Leonard Cushing fight.”³⁴² This would place Rector more in the role of “producer,” with Dickson and Heise operating the cameras.³⁴³ But Hawley also interrogates Rector’s time spent “inside” the Kinetoscope cabinet, suggesting that before Rector made his adjustments to the machine and its housing, the initial length of film was actually forty-two feet, not fifty, thus

³³⁷ Antonia Dickson, “Wonders of the Kinetoscope,” *Leslie’s Monthly* 39, no. 2 (February 1895): 245, emphasis mine. Antonia was the sister of W.K.L. Dickson. Also see W.K.L. Dickson and Antonia Dickson, *History of the Kinetograph, Kinetoscope, and Kineto-Phonograph* (New York: Arno Press & The New York Times, 1970).

³³⁸ George Parsons Lathrop, “Edison’s Kinetograph,” *Harper’s Weekly* 35 (1891), 446, emphasis in the original.

³³⁹ Lathrop, 446.

³⁴⁰ This hand-written section, which is found in Dickson and Dickson (53), seems to have the header “Notes or facts re the Pioneer Days of the Perforated Film Moving Photog-work at Edison Lab, Completed End of 1888.” It is unclear exactly when Dickson wrote these notes, but they discuss the years 1887-89.

³⁴¹ Dickson and Dickson, 12.

³⁴² Hawley, 117.

³⁴³ Hawley, 118.

gainsaying the “claimed forty-six [frames] per second.”³⁴⁴ What I find more interesting, however, is the language used on the device’s “directions”: “Great judgment should be exercised in avoiding *over strain or slackness* of film [...] as both are equally bad.”³⁴⁵ The solution here is not quite the same as in the Latham Loop proper—Rector increased the size of the housing and the number of spools within it.³⁴⁶ But the germ of Latham’s “supplies of slack” in the Loop patent is present, as is the focus on a happy medium struck between too much or too little slack. In other words, the desired outcome in each case is the harnessing of a specific *tension*.

Tension was in the air, and within the machinery, on 15 June, 1894: “The crew waited through several days of clouds for ideal sunlight, meanwhile conducting experiments (apparently unsuccessful) with ‘auxiliary lighting.’”³⁴⁷ Using Blair Co. celluloid stock meant that even powerful arc-lights would not supply enough illumination for suitable exposure.³⁴⁸ With respect to the interplay between sporting and cinematic milieux, we have once again the compression of round-length to fit with the “capacity” of the camera (roughly one minute),³⁴⁹ and the smaller-than-standard ring was used with the dictates of the Black Maria in mind.³⁵⁰ For Vogan, *Leonard-Cushing* is thus a principle example of “how media’s intersecting technological horizons and commercial imperatives shape sporting contests.”³⁵¹ But, once again, it is also the case that sport shapes media’s technological individuations and its commercial imperatives. Hence the 7

³⁴⁴ Hawley, 119.

³⁴⁵ Qtd. in Hawley, 120.

³⁴⁶ Hawley, 120.

³⁴⁷ Streible, 30.

³⁴⁸ Hawley, 117. Blair celluloid film stock differed from Eastman’s in that it was more translucent or “frosty,” a result of using a “large heated drum” in the stock’s development. See Deac Rossell, “Exploding Teeth, Unbreakable Sheets and Continuous Casting: Nitrocellulose from Gun-Cotton to Early Cinema,” in *This Film is Dangerous: A Celebration of Nitrate Film*, ed. Roger Smither (Bruxelles: FIAF, 2002) and Rossell, “A Chronology of Cinema,” 125. For more on Blair, see Stephen Bottomore and T.H. Blair, “Interview with Mr. T.H. Blair,” *Film History* 16, no. 1 (2004): 6-8.

³⁴⁹ Streible, 30; Musser, 82.

³⁵⁰ Vogan, *The Boxing Film*, 10; Hawley, 116-18.

³⁵¹ Vogan, *The Boxing Film*, 10.

September 1894 fight between Jim Corbett and Peter Courtney, known as *Corbett and Courtney before the Kinetograph*, which differed from *Leonard-Cushing* in three crucial aspects: there are more ringside onlookers filling out the film's mise-en-scène; the ring was widened (the Maria itself was expanded);³⁵² and the prestige was upped, since Corbett was the heavyweight champion at the time.³⁵³

Once again, the Latham enterprise was thinking in terms of time and space. The battery of kinetoscopes limited the size of the image, and it also limited the number of eyes that could focus on the fight (and hands that could fork over money to do so, of course).³⁵⁴ Temporally, though, one minute was not enough. This too was a problem with the kinetoscope viewing system, but it was also the case that “full” boxing rounds were three minutes in length. An affront to contingency, then, that its potential must be curtailed so: whereas previously rounds had been shortened to account for the film capacity, even if it had been expanded, now the aim was to record *full* rounds as they unfolded. Aiming to remedy this problem, the Lathams established the Lambda Company: “Gray would be president, Otway vice president and Woodville [their father] the treasurer and secretary.”³⁵⁵ Having familiarity with Dickson, they asked him to come aboard. Although Dickson would soon emerge as a full member of the American Mutoscope Company, his time spent in the Latham's employ is notable if dubious. It has been suggested variously that Dickson's displeasure with his role at the Edison labs led to at least a handshake deal with Lambda and “possibly even a contractual relationship,”³⁵⁶ or that Dickson's Latham function was little more than spycraft, a sort

³⁵² See Ray Phillips, *Edison's Kinetoscope and Its Films: A History to 1896* (Trowbridge, UK: Flicks, 1997).

³⁵³ Streible, 34; Hawley 129-31. Also see Vogan, *The Boxing Film*, 11: “Adding to [*Corbett and Courtney*’s] aesthetic significance, the film occasioned the industry’s first ‘star’ contract when Corbett agreed to perform exclusively for the Kinetoscope Exhibition Company.”

³⁵⁴ See Musser, 92; Hawley 148+.

³⁵⁵ Hawley, 149.

³⁵⁶ Musser, 93.

of double-agent situation in which he could keep an eye on Lambda's inner workings and potential patent infringements (Dickson privately maintained the latter).³⁵⁷ Hawley wisely reminds us that "it is indisputable that [Dickson] eventually received Lambda Company shares, holding them at arm's length through a lawyer."³⁵⁸

Perhaps the most critical "L" in the Latham-Lambda-Loop saga is Lauste. Eugene Lauste, also formerly of Edison employ, was likewise folded into the Latham's new enterprise. Paul Spehr is critical of narratives that squeeze Lauste into a subordinate role as Dickson's "chief assistant" during the Edison years.³⁵⁹ Rather, Spehr paints a picture of Lauste as a sort of swiss army knife machinist-technician, a man whose talents were split across numerous enterprises and whose unfamiliarity with the English language only increased his friendship with Dickson, likewise fluent in French. In this telling, Lauste's flexibility extends to his tenure with the Lathams, as he tinkers with both camera and projection systems in the Spring of 1895. Lauste's own words about the messiness of the Lambda drive to achieve longer filming time as well as screen projection is worth reproducing here for its candor as well as its humor [*sic* throughout]:

Everything was going satisfactory as the result of the apparatus, when a little trouble came out, which was the stop motion I had in mind several ways to do it, but our plant was not sufficiently equipped for such fine work. So we decide to have it done outside of our workshop. I found amongst several catalogues, one from the Boston Gear Work, in which I notice a sort of internal stop motion gear which was ordered on my instruction, infortunately the size of it was too large and not suitable for my camera, considering the case, Mr Ottway call on Mr W.K.L. Dickson, and try to get some ideas for making a stop motion. As Mr Dickson was still with Mr Edison, he had no intention to help Messrs Lathams on their invention in any ways, I think to keep his friendship with Messrs Latham, he simply suggested to them to use an escapement similar to those used in the watch, and then he make a little sketch to show how it look. Mr Ottway ask me my opinion and what I think of the idea, which I said, No good, too

³⁵⁷ Hawley, 149.

³⁵⁸ Hawley, 150. See Musser, 93: "Because of his relationship with Edison, Dickson's share (valued at \$125,000) was assigned to his attorney, Edmond Congar Brown."

³⁵⁹ Paul C. Spehr, "Eugene Augustin Lauste: A Biographical Chronology," *Film History* 11, no. 1 (1999), 19.

delicate. Of course they trust more Mr Dickson than of me, I was asked to make one and see what would be the result, which naturally was a failure, and prove that I was right.³⁶⁰

Lauste is speaking here about his work on the Latham camera, to which he was asked to pivot upon learning that the Lathams were more “anxious” about their new camera system. He reports that the early tests of the camera prior to the Griffon-Barnett film, although successful, produced issues with “stop motion,” and the team had to use a device “similar to the Maltese cross.”³⁶¹ The tests, run on 26 February and an unknown date shortly thereafter, were, respectively, of a lightbulb swinging across the frame and sporting endeavors such as a horse race and wrestling bouts.³⁶² It seems as though the Eidoloscope test runs led directly into *Griffon-Barnett*, and by 5 May the addition of the Loop was complete.

There is some strain on this historical strip, however. The tension comes from a remark made by Lauste during a 1911 patent dispute. In the case (Equity 5—167, MPPC v. IMP), Dickson’s testimony credits Lauste for the loop’s genesis.³⁶³ But when Lauste was discussing “the addition of the loop,” he “said this modification was made *after they began the public showings*” of *Griffon-Barnett*.³⁶⁴ Virtually every record of the 5 May, 1895 filmed bout takes on faith the fact that the roughly 1,000 feet of film were generated via deployment of what would become known as the Latham Loop.³⁶⁵ And why not? It is incontrovertible that filming went on for eight full minutes. This must mean that the “leap” of the Loop was achieved. But if we take Lauste at his testimonial word, a slightly different picture is projected. Spehr suggests that, in effect, the camera

³⁶⁰ Qtd. in Spehr, 24. The original is from Merritt Crawford’s papers, Museum of Modern Art.

³⁶¹ Qtd. in Spehr, 24-25.

³⁶² For an image of an Eidoloscope frame from one of these wrestling matches, see Musser, 99. The aspect ratio appears to be slightly greater than 2:1.

³⁶³ Spehr, 25.

³⁶⁴ Spehr, 25, emphasis mine. I cannot source the direct Lauste quote.

³⁶⁵ Rossell, “A Chronology of Cinema,” 133; Musser, 96; Streible, 45; Hawley, 157-64; McKernan, “Sport and the First Films,” 110.

used to *film* the Griffo fight achieved the longer run-time through additional feed and take-up rollers, but “[t]he larger roll [of film] caused tension and tearing of the film so, at the suggestion of Dickson, Lauste added an extra roller to ease the tension.”³⁶⁶ What he is describing here comes *before* the Loop’s addition to the equation, though. In short, the Loop as such would then have first been introduced to the Latham’s projection system (Eidoloscope) because of film-tear, a problem that perhaps hadn’t presented itself during filming.

We may never know at what point in the process the Loop made its debut. It seems incredibly likely that some version of the Loop was providing support for the filming of *Griffo-Barnett*, but there also seems little reason for Lauste to lie about *when* the modification took place. Perhaps Spehr’s—or Lauste’s—syntax is to blame for the confusion, or perhaps the “modification” to the projector is just a slightly different one than that made to the camera. Whatever the case may be, I find most compelling that if the version of the Latham Loop which appears in the 1902 [1896] patent was absent from the Lambda cameras on 5 May 1894, the machine itself nevertheless had the structure in place to allow for and capitalize on the Loop method itself. In other words, the Loop existed *in potentia*, or its addition/modification was presupposed by the prior iteration. Simondon might say that because we begin from ontogenesis and individuation, it makes perfect sense to hold fast to these successive stages of technical “concretization,” considering them less as fully individuated technical objects which resolve a prior state and more as phases that are always metastable, always pre-individual and provisional. Critically, the “leap” here is not reducible to individual or group genius (inventor), nor is it necessarily potentially present from the earliest abstractions of the camera system (teleology; final cause). As Simon Mills eloquently puts things, “the process[es] of iteration that inventors undertake in that initial work on inventions

³⁶⁶ Spehr, 25.

usually don't operate as expected but reveal new material potentials that can be folded back into the inventive process. In such instances the technical objects are co-constitutive in the inventive process with the ideas of the inventor."³⁶⁷ Folded back, indeed. In terms of process, then, certain technical "regimes of functioning" are "both guided into existence by the inventor, as well as [...] guiding the inventor."³⁶⁸ This will hardly be the last time the Latham-Lambda members arrived at a device or technique through the technology's own recursive, metastable state.

Whatever the case may be, the Latham Loop was here to stay, and it was certainly part of the projection systems for the *Griffo-Barnett* run. Reports then and now mark the occasion in terms of a new phase of cinema. Hawley suggests that "it was the world's first projected movie shown to paying customers, predating by seven months the Lumière brothers' first commercial screening in Paris."³⁶⁹ McKernan, as we have seen, claims it to be, "in effect, the birth of cinema."³⁷⁰ A widely reproduced article from the *New York World* seemed to mark the new age in strangely raucous language, with an additional clause about contingencies:

Life size presentations they are and will be, and you won't have to squint into a little hole to see them. You'll sit comfortably and see fighters hammering each other, circuses, suicides, hangings, electrocutions, shipwrecks, scenes on the exchanges, street scenes, horse-races, football games, almost anything, in fact, in which there is action, just as if you were on the spot during the actual events. [...] If [actors'] hair raises in fright, or grows gray in a half hour, you'll see all the details of the change.³⁷¹

On 28 August 1895, Thomas Armat and C. Francis Jenkins filed a patent for the Phantoscope projector.³⁷² "The intermittent mechanism was a single cam which engaged multiple segments of a star wheel, a kind of 14-sided Maltese Cross movement called a Boston Gear, and the apparatus

³⁶⁷ Simon Mills, *Gilbert Simondon: Information, Technology and Media* (London and New York: Rowman & Littlefield, 2016), 109, emphasis mine.

³⁶⁸ Mills, 108.

³⁶⁹ Hawley, 163.

³⁷⁰ McKernan, "Sport and the First Films," 110.

³⁷¹ Qtd. in Musser, 96. See Streible, 45-47; Hawley, 162-66. Vogan does not mention the *Griffo-Barnett* film.

³⁷² Armat had previously filed for his own Phantoscope patent, US 536,569, in the Fall of 1894.

also used a 'loop' to reduce tension on the moving film."³⁷³ The Phantoscope would become the all-important Vitascope in the Spring of 1896 after it was purchased by Edison and, of course, marketed as another breakthrough from the Wizard of Menlo Park.³⁷⁴ In June of that year, Woodville Latham finally got around to submitting his patent, US No. 707,934, for the "Projecting Kinetoscope." Thus the twin loops of the Lathams' projection system, *21^a* and *21^b*, which are "thrown out and then taken up by the operation of the sprocket drums, respectively, and [...] produce and take up the slack by their own positive action entirely independent of the film-supporting reels at the extremes of the apparatus" (Fig. 3.1).

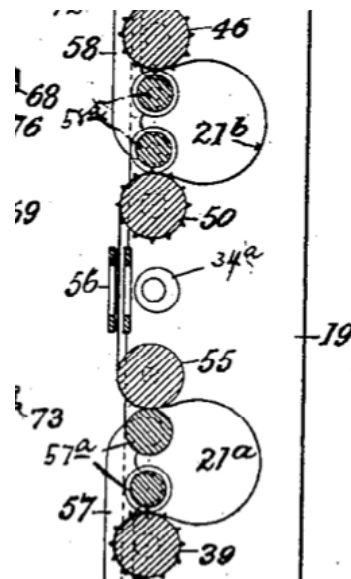


Figure 3.1 Image enlargement of the two "loops" in Latham's Projecting Kinetoscope Patent (1896/1902)

³⁷³ Rossell, "A Chronology of Cinema," 136, emphasis in the original.

³⁷⁴ The Phantoscope used a "beater" movement, not unlike the earlier device produced by Demeny. Armat and Jenkins had been experimenting with a projection system helped along by an intermittent mechanism from Boston Gear Works; the mechanism worked, at a price. "The picture lasted but a few seconds. The machine battered and clattered and shook. Pound for pound in weight it was the noisiest piece of machinery in the world." After adopting the beater movement from Demeny, we are told, Armat kept the "noisy gear wheel" as a paperweight: "As a paper weight it is excellent. It lasted just one minute in the motion picture business. But that minute has proven a valuable one." Terry Ramsaye, "The Romantic History of the Motion Picture," *Photoplay* 12, no. 1 (1922): 100. For a wonderfully rich description of the beater or "dog" movement in projector systems, see F.H. Richardson and R.W. Martin, et al, "Projection Department," *The Moving Picture World* 27, no. 1 (1916): 78-79. Martin's lengthy response to the question "What is the 'beater type' of intermittent is used by Richardson in his reply to the question.

Although Latham had been granted British patent 4841 in the Spring of 1896 for the Eidoloscope (including loops), the US patent wouldn't be issued until August of 1902.³⁷⁵ And while the question of the Loop's provenance would be central to early twentieth century patent wars and the saga of the MPPC, members of the Latham enterprise would have already frustrated Edison's legal team, "since its films of the Corbett-Fitzsimmons fight were made prior to the issuance of Edison's patent."³⁷⁶ While *Griffo-Barnett* was one of a mere handful of short films generated by the Eidoloscope, *Corbett-Fitzsimmons* is the *only* film shot with the Veriscope camera(s),³⁷⁷ a name the device shared with the newly-minted production company overseen by Dan Stuart, Rector, and William Wheelock. It is to the Veriscope, and the "first feature length film," that we now turn.

3.2 Machinists and "Men of Destiny": The Veriscope films *Corbett-Fitzsimmons*

We have already witnessed numerous reminiscences about the "birth" of cinema with respect to Muybridge's time in Philadelphia, a set of attempts to fix the mark *locally* on the medium's genesis. *Moving Picture World*, in 1927, put forth its own cartographic sketch, this one accompanied by "a map of the territory."³⁷⁸ In addition to a full-page recap of "the cradle of motion pictures in the United States," Charles Hastings offered a somewhat crudely drawn map of Lower

³⁷⁵ For a discussion of the strange timing of Latham's patent—coming as it did after both the British and French iterations—see Rossell, "A Chronology of Cinema," 211.

³⁷⁶ Musser, 239-40.

³⁷⁷ The only film *released*, of course.

³⁷⁸ Charles Edward Hastings, "The Cradle of Motion Pictures in the United States," *Moving Picture World* (January 1927): 18-19.

Manhattan, singling out nineteen locations relevant to motion pictures being “established” (Fig. 3.2).³⁷⁹

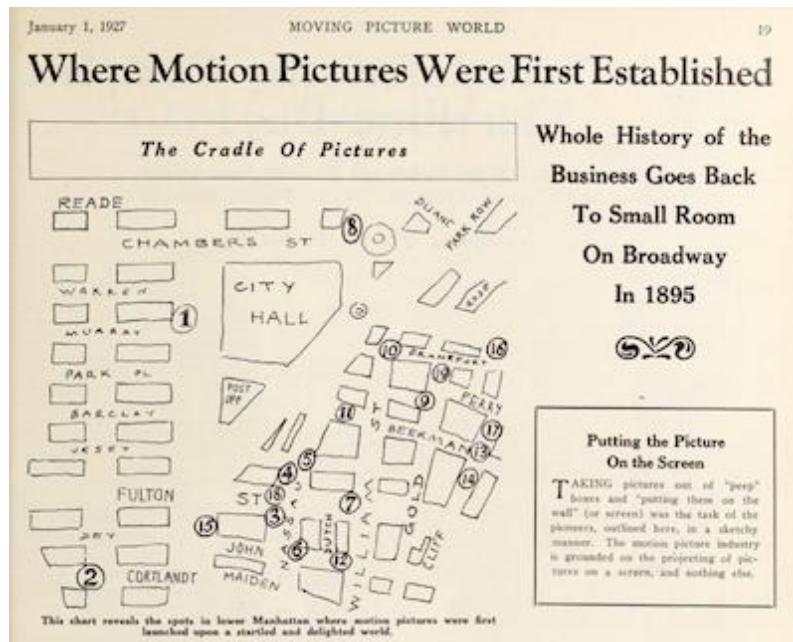


Figure 3.2 Charles Hastings' "map" of the "cradle" of motion pictures, *Moving Picture World* (1927)

Digitized scan courtesy of Media History Digital Library

Entry “No. 9—No. 73 Gold Street” in Hastings’ diagram is wonderfully curious, inasmuch as it introduces a new set of figures into the Latham/Lambda orbit (as if things weren’t already muddled enough). To wit: “*Chronik Brothers, machinists, in 1896, built for Enoch J. Rector, and associates, the Veriscope, designed by Rector. One of these projecting machines was used as a camera to photograph the Corbett-Fitzsimmons fight in Carson City, Nevada, March 17, 1897.*”³⁸⁰ Further details about the Chronik Machinists do not appear in Hastings’ review, nor does their

³⁷⁹ Hastings, 18-19, emphasis mine.

³⁸⁰ Hastings, 19, emphasis mine.

surname—a memorable one, at that—show up in Ramsaye, Rossell, Musser, McKernan, Hawley or Streible.

Thankfully, there is a bit more to go on: only one year hence from Hastings' mapping, James Finn detailed the contributions of various "Men of Destiny" in *The Motion Picture Projectionist*. Finn's opening move stands as an important reminder to our purposes here, perhaps, as he claimed that "The motion picture of today [1928] represents the cumulative efforts of many men, many minds, many hands. [...] [T]he work of no individual was of such nature as to justify the bestowal on him of the title 'Inventor of the Motion Picture.'"³⁸¹ Fortunately, among these "hands" we find the "Chronik Bros.," who "In 1899 [...] produced a projector that had many unusual features, including a feed and takeup sprocket, an adjustable aperture plate, a tension release on the film, a balanced shutter, and, what is perhaps most interesting, a triangular pin cross with locking cams. This movement is undoubtedly the granddaddy of the modern pin-cross."³⁸² This is certainly intriguing with respect to the development of the Maltese Cross and other intermittent mechanisms of the period. More immediately interesting, however, is the name appearing just above that of the Chroniks in Finn's *dramatis personae*: Enoch Rector. While Finn does not, like Hastings, explicitly link the machinists to Rector's Veriscope, he does discuss the latter's development specifically for the Corbett-Fitzsimmons bout, and even appends a rare photograph of the device (Fig. 3.3).

³⁸¹ James J. Finn, "Men of Destiny," *The Motion Picture Projectionist* (February 1928): 17.

³⁸² Finn, 22.

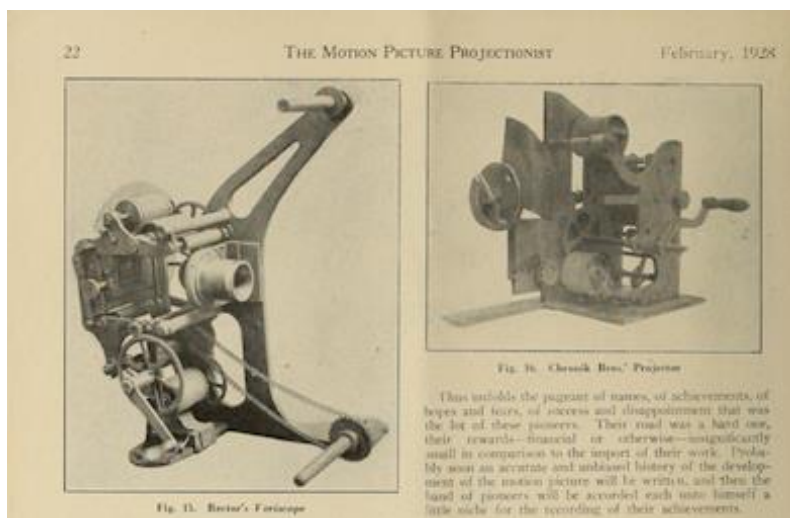


Figure 3.3 Rector's Veriscope and the Chronik Brothers' projector, *Motion Picture Projectionist* (1928)

Digitized scan courtesy of Media History Digital Library

As if things weren't already convoluted enough, Hawley places William T. Gregg, "manufacturer of cameras and precision optical instruments used in engineering and mining," in the position of lead technician as far as the building of the Veriscope itself was concerned.³⁸³ The March 1897 *Phonoscope* offers a brief mention of Gregg in this very capacity, conveniently placed just after a discussion of Rector's "failure" to properly expose and develop footage of the Corbett Fitzsimmons fight. Per the *Phonoscope*, after filming the bout Rector was less bothered by the "prospect of legislation that will cripple the business" than by "every defect known to photography [making] its unwelcome appearance" while the *Corbett-Fitzsimmons* negatives were being serviced by Raff & Gammon in New Jersey.³⁸⁴ The mention of Gregg comes amid news of an "attachment against the Kineto Multiscope Company for \$3,722 in favor of William T. Gregg, for services from June 15, 1896 to February 1, 1897," with Gregg winning the removal of camera

³⁸³ Hawley, 231.

³⁸⁴ "Fight Pictures a Failure," *The Phonoscope* 1, no. 4 (1897): 8.

systems from Rector's headquarters "as the stunned engineer looked helplessly on."³⁸⁵ It would not be until the veritable eleventh hour of preparation for the bout that Rector would be reunited with the critical technical elements of his system.

Rector was playing coy with respect to the celluloid fiasco. As Eastman Kodak had already surmised, his "fears" over the film's development were little more than a smokescreen, an attempt to turn down the temperature (which was greatly heating up) about banning the film.³⁸⁶ But we are getting ahead of ourselves. When a camera system—especially one as strange and singular as the Veriscope—is only used to produce *one* film, it is imperative to examine the terms of such an event. How best to describe Rector's device? It is clear that there were three cameras deployed for the Corbett-Fitz fight, and they were in effect exponentially-modified Kinetographs. A little over a year before the fight, Rector had filmed Fitzsimmons battling Peter Maher in Langtry, Texas, likewise using modified Kinetograph machines.³⁸⁷ But further individuations were introduced to the cameras for *Corbett-Fitzsimmons*, changes which spread across a number of registers. Perhaps most significantly, Rector and Co. opted to remove electricity from the equation. Unlike the Kinetograph and many other cameras of the period, the Veriscope would rely on hand-cranking. The cameras were also "smaller [and] lighter," with the added benefit of requiring less light despite the increased negative size.³⁸⁸ I will return to questions of aspect ratio and negative/print format shortly, but first our attention must be turned to the Veriscope's tactile and bodily integration.

As we will see, the hand is one of the critical elements in any discussion of the Latham Loop, since its ultimate inclusion in nearly every twentieth century camera and projection system

³⁸⁵ Hawley, 234.

³⁸⁶ Streible, 65-66; Hawley 286-88.

³⁸⁷ Streible, 57. For a rundown of the veritably swashbuckling maneuvers of Rector et al in terms of eluding, variously, Mexican soldiers, Texas Rangers, and other leaders civic and governmental, see Hawley, 182-200.

³⁸⁸ Streible, 59.

revolves around the plainly *manual* (L. *manus*, hand) “setting of the loops.” In Lisa Cartwright’s idiom, the operator’s hand (and their handling of the device) in early cinema is best treated as “an instrumental element mattering space”; in other words, the body of the projectionist, in its relation with the technology, should be considered as one of the co-constitutive elements of the film experience.³⁸⁹ The Veriscope relied on the specific intervention of the hand—of *hands*, to be more precise—in a twin sense. In the main,³⁹⁰ Rector and the other operators would of course have to maintain a steady crank for the full eight minutes that each camera would roll. The start times of the camera battery were staggered, such that once half of camera A’s film was exposed, camera B would start; once the latter was half through, camera C would begin rolling. But these were not the only hands at work inside the giant camera enclosure: “To pull it off, the men locked inside would have to perform with smooth precision, camera operators cranking at an exact speed for eight-minute stretches, assistants manually turning the feed reel and take-up reel while loading on fresh film in under four minutes, the man in back keeping the exposed film in order...”³⁹¹ Three sets of hands rhythmically cranking, six sets maintaining the supplies of slack (manually). It is worth considering whether these were some of the largest “Latham” loops ever put to use, a translation of the principle used to extend filming time for *Griffo-Barnett* into a fully manual and outsized system.

Hawley astutely observes that Rector and his other operators were in unfamiliar territory in terms of hand-cranking. Not only did they have little experience doing so, but the lengths of each cranking session were also uncharted at the time.³⁹² He wonders whether they all would have

³⁸⁹ Lisa Cartwright, “The Hands of the Projectionist,” *Science in Context* 24, no. 3 (2011): 459-61.

³⁹⁰ (Fr. *le main*, hand—pun fortuitous yet unintended).

³⁹¹ Hawley, 256.

³⁹² Hawley, 258.

hummed a tune to themselves, perhaps almost silently, to keep a particular pace.³⁹³ At stake is not so much the question of embodied knowledge or expertise, but rather the synthesizing of information and fields of resonance. There are plans; there are schemata—but planning cannot ensure the perfect (it could never be perfect) co-operation of nine sets of hands, working variously to feed, stabilize, and take-up the film stock. The experiment must be run, the process unfold. Humming to oneself adds another valence to the somatic experience of cranking, a sort of metronymic habit which both unites the operators and separates them. Simondon’s concern with the “mold” seems apt here, if we might consider the Veriscope system as one in which a tremendous amount of contingent elements fuse to deliver a seemingly automatic product: “the worker’s gestures are never exactly the same; the schema is perhaps a single schema, from the start of the labor until the end, but each molding is directed by a set of particular psychical, perceptive, and somatic events.”³⁹⁴ One wonders, further, how much the somatic events taking place within the ring affected the work undertaken within the enclosure. Was the irony lost on Rector et al that their hand-cranking and -feeding gestures—“forearm perpendicular to the machine and [...] crank with just wrist and forearm”³⁹⁵—mimicked the jabs and straights being traded by Fitzsimmons and Corbett? It makes for a comical and poignant image, in any case: these shadow boxers, locked inside their shed, throwing the same “punch” over and over again as if in a dream.

The Veriscope cameras would soon find a shelf life as projection systems, but the particular models used on the afternoon of 17 March 1897 were apparently deployed no further in terms of image-capture. Nor did the bespoke enclosure make any repeat performances. The squared-off

³⁹³ Hawley, 257-58; 267.

³⁹⁴ Simondon, *Individuation*, 44.

³⁹⁵ Hawley, 267.

boxing ring and the massive shed, which was likely at least 12x8x8 in size,³⁹⁶ had already tussled before the real fight kicked off. The ring had been reduced in size just prior to the fight “at the request of the cinematographers,” but the referees overruled the change.³⁹⁷ Thus the collision of two milieux, a sort of opening round that ultimately went in favor of sport. If sport achieved another interrelated victory over the device, it had to do once again with the very corner of the ring: “When Fitzsimmons knocked Corbett down for the final count in the fourteenth round, Corbett appeared to be aware enough to steal to the corner, out of camera range.”³⁹⁸ The mechanism designed to capture the flow of time had missed a very particular bit of space despite its considerably wide gauge and aspect ratio. One contingency at a time, perhaps.

What exactly *was* this mechanism, though; what do we mean when we say *Veriscope*? The definitional slippage in accounts of the fight are extremely suggestive. Streible speaks of the “wooden house” that surrounds the “three Veriscope cameras,” and he of course also refers to the Veriscope Company, which had boldly stamped “Copyrighted the Veriscope Company” on the camera-facing ringside.³⁹⁹ Musser carefully points out that the name itself (Veriscope, “Truth-Viewer”) “was appropriate because it emphasized one of the selling points of the pictures: the camera had recorded the foul that eluded the referee.”⁴⁰⁰ For Ramsaye the Veriscope was “a motion picture machine especially made for the event,”⁴⁰¹ and Hawley refers to both the “Veriscope

³⁹⁶ The exact specifications are unknown to me. Hawley (255) remarks that the shed was “twelve-foot-square,” by which is probably meant 12x12. See Musser, 196, for a photograph of the fight which conveys the size of the enclosure. Multiple sources suggest that the three cameras were spaced four feet apart from one another, which accounts for at least eight feet in width. It is likely that the sides of the shed needed additional spacing. A newspaper sketch, reproduced e.g. in Streible (61), shows Rector at the helm of one camera, and the massive size of the feed and take-up reels suggests significant height and depth.

³⁹⁷ Streible, 60-61; Musser, 196.

³⁹⁸ Streible, 61.

³⁹⁹ Streible, 60.

⁴⁰⁰ Musser, 198.

⁴⁰¹ Musser, 286-87.

camera” and, variously, the Veriscope “apparatus” and the Veriscope “machine,” in these cases meaning the enclosure itself.⁴⁰² So is the Veriscope the camera(s), twice-modified Kinetographs housed within an enclosure and set to run at intervals? Is it the structure itself, a sort of giant three-eyed camera existing only as such for the space of two days? Is it the Veriscope projector, which later maintained the hand-cranking and loop-guided system while reintegrating some electricity to govern the newly-introduced intermittent movement—a “finished” projector that once masqueraded as a camera system?⁴⁰³

I think that Hawley is closest to the mark here, as he writes: “Rector and his assistants [...] would have to work together like a machine. *For that was what the Veriscope was, a machine—a huge, three-lens camera with its human operators, its flesh-and-blood motor, sealed inside.*”⁴⁰⁴ What it *was*, once, on a March day in 1897. Veriscope-haecceity vs. Veriscope-quiddity: camera system as event/occasion, or the Veriscope in its various expressions and individuations over time. The former is of course inseparable from the terms of its structure (outer housing, camera spacing, darkness) and inseparable from its human, somatic relationality, bodily contingencies very much included. Hawley would have it as a machine within a machine, a machine-coupling, or perhaps a machinic assemblage. I want rather to think of the Veriscope in this particular arrangement as a massive *engine*, one which can hardly be said to exist as such absent its human components. (Milton wrote cryptically of “that two-handed engine”—what to call the Veriscope? There are

⁴⁰² Hawley, 292; 250.

⁴⁰³ Hawley, 292: “Enoch Rector had now [by May 1897] completed the final version of his Veriscope projector and was ready to begin making copies of the machine. It used an intermittent mechanism rather than the Eidoloscope’s continuous movement, the momentary halt of each frame in front of the lens producing a brighter image. Like his Veriscope camera, Rector’s projector was notable for its reliance on manual operation, the feed reel and take-up reel both turned by hand, thereby avoiding the problem of excessive tension on the film. Electricity had not been entirely discarded, however. It was needed to run the intermittent mechanism and to light the powerful lamp that cast the image onto the screen. And that meant problems.”

⁴⁰⁴ Hawley, 256, emphasis mine.

certainly many more hands at work...). In this reading, we would actually be inching much closer to Simondon's category of the hypertelic machine, or the process whereby a technical object or ensemble ends up (-tely, *telos*) with an "exaggerated degree of specialization." If, for Simondon, there is a subset of technical maladaptation that results in a "mixed hypertely," "correspond[ing] to an adaptation to the milieu, such that the object necessitates a certain kind of milieu in order to function properly, because it is energetically coupled to its milieu," we might consider the Veriscope of *Corbett-Fitzsimmons* as a prime example.⁴⁰⁵ The "Fight of the Century" suggested its construction, and the human-camera-engine generated the filmed record. Then the final bell rung, and that was that.

But, as we know, the Veriscope got up from the mat. Analyzing the projector's initial run and the exhibition of the *Corbett-Fitzsimmons* film provides some more clarity into the experimental particularities of its aesthetic yield. A wonderfully detailed side-profile of the Veriscope projector had in fact shown up in 1897, just prior to the long-awaited bout, yet the article in which this illustration is housed may elude the historian whose spelling is on point. "Varioscopes [*sic*] to be Operated at the Corbett-Fitzsimmons Contest" announces the Spring 1897 *Phonoscope* (Fig. 3.4), going into some detail on "the plan [...] to build three" of the cameras, which would be "placed in a row at the ring side in a small enclosure [...] specifically constructed for them."⁴⁰⁶

⁴⁰⁵ Simondon, *On the Mode of Existence*, 54.

⁴⁰⁶ "Varioscopes [*sic*] to be Operated at the Corbett-Fitzsimmons Contest," *Phonoscope* (January-February 1897): 12.

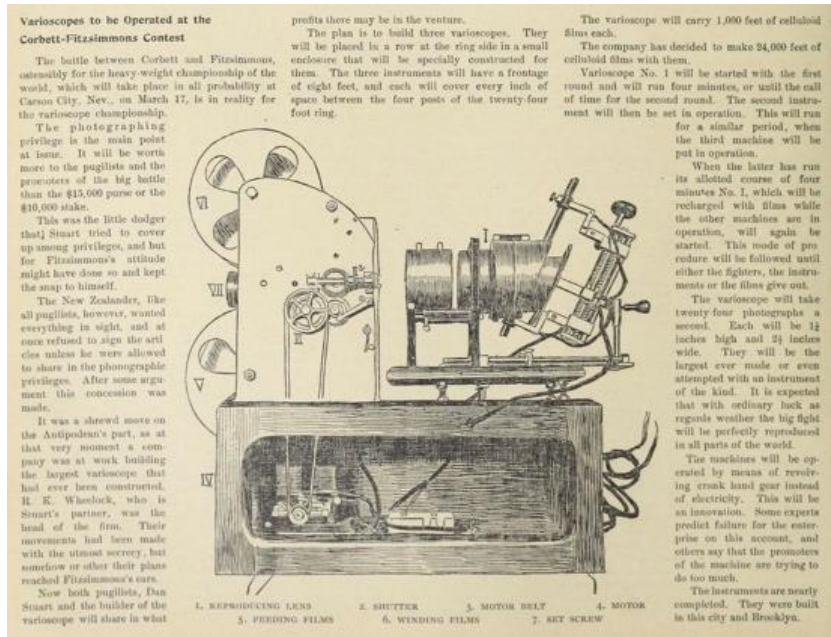


Figure 3.4 Side-profile of the Veriscope (or "Varioscope") projector "in-progress," as it were, *Phonoscope* (1897)

Digitized scan courtesy of Media History Digital Library

This is a far cry from the version of the Veriscope projector that would tour with *Corbett-Fitzsimmons*, and we might wonder at what stage of 1896 the diagram was generated. But the article does rightly suggest that the “Varioscopes” operated under Rector’s guidance would generate images on negatives that were among “the largest ever made or even attempted with the instrument of the kind,” and this segues nicely into an analysis of the film’s projection history once Rector had fine-tuned the Veriscope to accommodate the large-format film. Reasonable minds agree on the gauge of film stock used for the Corbett-Fitzsimmons bout—63mm—yet there are minor discrepancies as to the intended and final aspect ratio of the resulting film, as well as the effective negative and gate sizes. Robert E. Carr and R.M. Hayes suggest that the “Veriscope Company exhibited a true wide screen, wide gauge short...filmed by Enoch Rector on 63mm

Eastman-made film, using a five-perf pulldown and a 1.65 x 1 aspect ratio.”⁴⁰⁷ This, they claim, makes *Corbett-Fitzsimmons* the “first of its type for public exhibition.”⁴⁰⁸ In terms of the sports film, Birt Acres had photographed the Henley Regatta (1896) “on 70mm using a ratio wider than 1.33 x 1,” although it is unclear what the width actually was or the terms of the footage’s exhibition.⁴⁰⁹ John Belton calls the Veriscope’s aspect ratio 1.66:1, at 1 7/8 x 1 1/3 inches,⁴¹⁰ and Streible lands on 1.7:1 for the Veriscope’s “projected images.”⁴¹¹ Paolo Cherchi Usai’s position is that “the American Veriscope format has five perforations per frame on each side; the aspect ratio of the frame is 1:1.75.”⁴¹² Ramsaye claimed that Rector used film with a width of “two and three-sixteenth inches,”⁴¹³ while Hawley puts the figure at 2.5” in width.⁴¹⁴ The latter clarifies that Rector’s finalized negative size, after perforating the custom Eastman-Kodak stock, was about “an inch and a quarter high by two inches wide.”⁴¹⁵ Thus the “Varioscope” article’s surmise—that the images would be 1 ½ inches high and 2 ½ inches wide—was in the ballpark, at the very least.

⁴⁰⁷ Robert E. Carr and R.M. Hayes, *Wide Screen Movies: A History and Filmography of Wide Gauge Filmmaking* (Jefferson, NC: McFarland & Company, Inc., 1988), 2.

⁴⁰⁸ Carr and Hayes, 2. Among the wide gauge, wide frame, or combined wide gauge *and* frame film experiments cited by Carr and Hayes are Demeny’s 60mm film “with a four-perf pulldown and a 1.22 x 1 ratio for his Chronophotographe (named after the Marey camera assembly, and possibly actually built by Marey),” and a film stock “made [...] for Burton Holmes [by Prestwich] using a 2 3/8-inch film with a 1.31 x 1 aspect ratio and a four-perf pulldown.” See H. Mario Raimondo-Souto, *Motion Picture Photography: A History, 1891-1960*, trans. H.M. Grierson (Jefferson, NC, and London: McFarland & Co., 2007), 49, wherein he confirms the gauge and perf while not listing an aspect ratio. The Holmes website, citing Thayer Soule’s *On the Road with Travelogues*, suggests that in the late 1890s Holmes was in fact shooting on 60mm film, unperforated, which would in effect become perforated as it was cranked through the camera system. See <https://www.burtonholmes.org/films/films.html>. Also see John Belton, *Widescreen Cinema* (Cambridge, MA and London, 1992), 24-25. Belton agrees with Carr and Hayes on the Demeny gauge (60mm), but lists the aspect ratio as 1.4:1 (25). He also appends an experiment by Dickson to generate a 51mm negative that “produced an image that was 1 ¾ inches wide by ¾ high and had an aspect ratio of 2.33:1 (or 7:3)” (24). Sadly I can source no further information on this last, a *tremendously* wide aspect ratio for the period in question.

⁴⁰⁹ Carr and Hayes, 2.

⁴¹⁰ Belton, 25.

⁴¹¹ Streible, 59.

⁴¹² Paolo Cherchi Usai, *Silent Cinema: An Introduction* (London: BFI, 2000), 5.

⁴¹³ Ramsaye, *A Million and One Nights*, 286.

⁴¹⁴ Hawley, 231.

⁴¹⁵ Hawley, 231.

Streible writes eloquently of the *Corbett-Fitzsimmons* film as a technically and socio-culturally “atypical example of early cinema,”⁴¹⁶ one that allows him to claim, rightly, that film historiography is often strengthened by a holistic approach to such items, one which “examines the experiences of the people who encountered fight pictures, describing the concrete realities shaping the lives of filmmakers, fighters, and spectators.”⁴¹⁷ This selfsame impulse kicks off Miriam Hansen’s *Babel and Babylon* and its profound insights into spectatorship and the public sphere.⁴¹⁸ What Streible shares with Hansen and Musser is a focus on the “role of the ‘spectatrix’” at the Veriscope tours, upon which he casts a somewhat critical eye.⁴¹⁹ Despite throwing some cold water on the idea that women thronged to see *Corbett-Fitzsimmons*, a claim perpetuated probably by erstwhile promoters and members of the Veriscope Co., Streible does make clear that “a female audience of some size saw the films,” and he asks—as did Hansen—how much we may reliably read from this an undercurrent of erotic transgression pertaining to women observing the scantily-clad and well-proportioned (“gluteus maximus” of) Corbett, ever the heartthrob.⁴²⁰ However, in discussing “the social conditions of exhibition and reception” of the Carson City bout, Streible also refers to the finished product as “a motion picture *of so little aesthetic or formal interest.*”⁴²¹

This is a most mystifying statement. Perhaps Streible was thinking ahead to the proliferation of “fake fight films” in the wake of the Veriscope production—to a period of remakes, copycat works and facsimiles.⁴²² Or it may have more to do with the “static” camera and lack of

⁴¹⁶ Streible, 95.

⁴¹⁷ Streible, 4.

⁴¹⁸ See Miriam Hansen, *Babel and Babylon: Spectatorship in American Silent Film* (Cambridge, MA, and London: Harvard University Press, 1991), 1-20.

⁴¹⁹ Streible, 83.

⁴²⁰ Streible, 88.

⁴²¹ Streible, 95, emphasis mine.

⁴²² See e.g. Streible, 126-63, and Musser, 200-08.

close-ups (or even edits as such). Nevertheless, it seems more apt to refer to *Corbett-Fitzsimmons* as a motion picture of *tremendous* aesthetic and formal interest, almost to a fault. Even if the only “unique” or interesting element of the film had been its negative size (63mm), we would have plenty to discuss. It is easy to forget that a film gauge of 63mm, with dimensions roughly 1 7/8 x 1 1/8 inches, is not just twice as “large” as silent film 35mm: in terms of area and—consequently—image fidelity, a negative or print of this magnitude has almost 3.5 times the space of the then “standard” 35mm negative. Although Biograph would utilize ultra-large-scale, 2.75 x 2 inch 68mm negatives (around *seven* times more area than standard) to photograph numerous pictures between the year of the Carson City fight and the end of the century, its theatrical reach was just becoming established in mid-1897, and the turn-of-the-century was not as kind to the company, embroiled as it was in patent litigation with Edison.⁴²³ The Veriscope, according to Finn, could project with a throw of 150 feet.⁴²⁴ If true, this is a staggering figure, even if data on early cinema projection throw distances is hard to come by. Hawley tells us that the Academy of Music in New York, site of the first *Corbett-Fitzsimmons* screening, was packed to the brim with “patrons settling for standing room in the back to push the total turnout to nearly three thousand.”⁴²⁵ The deluxe 2,100 seat theater thus made room for an additional 900 or so spectators, with prices ranging from 25 cents (in the nosebleeds, as it were) to a dollar.⁴²⁶ Another expansion in size was the screen itself: “one clue that this was a different kind of performance [...]. At thirty feet wide, it was somewhat smaller than an average-sized movie theater today. For a projected film in 1897, however, it was immense.”⁴²⁷

⁴²³ See Musser, 303-13.

⁴²⁴ Finn, 22.

⁴²⁵ Hawley, 295.

⁴²⁶ Musser, 199.

⁴²⁷ Hawley, 295.

We hear little about how tall the canvas was, and it is difficult to parse exactly what the aspect ratio was for the projected film. Furthermore, there are credible reports of on-and-off problems with the projection machines, likely made more challenging by the dictates of such large-scale formatting. But the 63mm gauge was not just an aesthetic decision. By selecting this size, Rector pre-emptively nullified any attempt to make the prints amenable to 35mm projection systems. The film eventually made somewhere “between six and seven hundred thousand dollars,” even if Rector saw little of these funds.⁴²⁸ That those who saw the film did not experience a uniform presentation is certain. Yet the exhibition specifications, however actualized, were immense, excessive, *big*. As such, the print of *Corbett-Fitzsimmons* is a perfect expression of this set of *fin-de-siècle* film experiments which reacted to, acted upon, and ran in parallel with prizefighting. *Space and time, space and time*: these larger-than-life figures, battling in marathon and ultimately contingent bouts, are responded to cinematically in a way that highlights (and spectacularizes) the spatio-temporal potentials of cinema, unfolding through the slack-maintaining folds of various celluloid loops. To say that *Corbett-Fitzsimmons* was so oversized—and overlong—that it would take cinema decades for its average print size and length to even approach it is not an overstatement. And it is perhaps not until the experiments in Olympic cinema made during the years between 1960 and 1980 that sports media would once again maximize its canvas so ostentatiously.

Here is the cast of characters who had a hand in the Latham Loop process as well as the varied technologies which pre-dated, accompanied, and post-dated its coming-into-being. The list is partial: the Lathams Woodville, Otway and Gray; Eugene Lauste; Enoch Rector; Samuel Tilden,

⁴²⁸ Hawley, 305-07.

Jr.; W.K.L. Dickson and William Heise; the mysterious Chronik Brothers; William T. Gregg; Emile Kleinart and “Herr Heinrich,” assistants-attendants to Rector; (Thomas Edison, of course); and George Kellogg. To this partial list of cinematographers, tinkerers, factotums, old hands and new hands, and producers, should be added the moving bodies which frequently occasioned such experimentation and testing.

Men of destiny? Woodville Latham was destined to have his surname attached to an invention he perhaps could only have conceived in the most abstract of terms. His destiny while he lived was one of considerable heartbreak. Otway and Gray died within a year of each other in 1906-07, the former of a “sudden illness,” the latter either pushed or accidentally dislodged from a moving streetcar.⁴²⁹ Woodville participated in the 1911 patent hearings concerning the MPPC and IMP, at which point he was “a broken-down Southern gentleman reduced to selling books door to door.”⁴³⁰ In Ramsaye’s considerably saccharine yet profound phrasing, his “landlady complained of his long use of the lights in his little hall room. It was past her understanding why a man who sold books all day should want to read books all night. She, of course, could not understand that the books he tried to sell were not the books he read.”⁴³¹ Major Latham died sometime around Thanksgiving Day, 1911.

Would referring to the loop system as the Lauste Loop, or even splitting the credit for invention, improve things? These are questions for patent litigation and bookkeeping. This does not mean they are without merit, nor that such labors should be understated. The messiness of the Latham Loop story does remind us, however, of the fundamental problem of the proper name and propriety. Deleuze was right to recognize that “military men” and “meteorologists” understood the

⁴²⁹ Hawley, 315-16.

⁴³⁰ Hawley, 316.

⁴³¹ Ramsaye, *A Million and One Nights*, 298.

secret of the proper name, that it designates not an individual or a subject but events and becomings (e.g. Hurricane X, Tropical Storm Y).⁴³² In other words, “proper names belong primarily to forces, events, motions and sources of movement, winds, typhoons, diseases, places and moments, rather than people.”⁴³³ The host of hands and the sporting milieu are forces in the equation, but in a very real sense the Loop itself authors its own becoming. Although “the designer is the helpmate to emergence,” for Brian Massumi, “invention is less about cause than it is about self-conditioning emergence.”⁴³⁴ (More directly: “either it [relation] clicks in or it doesn’t.”)⁴³⁵ And once the Loop emerged, it would become a necessary element in virtually all non-digital camera systems up to the present. How else could the long takes of *Raging Bull* or *Snake Eyes* run their course?

3.3 All Hands On Deck: Setting the Loops (Again, and Again...)

Careful attention to various loop⁴³⁶ methods was hardly restricted to professional camera technicians throughout the twentieth century. The Harmon Foundation’s 1939 instructional series, *You Can Make Good Movies!*, makes sure to clarify for its viewers the necessity of proper loop length and flexibility.⁴³⁷ The series’ first lesson, “How To Use Your Camera,” walks would-be cinematographers through the steps of camera and lens preparation, suggesting that “With modern cameras and films, movie-making is an activity we can all enjoy.” Its pedagogical method is sound:

⁴³² Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis and London: University of Minnesota Press, 1987), 264.

⁴³³ Deleuze, *Negotiations*, 34.

⁴³⁴ Massumi, “‘Technical Mentality’ Revisited,” 26.

⁴³⁵ Massumi, “‘Technical Mentality’ Revisited,” 26.

⁴³⁶ For the remainder of this chapter I will only capitalize “Loop” when referring explicitly to the Latham Loop or to late-nineteenth century loop systems.

⁴³⁷ *You Can Make Good Movies!* was directed and photographed by Kenneth F. Space, with assistance from Evelyn S. Brown.

first, show average American adults peering through 16mm motion picture cameras, referring periodically to their respective manuals; next, suggest that loyal adherence to the information and guidelines found therein would result in “scenes [that] would all look like these,” before teasing the viewer with properly exposed images of children—and kittens—playing, a tennis match in action, and a swimmer preparing to take the plunge. The rest of the film is split into fifteen subsections, referred to as “simple but rigid rules.” Rule 3 tells us that “The ‘loops’ should be large enough to allow free movement.” Here the filmmakers show us three different 16mm cameras (unspecified in the film) with the camera housing side detached. A charcoal pencil or like instrument is used to “prod” the top and bottom loops, yet there is little said about exact loop length (Fig. 3.5). In other words, in a camera system wherein everything else must “snap” into place and follow mechanical pathways—the sprocket teeth system, feed and take-up spools, &c—the loops are highlighted as elements that are critical to the camera’s functioning while escaping an exact requirement. They must be, to bend a phrase from Husserl, “anexact yet rigorous” in their deployment.

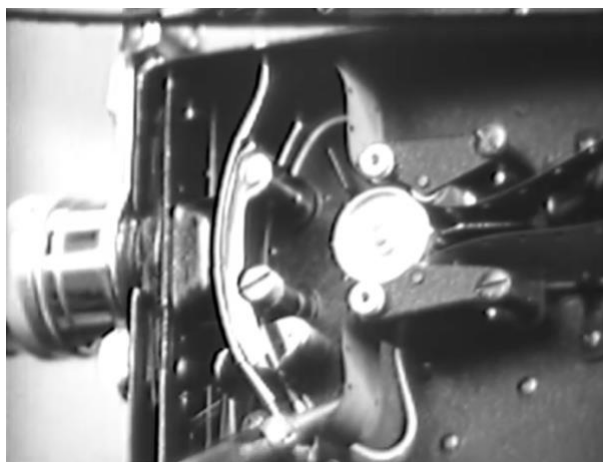


Figure 3.5 Setting the loops in *You Can Make Good Movies!* (1939)

Such modeling extends to professional guides and manuals for camera team members, and film school curricula likewise must spend plenty of time familiarizing students with the maintenance of loops. It is thus worth considering how the Latham Loop has been discussed, imaged, and made diagrammatic. In a media landscape that continues to shift exponentially toward digital technologies, 16mm Bolex cameras as well as more “advanced” (standard and super-) 16mm systems, such as Arriflex and Aaton, nonetheless remain central to a number of filmmaking pedagogies. The *Professional Cameraman’s Handbook*, still circulating in its fourth edition (1994), is among the essential reference guides for anyone interested in camera team practice. What I find most intriguing about the various diagrams and directions for “setting the loops” in the *Handbook* is that they likewise play fast-and-loose with discussions of loop “size” and spread. For instance, the very first camera outlined in the text (Arriflex 535 35mm) has in its entry the following recommendation: for either 1000-ft or 400-ft magazines, “draw a film loop from the magazine’s supply side (just enough to slide four fingers between the film base and magazine).”⁴³⁸ This is not to say that there aren’t strict requirements for certain threading procedures. Select sections on “setting the loop” refer to exact sprocket count, for example; such is the case for the Arriflex 35 III magazine, to wit: “It is important to maintain proper loop size: 54 perforations, regardless of capacity.”⁴³⁹ Or the Mitchell 35mm S35R, the entry for which must outline no fewer than six separate guidelines for setting the loops in the magazine’s top-load form, including the directive (12a), “[a]djust lower loop so that when lower film-guide eccentric closes, loop will clear

⁴³⁸ Sylvia Carlson and Verne Carlson, *Professional Cameraman’s Handbook*, 4th ed. (Boston and London: Focal Press, 1994), 139.

⁴³⁹ Carlson and Carlson, 180.

bottom of box by *3.175mm x 6.35mm (1/16-1/8")* at lowest arc of loop.”⁴⁴⁰ Such attention to detail thus remains of the essence in determining various supplies of slack.

What of these analog processes that rely heavily on the *digital*, though, by which is meant the use of fingers and hands for reference? Returning to the Arriflex 535, we might ask how universal a measurement “four fingers” is, to say nothing about an individual’s bodily changes amidst extremes of heat and humidity. Other entries likewise dance around this technique for setting the loops, taking a surprisingly varied approach to hand-loop engagement. There are procedures involving the placement of a forefinger against the camera’s pressure plate before “loop[ing] excess film around forefinger” (Eclair ACL 400-ft. magazine), or using the four finger approach on the outside of the magazine to create an arc and, ultimately, “two equal halves [of film stock], which, when individually pushed into the magazine, form the upper and lower internal loops.”⁴⁴¹ Recall the language from Latham’s patent, that the “loops of slack below and above the exposure window [...] produce and take up the slack by their own positive action entirely independent of the film-supporting reels at the extremes of the apparatus.”⁴⁴² Yes, the loops effectively maintain tension within a range of acceptable strain, and it is not unwise to say that they do so independently of intervention once the machine whirs (it either clicks or it doesn’t). But of course hands or fingers must prepare these loops, this preparation often taking place in the dark or blindly: to fumble in a changing-bag or darkroom is to rely on proprioceptive gestures and habits, to trust the hand in-formed by repetition and respond to the feel of device and celluloid. In this sense the loop is both materially inscribed and functionally autonomous. The hand cannot

⁴⁴⁰ Carlson and Carlson, 422, emphasis mine.

⁴⁴¹ Carlson and Carlson, 371; 346.

⁴⁴² Latham, 3.

remain within the camera when it has been closed up and prepared for photography—but the hand never really *leaves* the camera, either (Fig. 3.6).



Figure 3.6 Does the hand ever really leave the camera? Eclair 35mm Cameflex magazine loop-setting instructions

Image enlargement from Professional Cameraman's Handbook

David Elkins' *Camera Assistant's Manual* brings us back down to earth: the “loop is *nothing more than a slack length of film* between the rollers or sprocket wheels and the gate, which acts as a buffer between the intermittent movement and the continuous movement of the film.”⁴⁴³ *Nothing more!* The Latham syndicate members turn in their graves. But this is hardly the only example of descriptions of the loop that seem to evacuate it of material interest or render it as a sort of metaphysical—and beneficent—phantom undergirding the “rest” of the camera’s functionality. In a strangely raucous piece for *ArtSlant*, Guy Parker discusses the genesis of the Latham Loop in terms of Virilio’s “integral accident,” which he paraphrases as “the idea that every

⁴⁴³ David E. Elkins, *The Camera Assistant's Manual*, 4th ed. (Burlington, MA and Oxford: Focal Press, 2005), 18, emphasis mine.

new technology contains the capability of its own derailment or failure.”⁴⁴⁴ For Parker, what most interests us about various loops is their status as a sort of *mediator* between the flimsiness of the celluloid stock and the intensity (he uses the word “violence”) of the cinematic machinery. He writes: “The loop exists within the machine as a no man’s land: its images are not on the reel, nor in the gate, or on the take up reel. [...] It is anti-materialist. The film stock is supported only as a means to an end. Any evidence of its physical existence is considered vulgar, ungainly, inferior. The loop’s presence only becomes apparent when it fails.”⁴⁴⁵ Thus, for Parker, the loop is only made “present” when it stops functioning—when it becomes, as Heidegger might have said, “present-at-hand.”

To call the Loop “anti-materialist” is bewildering. In the main, its formation cannot be separated from the manual intervention of a loader or camera assistant, their labor inscribed during the process of “setting the loops.” Every frame of film will travel through the course set by these hands, whether before, after, or both before and after exposure. There would also be no loop as we know it without the particular properties of flexible roll celluloid film. So while it is tempting to consider the loops themselves as *ghosts in the machine*, as fundamental but fundamentally abstract elements in the camera system’s technical ensemble, to do so is to bracket the material base of cinema and evacuate the labor and craft of the medium’s technicians. In response to Parker’s suggestion that the loop is only brought to our attention when it fails, I ask: does not every frame that passes through the camera system make apparent the loop and its effective setting? The loop’s failure is, more accurately, its *absence*—the film snaps, the celluloid accordions into the magazine.

⁴⁴⁴ Guy Parker, “The Latham Loop: Maintaining a Clean and Healthy Image for 120 Years,” *ArtSlant*, November 19, 2011, accessed November 17, 2019. See Paul Virilio and Sylvère Lotringer, *The Accident of Art*, trans. Mike Taormina (New York and Los Angeles: Semiotext(e), 2005).

⁴⁴⁵ Parker.

Whither the loops then? Holding fast to the loop may not take the same shape as other methods of “reading for” labor and embodiment in the cinema, since *sensing* it does not operate on the same plane. But its ubiquity and invisibility need not foreclose it from our consideration of integral and material elements in film production.

Jon Hackett has analyzed a number of early-cinematic objects and practices via certain of Simondon’s concepts, especially as these pertain to the latter’s broad treatment of ontogenesis. Turning to Hackett’s work allows us to finesse these questions of the loop’s (anti-)materialism while considering whether its status is ultimately *minor* or *major* in Simondonian terms. Hackett’s plan here—as was Simondon’s, more generally—is to undercut or at least nuance the supposed dichotomy between materialism and idealism, and while this seems tailor-made both for a reassessment of early-cinematic practice and a rethinking of Bazinian film theory, his approach does not exhaust its usefulness despite a focus on the analog or the canonical.⁴⁴⁶ What rather interests us here, however, is Hackett’s hesitancy to address either the Latham Loop or the Maltese Cross (and similar intermittent devices) in any sort of depth. Lest we treat Hackett too unfairly, however, it must be admitted that focusing on Muybridge and Marey (and Bazin) makes much sense as a theoretical opening salvo, and his treatment of Marx vis-à-vis Simondon also allows him to fuse an analysis of “gentlemen inventors,” their reliance on established “economic networks,” and the role of craft laborers in cinema.⁴⁴⁷ Hackett also goes to great lengths in highlighting his essay’s own provisional and provocative nature, seeming to return time and again to a sort of speculative position which calls for subsequent critical tweaking and renewed

⁴⁴⁶ Hackett’s claims on a Simondon-inflected understanding of “technical culture” and cinematic inventions will remain of interest in the following chapters, especially when dealing with automatic-capture digital technologies and sports-specific inventions.

⁴⁴⁷ Hackett, 14.

questioning. Note his tone, both deferent and exclamatory, after briefly considering the question of whether the Loop and Cross are “major” inventions in the vein of Simondon: “It might take an expert in the technology of cinema to provide more reliable verdicts on which additions to the apparatus were merely compensatory, and which were undoubtedly ‘major’ inventions in Simondon’s sense!”⁴⁴⁸

The question of value abounds in Simondon,⁴⁴⁹ yet such judgments of utility and potential function are not reducible merely to firm decrees on which inventions or modifications *count*, and which should be held up as instances of major genesis. This would hardly track with a body of work that returns consistently to notions of ontogenesis, process, and perpetual individuation. As such, Hackett’s call for us to clarify which additions or supplements to the cinematic “apparatus” (this term kept here for the moment *sous rature*, as it were) are “essential” needs reframing. For we do not pass judgment on the historical object (or actor) and move on, choosing this or that item for a specific place on the genealogical tree of the cinema; rather, we observe the emergence of such an invention with respect to its milieu and with an eye toward not only what it does, and what it makes possible, but also *what new thoughts about our relationship to technicity it makes available*. These are never given, never static. They are feedback loops, perhaps.

That is to say, the question of how “major” an invention is, whatever credence is lent to that term, cannot be separated from the shifts in practice and thought that it harbors (potentially, pre-individually) during its individuation. Hackett would have it that the Latham Loop is “minor” in the sense that it was “an adaptation that serve[d] to compensate for a deficiency in the celluloid

⁴⁴⁸ Hackett, 15.

⁴⁴⁹ See, e.g., the introduction to *Mode of Existence*: “We would like to show that culture ignores a human reality within technical reality and that, in order to fully play its role, culture must incorporate technical beings in the form of knowledge and in the form of a sense of values” (15).

itself as a medium for carrying photographic images,” as if the inaugural use of the Loop itself solved a problem and marked a split in the development of cinema, after which everything can come about in a *post-Loop* setting, not one conditioned by and still interacting with the device’s complex connections.⁴⁵⁰ It is perhaps of the essence to recur to one of Simondon’s shorter works, 1965’s “Culture and Technics.” We find here a discussion of the major/minor divide that is far less detailed than that of *On the Mode of Existence of Technical Objects* and perhaps a bit “looser,” but its description of what might constitute a “major” gesture of invention helps to recalibrate our thinking away from some of the overly-rigid discussions found in the more structural of Simondon’s publications. Consider the following:

Generally speaking, these [major] technical gestures are not justified by the needs that precede them, *but only by the system of functions and needs that they create through their own existence*; to a certain extent, these are gestures endowed with a power of self-justification. They have an optimization value, in the sense that they concretize the greatest prowess that can be achieved, without failing [*faillite*], with the technical means belonging to a given epoch and a given group’s energetic and cognitive resources; they are perfect, in the sense that they are on the brink of failure...⁴⁵¹

The introduction of the Latham Loop can certainly be said to find its justification, or at least its partial cause, in a need that “preceded” it. Additionally, it would be wrong to say of the loop that it stands as a full concretization of the technology, serving also to increase the system’s autonomy. However, the “technical gesture’s” individuation *is* related absolutely to the function created by its own existence, *viz.* its “separation” from the exigencies of the boxing long take and its ultimate status as a *sine qua non* for subsequent motion picture work. Returning to the loop’s ever-tenuous status within the camera/projection system, we can also link this to Simondon’s poetic suggestion that such “perfect” devices or gestures are “on the brink of failure,” even if he had something

⁴⁵⁰ Hackett, 15.

⁴⁵¹ Gilbert Simondon, “Culture and Technics,” trans. Olivia Lucca Frasier, rev. Giovanni Menegalle, *Radical Philosophy* 189 (January-February 2015): 20, emphasis mine.

slightly different in mind. Witness his discussion of the Eiffel Tower, more specifically the moment when the two “unstable” halves meet, have their cabling removed, and “[support] one another in the centre.”⁴⁵² Gargantuan metallic edifices and tiny, folding celluloid strips may thus be thought of together in terms of their provisional status and the registration of a particular tension (not too much, not too little).

But these functions and needs created through the unforeseen coming-into-being of the technical object/gesture are also inseparable from concerns of technical mentality, understood here as both a culture-technics “bridge” and a set of cognitive, affective, and ethical valences potentialized through technical ontogenesis. The materiality of the Latham Loop—and the aesthetic domain of its generated images—expanded the domain of conceptual problems related to not just the status of the contingent, but questions of temporal pressure, deferral, and—ultimately—death. As such, it behooves us now to turn (back) to Bazin and ask him what he thinks about boxing.

3.4 How (Not) to Make a Cut: Bazin, Contingency, Deferral

*Time present and time past
Are both perhaps present in time future,
And time future contained in time past.
If all time is eternally present
All time is unredeemable.*

-T.S. Eliot, “Burnt Norton”⁴⁵³

⁴⁵² Simondon, “Culture and Technics,” 20.

⁴⁵³ T.S. Eliot, “Burnt Norton,” in *Four Quartets* (New York: Mariner Books, 1971), 13, lines 1-5.

In many ways, André Bazin's work has functioned as a sort of film theory palimpsest. This is not due solely to the numerous re-readings and re-thinkings (à la Dan Morgan) of Bazin that often revolve around the problem of his being reduced to a "naïve realist," regardless of how much straw is stuffed into this critical persona. Rather, we might also say that when provocative shifts are made to our understanding of Bazin's big picture thought, some of his seemingly off-the-cuff or less focused observations reveal themselves as more worthy of our attention than previously supposed. My goal here is to look at how Bazin treats the nuances of contingency and deferral in cinema, both of which are ever crucial to boxing as an event and the function of the Latham Loop, but which are hardly restricted to such a specific genre or mode of filmmaking.

It remains for us first to address a few entries from the aforementioned re-readings of Bazin's oeuvre, both to offer a general sense of the critical insights I rely on here and to better explain my surprise that Bazin has not been taken up in the context in which I now find myself. Morgan gets pride of place, not least because he—and Adam Lowenstein, subsequently—foregrounds the usefulness of the "ambitions of classical theories" in the face of a "rapidly changing media landscape," a claim to which I will return in subsequent chapters.⁴⁵⁴ But Morgan's essay also served as a snare-shot which kicked off another round of investigations into what, exactly, realism (or *realisms*) meant for Bazin, and how we should understand his approach to indexicality. For Morgan, accounts of Bazin which privilege the "index argument" misunderstand the force of Bazin's "Ontology" essay, but not without reason. By introducing the term "transfer," Morgan suggests, Bazin short-circuits the accepted indexical argument by reworking the stance wherein an antecedent object or "reality" is indexed by a photograph.⁴⁵⁵ This is the move that

⁴⁵⁴ Daniel Morgan, "Rethinking Bazin: Ontology and Realist Aesthetics," *Critical Inquiry* 32, no. 3 (2006): 443.

⁴⁵⁵ Morgan, "Rethinking Bazin," 447-48.

allows him to claim that the image “*is* the model.”⁴⁵⁶ Such an approach, especially when adumbrated by a number of flexible metaphors, throws questions of identity, self-sameness, fidelity and realism into new relief. Ultimately Morgan uses this ground-clearing to argue for Bazin’s multiple, “open” realisms, supplanting the index argument position for one more attuned to style and “attitude.” Freed from dominion of the photographic index as faithful guarantor of reality, the image can be considered as *generative* and not solely as a post-hoc indexical register.

Mario Sluga expresses some umbrage with Morgan’s reading of Bazin, and he aims to take Bazin “literally” to finesse the latter’s stance on indexicality. For Sluga, it is not wrong to hold fast to index theory with respect to Bazin’s ontology, because it is incorrect to surmise that “index theory necessarily forecloses the possibility that an index may be identical to what it is an index of in the first place.”⁴⁵⁷ Marshalling evidence for such a claim, Sluga suggests variously that “I am a guarantee of my previous selves,” and that “fingerprints are materially identical to the body responsible for them.”⁴⁵⁸ These phrases misunderstand, or overplay, the ontological surety of *identity* as well as the concept of a guarantee, but we needn’t even go this far: in basic terms, such an approach to indexicality reduces the equation to a set of elements capable of transferring/translating an “essence” without loss and with little attention paid to the environment within and through which they individuate. For Sluga is using these examples not to suggest that Morgan is wrong to claim that indexicality, commonly understood, “does not fully capture the special relation Bazin has in mind”; he is doing so to gainsay, via a paraphrase of Morgan, “that there is no overlap between the relation of identity and that of indexicality.”⁴⁵⁹ While I admire

⁴⁵⁶ Bazin, qtd. in Morgan, “Rethinking Bazin,” 450.

⁴⁵⁷ Mario Sluga, “Taking Bazin Literally,” *Projections* 11, no. 1 (2017): 65.

⁴⁵⁸ Sluga, 65; 73.

⁴⁵⁹ Sluga, 66.

Slugan’s approach to the dual theory of light as pertains to Bazin’s “identity thesis”—which will be taken up in the following chapter—I find the supposition that things are or can be “numerically identical” to their past selves a philosophical dead-end.

In other words, the center cannot hold. A flimsy, metaphysical attachment to self-sameness or self-identity of objects does not an index guarantee. It botches the extent to which, in terms of this chapter, the camera system and its operators are co-efficient “causes” in the construction of experience and subject-superjects emerging from such experience. This is perhaps the original sin of the semiotic index model as so often deployed: even if those charged with constructing or documenting the pro-filmic are recognized as elements in the system, their position must be evacuated to clear the way for a unidirectional indexicality. Alan Watts, in a vein more mystical, cites the phenomenon of a rainbow as a similar example of the need to think experiential thickness and associated milieu: “For a rainbow only appears when there is a certain triangular relationship between three components: the sun, moisture in the atmosphere, and an observer [read, perhaps: a lens]. If all three are present, and the angular relationship between them is correct, then, and then only, will there be the phenomenon ‘rainbow.’”⁴⁶⁰ If there might be any sort of index here it is one of process and relationality, which are irreducible to the Peircean semiotic approach and will always, in some way, evade capture.

Morgan is right to point up the Bazinian “separation” between spatial and temporal contingency with respect to the image’s identity. This understanding of contingency might actually be more suited to the linguistics of a Greco-Roman world, as it were, since *contigere* originally carried separate notions, since blurred, of connection and contact. Thus we have not only the suggestion that contingent events are undetermined, temporal, and chance-driven, but also that

⁴⁶⁰ Alan Watts, *The Book: On the Taboo Against Knowing Who You Are* (New York: Vintage Books, 1989), 101-02.

they are, in a way, “touching” each other. Bazin gets at this, I think, in some interesting ways when he discusses a certain sort of contingency on which cinema often relies. Amid some of his prohibitions or suggestions against montage, he highlights sequences wherein animals and humans occupy the same frame, or where there is an overwhelming threat present in the diegesis and, by extension, the pro-filmic. Critically, he speaks of these events as enclosing “the simultaneous presence of two or more factors in the action,” thus “[ruling out] montage.”⁴⁶¹ Serge Daney calls these presences “heterogeneous elements.”⁴⁶² Adam Lowenstein has finessed this approach to pair Bazin’s fascination with spectator relationality and “riskiness” to a sort of surrealism,⁴⁶³ and Jennifer Fay wisely reminds us that Bazin isn’t so much interested in the violence or danger *as such*, but how the elements of these scenes are “above all, images of possibility.” She writes: “These scenes of possibility remind us that this particular journey and the human history it represents are contingent and might very well have unfolded differently.”⁴⁶⁴ In Bazin’s language, “it is not so much the photograph of the whale [as an example] that interests us but the photograph of the *danger*.”⁴⁶⁵ Not even of a danger that must ultimately be *paid out*, either, but one that remains present in its contingent, conditional absence—or present in its failure to appear. The question of indexicality here, always fraught, is even more quizzical: is the photograph indexing the danger (relationality), or is it indexing the contingent moment in its virtual, potential, or “differently unfolded” register? Would it still be an indexical image if it fundamentally indexes difference?

⁴⁶¹ André Bazin, “The Virtues and Limitations of Montage,” in *What Is Cinema? Vol. I*, ed. and trans. Hugh Gray (Berkeley and Los Angeles: University of California Press, 2005), 49.

⁴⁶² Qtd. in Adam Lowenstein, *Dreaming of Cinema: Spectatorship, Surrealism, and the Age of Digital Media* (New York: Columbia University Press, 2015), 137.

⁴⁶³ Lowenstein, 135-48.

⁴⁶⁴ Jennifer Fay, “Seeing/Loving Animals: André Bazin’s Posthumanism,” *Journal of Visual Culture* 7, no. 1 (2008): 46.

⁴⁶⁵ André Bazin, “Cinema of Exploration,” in *What Is Cinema? Vol. I*, 161, emphasis in the original.

Place Bazin ringside, giving him a front row seat for a boxing match—or the projection of a filmed bout. It takes only a little wriggling to approach long takes of boxing fights as similar instances of his “heterogeneous elements,” with a sort of endlessly deferred threat and contingency that call for the preservation of temporo-spatial unity. The knockout, or a fight’s finish, is both the ultimate event that fixes the mark on the previously recorded material *and* the ever-present future of the bout that must not be missed—thus the primary impetus behind the Loop’s development. More simply, the opponents are in effect “two [...] factors in the action”: “In the boxing ring there are two principal players, overseen by a shadowy third,”⁴⁶⁶ and these two of course represent massive threats to each other’s corporeality. We must be careful to remember that Bazin was not always describing situations in which great danger or death was “actually” around the corner, or in which such heterogenous elements were “touching.” For Lowenstein, it is crucial to highlight Bazin’s suggestion that in *Where No Vultures Fly* (1951), a scene that includes a family sharing the frame with a “lioness” is “not based on exposing the filmed actors to actual physical risk.”⁴⁶⁷ As such, Lowenstein makes clear that Bazin’s “edict against editing” is in fact no edict at all, but rather a “commitment to provide the spectator with a certain cinematic experience,” in this case one which—however watered down—“does not depend on an actor actually being threatened by an animal outside the film but on *spectator perception* of the *relationality* between human and animal together within the film frame.”⁴⁶⁸ Bazin’s “posthumanism” is best recognized through these nuanced accounts of his description of “risky spectatorship” in which the relationship between human and animal is dissolved even as it is struck through with (the image of) threat.⁴⁶⁹

⁴⁶⁶ Oates, 8.

⁴⁶⁷ Lowenstein, 137. See Bazin, “The Virtues and Limitations of Montage,” 49.

⁴⁶⁸ Lowenstein, 138; 137, emphasis in the original.

⁴⁶⁹ Lowenstein, 139. Lowenstein goes on to argue that Bazin’s treatment of Buñuel’s *Los olvidados* (1951) effectively scrambles such a “surrealist posthumanism” in favor of a retrenched humanism (139-42).

But the cinematic experience generated via the single-shot or long take boxing film is of a piece with this thinking. We might inquire what Bazin would have said about Dickson and Heise's Edison Co. film *The Boxing Cats (Prof. Welton's)* (1894), with two felines duking it out as a grinning referee looks on with dubious intent; or, perhaps, Birt Acres' *The Boxing Kangaroo* (1895), made in tandem with R.W. Paul, another early "sporting" wide gauge, widescreen short featuring a pugilistic kangaroo squaring off against a young boxing boy. More to the point, when I review films such as *Leonard-Cushing* or *Corbett-Fitzsimmons*—or, rather, when I review what is left of these early fight films—I think of Bazin. Not so much for his sketch of cinema's "mummy complex," but for his somewhat contradictory position on deferral, the contingent, and "life-time." Here is how I imagine the conversation going:

- Inquisitor ["I"]: The hour long film of *Corbett-Fitzsimmons* must be of tremendous interest to you?
- André Bazin ["AB"]: Nothing could be further from the truth.
- I: It has everything, though. It is a cinema of "duration," which you invoke admiringly. It—
- AB: "The faithful reproduction of reality is not art."⁴⁷⁰
- I: Not art, then, but is it not dramatic? After all, you have said that De Sica "[gave] dramatic necessity the character of something contingent," that he "succeeded in making dramatic contingency the very stuff of drama..."⁴⁷¹
- AB: You misunderstand me. When I say that a film like *Bicycle Thieves* "unfolds on the level of the pure accident," this does not mean that its value is generated by a *recording* of the contingent; rather, its value is in the relationship a dramatic film has to the contingent.⁴⁷² This relationship is style. It is realism, or realisms, but not faithful reproduction—
- I [aside]: *Dan Morgan was right...*
- AB: —you likely think that what I say of "documentary" elements in narrative films holds for documentary as such, no?
- I: Well, you did invoke "respect for the spatial unity of an event at the moment when to split it up would change it from

⁴⁷⁰ André Bazin, "De Sica: Metteur en Scène," in *What Is Cinema? Vol II*, ed. and trans. Hugh Gray (Berkeley and Los Angeles: University of California Press, 2005), 64.

⁴⁷¹ Bazin, "De Sica," 68.

⁴⁷² Bazin, "Bicycle Thief," in *What Is Cinema? Vol II*, 59.

something real into something imaginary,” and that “it is naturally true of all documentary films, the object of which is to present facts which would cease to be interesting if the episodes did not actually occur in front of the camera, that is to say documentary films that approximate to reporting.”⁴⁷³

AB: You refer obliquely to the “photograph of the *danger*” that interests us, then?

I: Yes, and [reading from “Death Every Afternoon”]: “I have never been to a bullfight, and it would be ridiculous of me to claim that a film lets me feel the same emotions, but I do claim that it gives me its essential quality: death. The tragic ballet of the bullfight turns around the presence and permanent possibility of death (that of the animal and the man). That is what makes the ring into something more than a theater stage: death is played on it.”⁴⁷⁴

AB: I have never been to a prizefight either, but...

I: Two rings, each with the permanent possibility of death. And in which heterogeneous elements, if you will, collide.

AB: There may in fact be something here—but do not call it art.

If, for Lowenstein, Bazin’s surrealism is eloquently expressed through his confession-like writing on the death of the matador in *The Bullfight* as well as “death’s possibility for both man and animal,” it is crucial to point out that such an undercurrent is tethered to Bazin’s occasional penchant for the *both/and* formulation, in this case “a simultaneous obscene/sacred, [and] material/eternal” cinematic rendering.⁴⁷⁵ In imagining Bazin ringside, I return as well to some of these moments in which Bazin’s thought (and his style) aims to hold seemingly contradictory elements in suspension. It appears that these are in fact not contradictory, nor are they even contrary. They do, however, index a sort of crisis.

We know that the nineteenth century was the site of what has been referred to, directly or obliquely, as a crisis (Gk. *krísis*, [κρίσις]), of contingency. This may very well be a repetitive phrasing, since the contingent is always in crisis (“turning point,” “decision,” “dispute”). What

⁴⁷³ Bazin, “The Virtues and Limitations of Montage,” 49-51.

⁴⁷⁴ André Bazin, “Death Every Afternoon,” trans. Mark A. Cohen, in *Rites of Realism: Essays on Corporeal Cinema*, ed. Ivone Margulies (Durham and London: Duke University Press, 2003), 29. See Lowenstein, 136-41.

⁴⁷⁵ Lowenstein, 136.

Doane and others rightly suggest, though, is that the pairing of Darwinian thinking on evolution with the spread of “mechanical” image-making technologies threw notions of time and contingency into new relief, seeming both to reveal something about the role of chance in the universe and to continuously produce/present/*presence* the contingent.⁴⁷⁶ Crises, as we know, can unfold in many ways. They can overwhelm with anxiety or forge bottlenecks of creative opportunity.⁴⁷⁷ They are turning points, after all. Nancy Frankenberry nicely summarizes the American Pragmatists’ answer to the turn-of-the-twentieth-century situation: “For both Whitehead and contemporary pragmatists, contingency and chance mark the universe as unfinished. All inquiries are therefore open to revision, and every life itself is a matter of invention and experiment.”⁴⁷⁸ But the sword of contingency is of course double-edged. A new conceptualization of the role of chance and the contingent could open the mind to the promises of experimentation, becoming and connectivity. But it also beckons with the valences of meaninglessness, entropy and death.

Doane, who has a lot to say about death (in life, in cinema) treats neither the boxing film nor the Latham Loop in her *Emergence of Cinematic Time*, reserving pride of place for Muybridge and Marey. While certainly not misguided, this focus nonetheless results in a strange exclusion. All the more so because Doane does spend time discussing the long take in cinema, most notably with respect to Pasolini’s writings.⁴⁷⁹ In a 2007 interview reflecting on these matters, she outlines the function of the long take vis-à-vis contingency in language aptly suited to boxing films of yesteryear as well as the suite of extended camera moves which opened this chapter:

The single take or the single shot film (a description of many actualities of the

⁴⁷⁶ See Doane, *Emergence of Cinematic Time*, 3-4.

⁴⁷⁷ Deleuze, *Negotiations*, 133: “Creation takes place in bottlenecks.”

⁴⁷⁸ Frankenberry, 106.

⁴⁷⁹ See e.g. Doane, *Emergence of Cinematic Time*, 104-07.

earliest period of the cinema) epitomizes the openness of film to contingency and chance. The longer the shot is held, the more likely the invasion of the unplanned, the contingent event. Pasolini recognized that it is the cut that acts as a reconfiguration of the photographic instant in film; it is the cut that lends to film the veil of historicity.⁴⁸⁰

We are thus returning to Bazin's focus on deferral, to the withholding of a cut (*L. decisio*). For Doane, following Pasolini, the cut—which signals “death,” or a making-past—retroactively rehabilitates the “meaninglessness” of the long take's perpetual presents by consigning them to the “archived.”⁴⁸¹ I want to ask here not just whether the focus on present-tense cinema mistakenly front-loads the equation such that the cut takes on an deceptive suzerainty over the image's contingencies, but also whether the exuberant and excessive long take itself is not then a sort of dice throw which tempts, if not death, then at least chance and necessity; to say that “bravura” long takes affirm virtuosity, affirm life in the face of multiplying variabilities, is in some sense to say that they acknowledge finitude while challenging its authority. Even the smallest “invasion of the unplanned” points to that phenomenon's ultimate expression.

In more general terms, then, is it possible to think contingency without thinking death? In one sense, the prospect of death seems the guarantor or foundation of contingency. How else to theorize the branching of temporalities, the concept of the event, if not for this “end”? In another sense, death is itself always contingent, always “irrupting,” to use Doane's apt term. She writes: “Perhaps death functions as a kind of cinematic Ur-event because it appears as the zero degree of meaning, its evacuation. With death we are suddenly confronted with pure event, pure contingency, what ought to be inaccessible to representation.”⁴⁸² Levinas, in a rather more poetic and elliptical manner, describes duration—a specific sense of *durée* which labors under the sign

⁴⁸⁰ Mary Ann Doane, “Imaging Contingency: An Interview with Mary Ann Doane,” interview by Nicholas Chare, Peter Kilroy, Marcel Swiboda, and Liz Watkins, *Parallax* 13, no. 4 (2007): 17.

⁴⁸¹ Doane, *Emergence of Cinematic Time*, 105.

⁴⁸² Doane, *Emergence of Cinematic Time*, 164.

of the Different—as “a deference of the immemorial to the unforeseeable.”⁴⁸³ A tremendously suitable phrase for the description of a boxing match. Death considered thusly waits just around the corner, in the future contingent, continually but not endlessly deferred. Its temporary absence generates the “danger of” in the words of Bazin, and in this sense death or great physical harm represents the limit which every boxing match trends toward. Unfortunately, at the time of this writing, there have been no less than three high profile deaths as a result of professional boxing matches in little over a season: Patrick Day, 27, died on 16 October 2019, four days after slipping into a coma at the end of a welterweight title bout. He joined Maxim Dadashev, 28, and Alfredo Santillán, 23, two other fighters who passed away in July as a result of injuries sustained in the ring.⁴⁸⁴ Understandably, discourse in the wake of these tragedies revolved around regulation and safeguards in the sport, a situation similar to that ever-present in American football, wherein the violent and chaotic nature of the game is all too often used as an excuse in lieu of improved safety protocols and treatment of the athletes upon whose labor these respective organizations flourish financially.

The literature and poetry of boxing is rife with historical examples of death announcing itself suddenly and altering the previously held tension we name the “danger of.” The downfall of Benny “The Kid” Paret in the early 1960s is one such (major) instance, not least because while Paret passed away ten days after his bludgeoning at the hands of Emile Griffith, the catastrophic final moments of the fight were broadcast live across the airwaves to a tremendously large audience.⁴⁸⁵ When Oates speaks about the specter of death hanging over bouts, or, in more pointed

⁴⁸³ Emmanuel Levinas, *God, Death, and Time*, trans. Bettina Bergo (Stanford: Stanford University Press, 2000), 19.

⁴⁸⁴ Neil Vigdor, “Ex-Champion, 27, Dies After Brain Injury” *New York Times*, October 17, 2019, B12.

⁴⁸⁵ See, e.g., from *Perfect in Their Art*: Elizabeth Alexander, “Narrative: Ali”; Anonymous, “The Kid’s Last Fight”; Ana Istarú, “The Man Who Boxes”; Lou Lipsitz, “To a Fighter Killed in the Ring”; Dave Smith, “Blues for Benny ‘Kid’ Paret”. Also see Nicomedes Santa Cruz, “Muerte en el Ring [Death in the Ring.]” <https://www.poemas-del->

terms, about the filmic record of fights which ended in death (however precipitously), she does so in terms that seem less to clarify the situation of filmed death than to further complicate it: “In the boxing ring, even in our greatly humanized times, death is always a possibility—which is why some of us prefer to watch films or tapes of fights already past, already defined as history. Or, in some instances, art.”⁴⁸⁶ Setting aside for the moment the question of “art” and the problem of whose imprimatur such a tag relies on, we might press Oates—perhaps a bit unfairly—and inquire whether these films, which are “defined as history,” are so-called *because* they concluded without a casualty or, more simply, because we can comfortably consider them as “already past” (*viz.* it matters not what the outcome was, since we are looking at what Bazin might call “embalmed time,” or Pasolini a “describable past”).

To this end, Oates quickly pivots to “admit” that she watched “two ‘infamous’ death fights”—on tape—in preparation for her study. If there is a strange disconnect here, it has to do with the fact that death or great physical harm always hangs over the prizefight, always lurks as the ultimate metaphorical-actual cut. Perhaps some of the allure undergirding boxing spectatorship, whether in person or mediated via the cinema or Pay-Per-View, is that “death is always a possibility” but it is “statistically rare.”⁴⁸⁷ As such, it lends the proceedings a certain weight in its absence and a certain burden in its presence, even if it occurs off-screen.⁴⁸⁸ But in

alma.com/nicomedes-santa-cruz-muerte-en-el-ring.htm. For a partial list of other fateful fights, see Oates, 98: “In addition to the infamous Griffith-Paret fight there have been a number of others given wide publicity: Sugar Ray Robinson killed a young boxer named Jimmy Doyle in 1947, for instance, while defending his welterweight title; Sugar Ramos won the featherweight title in 1963 by knocking out the champion Davey Moore, who never regained consciousness; Ray Mancini killed the South Korean Duk Koo-Kim in 1982; former featherweight champion Barry McGuian killed the Nigerian ‘Young Ali’ in 1983. After the death of Duk Koo-Kim the World Boxing Council shortened title bouts to twelve rounds.”

⁴⁸⁶ Oates, 9-10.

⁴⁸⁷ Oates, 10.

⁴⁸⁸ Death, of course, always occurs *off-screen*, but what I mean here is that certain fighters have died well after the fight or the filmed record has ended, whereas in other instances the death is coincident with the cinematic coverage.

this reading there is still something unexplained with respect to how these films “change” given concrete representation of death or extra-textual knowledge of the fighter’s lives. In the closing section of this chapter I want to meditate briefly on two more moments from in and around the boxing ring, neither of which involve death as such, to ask whether by problematizing the very question of the cinematic perpetual present they may clarify how we treat the filmic event.

3.5 Final Round (Still Rolling): “Time Is Important Here”

There is an obvious choice for the central event in the life and career of Joe Frazier. It also happens to be, perhaps, the central event in the history of professional prizefighting. Late in the evening of 8 March 1971, at Madison Square Garden, Frazier caught the then-undefeated Muhammad Ali with a seismic left hook. Ali, who had only twice been knocked to the mat (temporarily “placed outside of time,” as Oates would say), would stagger to his feet, but the damage was done. Frazier won “The Fight of the Century” by unanimous decision, forever altering the landscape of the Sweet Science. As Vogan reminds us, the bout itself was partly arranged and ornamented with the aesthetic affordances of closed-circuit television broadcasts in mind:

The fight appeared in four hundred theaters and was the first to show in all fifty states. It played in forty additional countries via closed-circuit or home TV to reach an estimated total audience of three hundred million. [...] Recognizing television’s crucial importance to the event and its success, [promoter Jerry] Perenchio enhanced the fight’s suitability to the medium by darkening the ring’s canvas and adjusting the color of the towels each corner used.⁴⁸⁹

⁴⁸⁹ Vogan, *The Boxing Film*, 89.

Contingencies, in the form of hypothetical and conditional questions, proliferated. What if Ali had not been suspended from boxing in his prime after refusing to participate in the Vietnam War? How could he have been defeated? Would he have changed up his style if he hadn't lost, and would the punishment garnered in rematches with Frazier and the famed Rumble in the Jungle with Foreman have been the same? How would this affect his body and mind with respect to his Parkinson's diagnosis? This contingency extends to the visual record, to the felt sense of camera operation as the pressure of time built, irrupted into a crescendo, and settled. There are at least three angles of the knockdown which, however poetically, flashed as a sort of ante-/post- swivel in the annals of professional boxing. The shot seen on closed-circuit broadcasts lasts about twenty-four seconds. The three preceding shots at the start of the round only hold for a few seconds apiece, as Frazier and Ali, both exhausted, feel each other out at the onset of the final of fifteen rounds. When Frazier connects with his famous left hook, Ali falls and momentarily escapes from the frame, perhaps reminiscent of the spatial "mishap" in the Corbett-Fitzsimmons bout. The camera operator hastily zooms in, pans slightly right, and tilts down, this combined move shaky in its motion, as if registering bewilderment above all else. A flashbulb fires, its massive overexposure producing a brilliant afterimage that explodes onto the screen, fading gently into a purple-blue halo. The camera stays with Ali as he gets to his feet and suffers the standing eight count, the crowd awe-struck and electric with noise.

An overhead shot from the ring's opposite side presents a curious double to the CCTV footage. Here, the shot scale is closer to a long shot, whereas the aforementioned take was framed in medium shot, as it were. This second angle thus offers a greater view of the canvas, the individuals surrounding it, and the spatial orientation of the fighters. Ringside commentators and enthusiasts lean on the mat, with two zealous photographers (or cinematographers?) extending

cameras about three feet into the ring at the top left of the frame. When Frazier connects and Ali goes down, the latter once again manages to momentarily exit the frame, with barely half of his body visible. And, again, the camera operator reacts overenthusiastically (who wouldn't?), the frame bobbing up and down in rapid succession in an attempt to quickly reframe, suggesting a response to the explosion of an event that so upset the balance—literal and figurative—of the tripod's operation, the expected path of motion, and the expected arc of Muhammad Ali.

The cinematic *pièce de résistance* of the knockdown is a high-fps, “cowboy” scale (from the knees up) shot, in which we can see Frazier uncoil and uncork the left hand in mesmerizing slow-motion. If, as I've suggested, we watch Muybridge's sequence photographs animated and looped, expecting something “different” though knowing better, the elongated shot of the Fight of the Century's decisive moment is likewise a site for such contemplation. One still assumes that Ali will, *must*, dodge the hammer blow. He does not, of course, and he again crumbles, a mist of perspiration and spit flying from Ali's turned head. For the third time, “The Greatest” exits the frame, his lower legs and part of his head barely visible in the bottom-left corner of the image. Of these three angles, this is the only slow-motion shot captured on celluloid, and while it is unclear how long the take actually was, there is significant lead time for the left hook, time which is made to feel even more lengthy because of the high-fps rendering. Thankfully the loop was properly “set” (Fig. 3.7).



Figure 3.7 My own composite of three frame-grabs from Ali-Frazier I's "decisive moment"

This prismatic imaging of the event, both in its broader sense (Fight of the Century) and its singular pivot-point (knockdown), returns us to the question of contingency as well as that of crisis. It is a *krísis* inasmuch as the punch stands as a *decision*, a *judgment*, a *turning point*, and a *separation*. It is thus an excellent heuristic for expressing the contingent, especially given the sense of “touching,” of meeting at the supposed border. But I am more concerned with the fact that all of the camera angles of Frazier and Ali’s decisive moment are imbued with dramatically inscribed physical reactions. In other words, all existent footage of the knockdown is inseparable from an embodied response to this turning point. We feel, watching the left hook fifty years hence, that it could not have happened thusly, and the camera operation agrees with us. The experiential thickness of the twenty-fifth second of the Fight of the Century’s fifteenth round encompasses fighters, crowd, camera operator(s), technology, and spectator(s), across different valences. It is a peculiar expression of Whitehead’s prehensions, split into a prism (as prehensions always are, after a fashion). Or, rather, the Event, which Whitehead refers to “in the more general sense of a nexus of actual occasions, inter-related in some determinate fashion in one extensive quantum.”⁴⁹⁰ If for

⁴⁹⁰ Whitehead, *Process and Reality*, 73.

Whitehead, as for Deleuze, there are always only events—or “occasions”—this does not mean that some are not more event-*full* than others.

The aural record is no less interesting. Just before Frazier finds the opening and winds up for his punch, the closed-circuit commentator makes an observation. He could not have known how true this statement would be, nor how poignant: “Time is important here.” His precise, proximate meaning makes sense—if Ali wanted to have a chance at winning a decision, he needed to act in time. But the timelessness of such a claim relies on its status as a coincidental signal that Time, or a certain understanding of *durée*, was about to declare an explosive presence. Coming as it does during a relatively long-held shot as far as the broadcast goes, it sounds as if the commentator is responding to the felt sense of temporal pressure. And his remark also reads as a pronouncement about the historical “swerve” about to effect itself, as well as a statement about our attempts to make sense of cinematic time.

Although Deleuze’s ruminations on cinematic temporality often get taken up in the context of Bergson, I find his discussion of Aion (αἰών) and Chronos (Χρόνος) from *The Logic of Sense* to be more apt here. In his terms, the pair functions respectively as “becoming which divides itself infinitely in past and future and always eludes the present” against—or erupting within—“the always limited present.”⁴⁹¹ Describing this particular reading of Aion, Robert W. Luzecky wisely enumerates the ways in which the concept is “fraught,” while also pointing out the importance of thinking Aion in terms of its “differentiating” function, its ability to “cut” (into) chronometric time (cf. *L. decisio*, “to cut off”), and its status as “pure variability.”⁴⁹² And it would be *unwise*, perhaps,

⁴⁹¹ Gilles Deleuze, *The Logic of Sense*, trans. Mark Lester and ed. Constantin V. Boundas (New York: Columbia University Press, 1990), 5; 61.

⁴⁹² Robert W. Luzecky, “The Times of Deleuze: An Analysis of Deleuze’s Concept of Temporality Through Reference to Ontology, Aesthetics, and Political Philosophy,” PhD Dissertation (Purdue University, 2021), 87-91. Also see

to follow Deleuze all the way down his own labyrinths of the Aion, within which he ultimately explores Aion's "surfaces" and the "becoming-mad of the depths" of Chronos.⁴⁹³ Rather, what I find remarkably fitting about this approach to Aion and Chronos is that it proffers a dual understanding of perpetual presents and an always evasive, "vanishing" present. In this sense, therefore, events are *both* chronometric and eternal (Gk. Aion → L. *æternus*), materially presented and atemporally "unlimited." To Doane's question of whether "the primary tense of film [...] is that of the present,"⁴⁹⁴ or whether it is the case that "there is also a certain instability of the present tense in the cinema" resulting from its archival/historical function,⁴⁹⁵ there may only be one answer: *yes*. This needn't be an either/or question, nor is it dialectical.⁴⁹⁶

So we watch the left hook. Or we remember it. And we are right to see it as both a prehended record of the collision of bodies in relation, and the always-escaping event ("*did that happen?...what happened?*").⁴⁹⁷ For Oates, the moment in a fight in which everything changes produces a type of visceral horror: "[it is] the moment in which the fight is turned around, and in which an entire career, an entire life, may end. It is not an isolated moment but *the* moment—mystical, universal."⁴⁹⁸ She is, more accurately, describing the event in its two-pronged Aion-Chronos expression. While such "horror" is certainly tinged with the knowledge that one fighter is in danger ("punches which he can no longer absorb"), I wonder how much of this visceral

Luzecky, 91-99 for a discussion of Aion vis-à-vis differential equations. On this last, see Deleuze, *Difference and Repetition*, 170-83.

⁴⁹³ Deleuze, *The Logic of Sense*, 165.

⁴⁹⁴ Doane, "Imaging Contingency," 17.

⁴⁹⁵ Doane, *Emergence of Cinematic Time*, 103.

⁴⁹⁶ Despite Doane's wonderfully provocative discussions of the "instability" of cinema's so-called "perpetual presents" and her approach to contingency, I see no reason to suggest, as she does, that the relationship between "chance/instantaneity and continuity" is a dialectical one which "film is a technological incarnation of" ("Imaging Contingency," 17).

⁴⁹⁷ Cf. Deleuze, *Logic of Sense*, 63: "What is going to happen? What has just happened?"

⁴⁹⁸ Oates, 60-61, emphasis in the original.

reaction is also a sense of astonishment or awe generated by the inkling of such temporal overflow. Thus Oates' rendering of "two dimensions of Time abruptly operant," *viz.* the time of the standing boxer and the time of his knocked-down counterpart, is poetically apt, yet it is always preceded by an event which staggers her in a different way.

An event which staggers me no less than does the famous left hook is found in Kon Ichikawa's *Tokyo Olympiad* (1965), to which I will return in chapter four. It is far less "obvious" or "central" than the hit to Ali's chin in terms of Frazier's biography. The boxing section in *Tokyo* is only two minutes long; and, of these two minutes, only forty-five seconds or so are dedicated to the fights as such. Interspersed with black and white telephoto images of various bouts, Ichikawa shows us reaction—or action—shots of Frazier's then-trainer, Yancey "Yank" Durham, Yank's body twitching and wincing in an abbreviated doubling of his fighter's movements. After a freeze-frame finish to what must be the gold medal bout (the film does not clarify), there is then a long take medium close-up of Frazier having his gloves removed and sweat wiped from his face. The screen goes black momentarily, and we emerge in a dimly lit tunnel, the soundtrack privileging only the sounds of Frazier and Durham's footsteps as they pace through the arena's passageways, pinging from the brightness of exposed-bulb top-lighting to zones of near-total darkness. Ichikawa uses this ready-made chiaroscuro fluctuation to layer results of all the boxing divisions, the names of winners scrolling over the long take. Nearly half a minute into the handheld walk down the hall, Frazier turns over his shoulder to regard the camera. He doesn't stop walking, and after a few seconds lifts a hand in a gentle wave of recognition. The cameraman soon pauses, observing the pair as they continue down the hall, now with backs once again turned. The camera jostles slightly as the final fifteen seconds of the take runs its course, and Frazier exits through a door at the hall's end (Fig. 3.8)



Figure 3.8 Joe Frazier's wave and exit in one of the long takes from *Tokyo Olympiad* (1965)

A timeless image, yet a timely one. One of the 164 camera operators on board for *Tokyo* saw fit to follow Frazier, not yet a professional, down and through the tunnel. He was met with a wave that seems at once to come from a fresh-faced twenty year old and a man who would become a sports legend. Formally, the shot also looks forward to the Steadicam long take from *Raging Bull* (1980) discussed in this chapter's opening, even if the terms of the movement differ. One, a celebratory and adventurous black-and-white sequence tracking De Niro's Jake La Motta out of the dressing room, through the low-key lighting of the tunnel, and into the ring's theatrics; the other, a less assured but visually exquisite follow-shot away from the arena's exuberance, through a dimly-lit passageway, and into the serenity of post-fight decompression. In some ways it appears that Frazier knew what would follow. Watching this in the years after his passing (2011) I was extremely moved, for obvious reasons. But I think that the poignancy of this moment that becomes an event—its “fullness of time,” in Kierkegaard's idiom—is once again inseparable from concerns of contingency. It is thus a powerful flip side of the earth-shaking left hook. And I choose to read the cameraman's decision to stop following Frazier after the gesture as one more embodied inscription of a response to the contingent, to an action not as shocking as the knockdown of Ali, but no less surprising.

Tokyo's long take also reminds us that although thinking about the Latham Loop's material and metaphorical purchase might not change the way we view the moving image uniformly, doing so does offer a potent figure for appreciating certain moments in the cinema as events. Loops above and below the film gate are constantly cycling through new film stock, but there are always fore and aft buffers, always supplies of slack, which guarantee the unfolding of presents. It is appropriate to see the film path as a straight line if we consider that every frame, during exposure, occupies the static gate. It is also appropriate to hold fast to a wave-like, double-loop diagram, a sort of sinuous, vibrational image of filmic time, since the celluloid (like time) warps around what we take to be the present. It is not that the cut ultimately fixes the mark on a series of presents—it merely ends the unfolding of presents that were already variable, already evasive. Frazier's gesture, his gesture in its haecceity, its *thisness*, cannot be separated from the drawn out walk down the tunnel nor the gentleness of the parting of fighter and camera operator. And it, like the famous left hook, still surprises, still seems evasive. And so we have two startling events which are bracketed by folds of time and joined by folds of film.

A hand raises, twice—a punch, and a wave: which is more sporting? which more eventful?

4.0 Writing with (Refracted) Light: Underwater Cinematography and the Many Meanings of Media

*O brilliant kids, frisk with your dog,
Fondle your shells and sticks, bleached
By time and the elements; but there is a line
You must not cross nor ever trust beyond it
Spry cordage of your bodies to caresses
Too lichen-faithful from too wide a breast.
The bottom of the sea is cruel.*

—*And yet this great wink of eternity [...]*

-Hart Crane, from *Voyages I* and *Voyages II*⁴⁹⁹

*A 'sporting' philosophy, without illusion –
the swimmer, the dancer, who are going
nowhere.*

-Paul Valéry⁵⁰⁰

The sea smothers *logos* (λόγος). That this is often quite obviously the case should not lead us to believe that there aren't still nuances to the observation, new depths to be plumbed. In the main, the process by which linguistic (transcendental) “certitude” and the rudiments of logocentric thought gasp or fade beneath the waves—or, perhaps, the placidity of a lake, a pond—can make itself clear in an instant or an epoch. To plunge is to temporarily forfeit breath, to substitute for speech a mode of gestural communication that assumes an even more defamiliarized register in light of the medium within which these messages must swirl and the constant exigencies of

⁴⁹⁹ Hart Crane, “Voyages I” and “Voyages II,” in *The Complete Poems and Selected Letters of Hart Crane*, ed. Brom Weber (Garden City, NY: Anchor Books, 1966), 35-36, lines 10-16; 1.

⁵⁰⁰ Valéry, 301, emphasis mine.

temporal pressure. The panic of a drowning body makes this most explicit, with thrashing limbs, stochastic air bubbles, and the *noise* of guttural pleas occupying a space where the groundedness of speech—literally, figuratively—is marked only by its absence. And, as Melody Jue has recently suggested, the ocean likewise threatens to overwhelm both the material signifying inscriptions we create *and* our concept of “inscription” itself, since “Underwater, any in-*script*-ions would be eroded, washed away, or overgrown with marine plants and animals.”⁵⁰¹ If the sea is thus cruel to the comforts of logocentrism, it can also be rather patient in this cruelty.

And yet—there is something mesmeric about the sea, with deference to the thalassophobic. Such attraction, whether of the ocean or other bodies of water, has found poetic purchase from Homer’s musings on the “wine-dark sea” through to the present, with notable high-point entries from Coleridge, Pound, Elizabeth Bishop, and Crane. Its allure has had a special place in the cinematic iconography of various regions, whether as a blockbuster backdrop or the tissue of meditative images from Ozu, Tarkovsky, Bergman, Painlevé. And Freud’s popularization—and mixed feelings on—Romain Rolland’s non-dualistic “oceanic feeling” has ensured that the sea and its fresh-water siblings remain analogical touchstones in the sphere of psychology, hand-in-hand with the canon of theologico-philosophical ruminations on the “great wink of eternity.”⁵⁰² In one form or fashion we are all, quite literally, *on an island*, yet the push-pull of the ocean and its mysteries is densely woven into our spiritual, aesthetic, and ecological existence.

In plumbing these cinematic depths, this chapter acts as a fulcrum between the land-based and somewhat “fixed”—though by no means static—experiences considered to this point, and the

⁵⁰¹ Melody Jue, *Wild Blue Media: Thinking Through Seawater* (Durham and London: Duke University Press, 2020), 28.

⁵⁰² See Sigmund Freud, *Civilization and its Discontents*, trans. James Strachey (New York and London: W.W. Norton & Co., 1989), spec. 10-15. Also see Jue, 53-56, and William B. Parsons, “The Oceanic Feeling Revisited,” *The Journal of Religion* 78, no. 4 (1998): 501-23.

final two chapters, which find somewhat different reasons for likewise “submerging” thought in the deep. We will soon turn to a consideration of film technology vis-à-vis the specificities of Olympic events (chapter four), a prime example of which is the testing and experimental fits-and-starts of mechanisms designed to capture and render swimmers’ bodies as they dive into, carve through, play within, and dance under the water; and this project’s coda, although focused primarily on street skateboarding, still aims to describe a situation wherein both filmer and rider are swept up in a cinematic “wave” that undulates atop an ever-tenuous surface. This chapter looks in both directions with respect to the rest of the dissertation, even if it may seem at first blush to be the most “separate” of the interlocking parts. As I will attempt to show, however, our trip underwater is not only useful for its analysis of a highly specific mode of image-making; rather, to assess the rudiments and curiosities of underwater filmmaking is also to read a number of land-based practices anew (or afresh), and it is also to take a more explicit look at the role of milieu in the cinematic experience.

It is not my goal to provide a full overview of motion pictures made underwater, nor will I spend much time discussing certain touchstones of water-based image-making, such as the oeuvres of the quasi-Surrealist Jean Painlevé or the famed Oceanographer Jacques Cousteau. The former pursuit is far outside the purview of this chapter, and an impressive group of recent works has gone some way toward painting a fuller picture of the history of still and moving image-capture below the surface.⁵⁰³ As far as the latter, both Cousteau and Painlevé have been approached from a variety

⁵⁰³ See e.g. Jonathan Christopher Crylen, “The Cinematic Aquarium: A History of Undersea Film” (PhD dissertation, University of Iowa, 2015); Nicole Starosielski, “Beyond Fluidity: A Cultural History of Cinema Under Water,” in *Ecocinema Theory and Practice*, ed. Stephen Rust, Salma Monani and Sean Cubitt, 149-68 (New York: Routledge, 2013); Sean Cubitt, *EcoMedia* (Amsterdam and New York: Rodopi, 2005), spec. ch. 4, “*The Blue Planet: Virtual Nature and Natural Virtue*,” and Jue, *Wild Blue Media*.

of perspectives, not least James Leo Cahill's sterling 2019 study of Painlevé, *Zoological Surrealism*,⁵⁰⁴ even if these magnetic figures still deserve more attention.

However, this chapter does revolve around two primary individuals, the husband-wife filmmaking duo of Hans and Lotte Hass. Although Hans may have been more frequently the prime mover of underwater image technology as well as their films' cinematography (and he surely overshadowed Lotte in terms of literary output), they are each diving legends and formative influences on the shape that ocean filmmaking would take well into the contemporary period. The most express reason for my focus on Hans Hass here is that he is credited with making the "first underwater film" (1942's *Pirsch unter Wasser* [*Stalking under Water*]).⁵⁰⁵ This is critical for multiple reasons, not least that Hass was involved in the creation, in fits and starts, of unique underwater rigs for his cameras, a genesis that allowed him to be the first to hand-hold a filmmaking apparatus undersea without the added layer of a submersible. As such, *Stalking* is the initial instance of sporting underwater camerawork, and yet there was plenty of precedent for what had already been termed "underwater" filmmaking, depending on one's vantage (in front of the screen, within the submersible).

Looking closely at Hans's development of his various camera rigs—both before and after his marriage to Lotte—allows us to tell a richer historical narrative about a fundamentally disruptive period of water-based filmmaking; luckily, although the exact technical specifics of the

⁵⁰⁴ James Leo Cahill, *Zoological Surrealism: The Nonhuman Cinema of Jean Painlevé* (Minneapolis and London: University of Minnesota Press, 2019). Also see Roxane Hamery, *Jean Painlevé: le cinéma au coeur de la vie* (Rennes: Presses universitaires de Rennes, 2009); and Lauren E. Fretz, "Surréalisme Sous-l'Eau: Science and Surrealism in the Early Films and Writings of Jean Painlevé," *Film & History* 40, no. 2 (2010): 45-65. On Cousteau, see e.g. Jon Crylen, "Living in a World Without Sun: Jacques Cousteau, Homo Aquaticus, and the Dream of Dwelling Undersea," *JCMS* 58, no. 1 (2018): 1-23; Phillip D. Duncan, "(Science) Fiction: Genre Hybridization in Jacques-Yves Cousteau and Louis Malle's *The Silent World* (1956)," *Journal of Popular Film and Television* 46, no. 2 (2018): 108-17; and Starosielski, "Beyond Fluidity."

⁵⁰⁵ Hereafter referred to by its English title, or abbreviated to "Stalking." The film was photographed in 1940, released in 1942.

Hasses' equipment for various shots throughout their oeuvre isn't always available, books penned by one of the divers—such as *Manta*, *Men Beneath the Sea*, or *A Girl on the Ocean Floor*—often flesh out what we might term, following Simondon, the various individuations of underwater film technologies and the bodies with which they interact. Furthermore, the split between Hans Hass' method, wherein a free diver operates a handheld camera (with or without the use of a rebreather), and the likewise pioneering work by figures such as Louis Boutan and J.E. Williamson, which relied on massive encasements (more on which below), challenges us to think critically about the role of the milieu in such “unfamiliar” filmmaking environments.

While the (associated) milieu is thus the target of this chapter's film theoretical inquiries, the intricacies of undersea optics and physics open up this discussion to ranging, yet intertwined, issues. Whereas chapter one suggested that the experiments of Muybridge and Marey beg of us to test film theoretical assumptions about measurement and athleticism, and chapter two analyzed how the Latham Loop's function and boxing coverage reconfigure our approach to cinematic contingency, this chapter breaks such theoretical questions down into a set of concerns. Within the issue of filmic milieux and sporting camera operation, I analyze the import of refraction to underwater filmmaking, the consequence of buoyancy and its relation to “floating” camerawork as well as stabilizing rigs (e.g. the Steadicam), and the notion of “pressure” as it pertains both to the challenges placed on the bodies of camera operators and the ability of celluloid or digital sensors to “faithfully” render color under the depths. After analyzing these traits of undersea filmmaking—which also pertain to land-based production, after a fashion—via the films, writing, and technical specifications of the Hasses, I briefly consider a set of recent interviews and trade publication articles featuring undersea operators; doing so grants us the ability not only to see

where some of Hass’ singular inventions or adjustments still live on in slightly modified form, but also to gauge whether contemporary techniques are rendering such solutions “to the wayside.”

4.1 Excursus: Against the Tide

As I write this chapter, the COVID-19 virus continues its ugly and malicious exponential spread across the globe, fundamentally reshaping the relationship between an individual—and a group, perhaps more pressingly—and their various milieux, between humans and their familiar habitats, and thus also, and ultimately, between daily life and our engagement with the environment. I do not introduce this discussion in attempt to parlay an extravagant and all-encompassing *problem* into an opportunity to make claims about the world’s water sources vis-à-vis visual media or to add to the chorus of voices calling for a shift to what Jue refers to as the “ocean humanities—also sometimes called the ‘blue humanities’ or ‘thalassography.’”⁵⁰⁶ Nonetheless, the perfect storm of the Coronavirus (to use its more familiar name) can hardly be separated herein from my thinking on topics such as prosthetic breathing apparatuses, unsafe conditions on such a large percentage of the world’s land space, and radical changes to the environment—this last for good or ill, of course, because the temporary downturn of factors such as carbon-emission and the release of nitrogen dioxide (NO₂) will likely end up being offset by deleterious rollbacks in regulation jammed into “relief” legislations and a return to climate-ruining “normalcy” once the Covid cloud eventually lifts. One can hope against hope, but the odds are long.

⁵⁰⁶ Jue, 16.

As much of what was very recently considered *terra firma* turns for the time being to a sort of *terra damnata*, then, it is useful to keep in mind that the ecological and environmental “givens” that we oft take for granted are in fact very much in flux, and much can change in an instant. Jue recurs frequently to both “literal oceanic displacements of people and living beings” as well as the split between “spectacular violence” (e.g. hurricanes, typhoons) and “incremental” or “slow violence” (e.g. the myriad effects of the climate change crisis and other consequences of what we might call *geological time processes*).⁵⁰⁷ In referring to the twin dangers of slow and spectacular violence—which, to be sure, can overlap—Jue’s missive about anthropogenic effects as well as the abrupt and unforeseen changes that can occur to the environment is dramatically (un)timely.

In terms of *physis* (φύσις) and *bios* (βίος), there are echoes here of Jussi Parikka’s interest in a geological temporality that pushes Zielinski’s “deep time” even further, linking up with Manuel Delanda’s “proposition of thousands of years of nonlinear history [...]: thousands, millions of years of ‘history’ of rocks, minerals, geophysics, atmospheric durations, earth times...”⁵⁰⁸ Philosophically, Deleuze’s sporadic references to both Simondon and Whitehead circle around these questions of great temporality, questions of how to think the middle, the milieu, the event: “People miss the amazing wait in events they were least awaiting.”⁵⁰⁹ Climate change and COVID-19 happen to be two different, yet not entirely separate, grim instances of the unexpected and temporality-shattering. And in *The Fold*, a book ostensibly about Leibniz with Whitehead as its shadow subject, a hydro-metaphor could stand as the text’s principle proposition: “events are fluvia.”⁵¹⁰ Neither the climate crisis nor the Coronavirus are meant to be focal elements of this

⁵⁰⁷ Jue, 15. In using “slow violence” she follows Rob Nixon, q.v. Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2013).

⁵⁰⁸ Jussi Parikka, *A Geology of Media* (Minneapolis and London: University of Minnesota Press, 2015), 8.

⁵⁰⁹ Deleuze, *Negotiations*, 160.

⁵¹⁰ Deleuze, *The Fold*, 79.

chapter, yet their flows cross by and through the thinking therein. We are in their (ever-shifting) middle, with all in flux.

4.2 Screening the Seas, to 1940

We've certainly come a long way since the days of banging two pieces of pipe together...

(from *The American Cinematographer Manual*, "Underwater Cinematography")⁵¹¹

The previous chapters have of course gone some way toward rethinking our approach to cinematic “problems” and the ways in which we might reframe how these problem arise, through what means they are worked out, and how they remain as viable traces for continued experimentation rather than being relegated to the filmic “past” in light of “solutions.” But I want to spend some time in this section coming to more strict terms with what I have thus far refused to really treat as *problemata* (Gk. προβλήματα). The noun *problema* (πρόβλημα) does mean, surely, (1) “hindrance or obstacle.” And yet, in the Greek this rests on the foundational sense in which a *problema* is something “thrown forward or projecting,” whether or not we take this to mean something *purposely* thrown forward (and thus perhaps still hindering) or something which is put forward or “projects” in front of a path. Critically, there remain two other senses that, I believe, are inextricably linked for our purposes in this chapter and also steer the discussion more toward notions of a kind of “self-imposed” set of *problemata*. To wit, (2): anything put before one as a defense, bulwark, barrier, *screen*, *shield*, wall; and (3): anything put forward as an excuse or

⁵¹¹ Pete Romano, “Underwater Cinematography,” *American Cinematographer Manual Vol. I*, 9th ed., ed. Stephen H. Burum, ASC (Hollywood: The ASC Press, 2007), 363.

screen. In essence, we can thus consider something like an underwater camera-housing rig—and the camera apparatus itself—as both a shield and a screen, and as a sort of “problem” that generates a novel embodied cinematic experience.⁵¹²

There is a sense in which the various *problemata* discussed in the previous chapters have indeed been treated for their capacity to introduce new functions and “obstacles” to moving image-capture, and not just for the means by which these camera systems (re)solve previously identified problems. In other words, I have tried to think through instances wherein the process of technological experimentation fundamentally alters various “fields” (visual, temporal, even athletic) rather than focus on a sort of positivist development in which products form links in a chain of cinematic evolution. And yet plenty of this has been latent thus far, not least due to the relatively static nature—from one side of the equation—of devices from Muybridge and Marey through the Latham Loop situation. Much of what is so potentially productive about examining underwater cinematography is that it allows for a fundamental shift in how one can theorize the status of “problems” in visual media; to be sure, this shift relies on a fortuitous etymological and metaphorical link, but these very *problemata* are far from hollow or strictly philosophical—in a sense they are as material and pragmatic as can be.

A diver splashes through the water’s surface, armed with a motion picture camera and perhaps a breathing apparatus. There is a protective layer of transparent material around the camera (a shield?), in addition to extra supports such that the outside layer and inner mechanism do not

⁵¹² See, e.g., Herodotus 7.70.2 (*The Histories*), one of the more widely cited examples of *problemata* being used in this vein: “προβλήματα δὲ ἀντ’ ἀσπίδων ἐποιεῦντο γεράνων δοράς,” which has been translated as “for shields [problemata] they used bucklers of the skin of cranes.” “Perseus Under Philologic,” Tufts University and the University of Chicago, accessed July 22, 2020, <http://perseus.uchicago.edu/perseus-cgi/citequery3.pl?dbname=GreekFeb2011&query=Hdt.%207.70&getid=1>.

affect each other. Flippers allow for a certain movement through the milieu, maybe helping to balance the strange sensation of swimming with a machine front-loaded, held out in front of one's body, between self and surrounding but likewise *in* the medium of the lake or sea. Since depth-of-field and focal length are effectively different—radically so—the second a lens system is submerged, what one expects to see through the viewfinder is certainly not what *appears*, to say nothing of how light travels into and through this underwater setting, its refractive index far different from that of open air. Clearly there is much to be accounted for.

Initially we might assume that the underwater milieu poses a set of problems affecting the accepted function, performance, and aesthetic yield of the motion picture camera and film stock. These problems would be dealt with or otherwise counter-balanced to allow for the device to “work” properly in such a distinct environment. Tinkering and testing serve to minimize any disturbance caused by these various phenomenal problems, in effect to mitigate that which differentiates the functioning and operation of the camera within this “unfamiliar” milieu from its “standard” place. Alternately, it is possible that all of the above phenomena are effectively value-neutral as far as cinema is concerned. They are no longer *problems* as such. It is as if they never existed—or, at least, they do not exist *in order to be solved*. (The sea has no *telos*, nor does cinema). Rather, the very housing and adjustments of the system (and of the diver's own attachments), as well as the distinctions made to technical specifications, are the *problemata*. They are shield and screen, deployed in an attempt to alter an unfavorable situation and, as a result, altering the experience of a milieu.

Another way to say this is that *the cinema does not solve problems, it creates them*. It problematizes. It projects, throws forward, undertakes a project. To consider film technology as well as various photo- and cinematographic craft work in this vein is not necessarily to do away

with inventions or solutions that clearly satisfied a previously unresolved situation. Rather, such an approach holds fast to the question of what has *changed* amid these shifts, inasmuch as they are read less as answers and more as further questionings. In this way it is much more expansive in its accounts of process—and in its renewal of the “middle of things”—than a rigidly genealogical method. And given the simultaneously threatening and welcoming lure of the sea, with a slew of distinct techniques and technologies submerged (for a time) in its depths to “capture” images, the underwater experience affords a perfect space to reconsider these questions of cinematic *problemata*.

It is outside the purview of this chapter to recount in depth the history of underwater image-making, either before or since the Hasses’ experimentation. But a brief overview of the major attempts at solving the visual riddle of oceanic photography is necessary here, especially since it introduces various “shields and screens” that the work of Hans and Lotte Hass will both continue and transform. According to Jonathan Crylen, the two primary figures in nineteenth century underwater image-making were William Thompson and Louis Boutan, with Marey garnering partial credit for “publish[ing] a study of aquatic motion in the popular science magazine *La Nature*; [Marey’s] images, shot using a small aquarium, inspired Auguste and Louis Lumière to make their *L’Aquarium* [...] and inaugurated the motion studies of marine life that continue today.”⁵¹³ Thompson’s initial salvo took place in 1856, just over three decades after Niépce’s first photographic production. Per Crylen, Thompson “photographed the floor of Weymouth Bay by lowering a 5 x 4-inch plate camera in a box tethered to an eighteen-foot rope.”⁵¹⁴ As Victor Adam reports, Thompson apparently became convinced of the utility of underwater images when stuck

⁵¹³ Crylen, “The Cinematic Aquarium,” 13. On the “few early cinematic exceptions” to Crylen’s history of underwater photography “pre-[John Ernest] Williamson,” see 27 n9.

⁵¹⁴ Crylen, “The Cinematic Aquarium,” 27 n9.

inside during a storm; what if, he mused, a camera could be lowered into the depths to survey damage to a ferry bridge?⁵¹⁵ Thus Thompson and his ad hoc assistant, Kenyon, had a local carpenter construct a “wooden box large enough to contain [his] camera,” with one side of the box “made of plate glass” and covered by a shutter operable via a string system.⁵¹⁶ Thompson then produced two images, one with an exposure time of five minutes, the second ten minutes. He “obtained a reasonable satisfactory [*sic*] negative, from which he made a print on which it was possible faintly to discern the outlines of boulders and seaweed.”⁵¹⁷ Adam suggests, rather sadly, that by the time Thompson had subsequently “designed a better apparatus”—better how?—he “lost interest and pursued the matter no further.”⁵¹⁸

Boutan’s work was performed later in the century, and represents “the first undersea photographs by a diver,” separating his practice from that of Thompson.⁵¹⁹ Boutan, a Zoölogy lecturer at the Sorbonne, offered a series of intriguing remarks about his experiments in an article titled “Submarine Photography” (1898). He speaks about the ocean’s “hidden region” and the “strangeness of these submarine landscapes,” which do not allow for “drawing” or sketching while still in the watery milieu.⁵²⁰ Thus *logos*, after a fashion, is frustrated, as is photo-sensitive inscription: his first attempts result in “only shapeless images, irregular undulations, which in no wise reproduced the landscape on which I had turned the objective [lens].”⁵²¹ A series of experiments end thusly, with the behavior of light underwater as well as the photographic plates’

⁵¹⁵ Victor Adam, “William Thompson—100 Years of Underwater Photography?” *BSoUP*, reproduced from *In Focus* 49 (September 1993), <https://bsoup.org.uk/william-thompson-100-years-of-underwater-photography/>.

⁵¹⁶ Adam, “William Thompson.”

⁵¹⁷ Adam, “William Thompson.”

⁵¹⁸ Adam, “William Thompson.”

⁵¹⁹ Crylen, “The Cinematic Aquarium,” 13.

⁵²⁰ Louis Boutan, “Submarine Photography,” *Century Illustrated Magazine* 56, no. 1 (1898): 43.

⁵²¹ Boutan, 43. N.B. Boutan’s use here of “objective/objectif” for camera lens, to which I will return below.

sensitivity proving difficult to handle. Eventually Boutan arrives at semi-satisfactory results, having experimented with different colored plates in front of the other lens elements.⁵²²

Boutan's self-described *modus operandi* is wonderfully detailed in terms of the physically demanding labor and the cooperative measures needed to perform the image-capture, however "imperfect" or impressionistic the results. He did not enter the water with the camera "apparatus"; rather, he dived to the floor of a cove in Troc (France) before "signal[ing] to the captain to send [him] down the different parts" of the camera system and enclosure.⁵²³ The entire system includes an iron stand, the camera "box," and a "cast-iron weight for steadying the whole." Another series of relays between Boutan and the above-surface captain-assistant takes place in order to signal the beginning of (lengthy) exposure and its conclusion; Boutan's "diving bell" (underwater chamber) renders it impossible, in his words, to use "a watch which can give the length of an exposure."⁵²⁴ Ultimately Boutan produced relatively clear images of a fellow diver and the oceanic milieu, largely resulting from lenses "specially constructed for that purpose," artificial lighting (to decrease exposure time), and a simplified diving enclosure—as well as trial and error.⁵²⁵ His article closes with an eye toward "the future of submarine photography," when effectively "useful results" will be supplanted by a device that can "accomplish its work at any depth of water."⁵²⁶

Enter John Ernest Williamson, whose construction of the "Photosphere" would seemingly combine elements of the devices and strategies deployed by Thompson and Boutan. Williamson's Photosphere, "an undersea observation chamber [...] connected to a boat via a long, flexible steel

⁵²² Boutan, 44.

⁵²³ Boutan, 45.

⁵²⁴ Boutan, 45.

⁵²⁵ Boutan, 46.

⁵²⁶ Boutan, 47-48. For commentary on Boutan's "early" work as well as his writing and lectures, see John Humphrey, "Submarine Photography," *Scientific American* 69, no. 16 (1893): 251, and "Submarine Photography," *Scientific American* 73, no. 6 (1895): 85.

tube,” enabled the filmmaker “to capture the seafloor on [motion picture] film for the first time,” in the words of Nicole Starosielski.⁵²⁷ Williamson put his Photosphere, “essentially an underwater camera booth affixed to the bottom of a barge by a watertight tube,”⁵²⁸ to use across a handful of films, both fictional and documentary, including *Thirty Leagues Under the Sea* (Carl Gregory, 1914) and *20,000 Leagues Under the Sea* (Stuart Paton, 1916). Crylen opens his chapter on Williamson with an anecdote that once again echoes the unique combination of delight and dread so intimately tied to oceanic milieux, which he calls “a fundamental contradiction in ocean exploration and filmmaking: a view onto wondrous and strange aquatic phenomena [...] undergirded by sometimes precarious and unpredictable technical and environmental arrangements.”⁵²⁹ Starosielski wisely points out that both the Photosphere and Williamson’s helmeted diving suits “were based on naval technologies, and he actively solicited assistance from the US Navy,”⁵³⁰ which Crylen considers the major instance of previous scholarship on Williamson’s work focusing on his technical system’s “ramifications.”⁵³¹ Among these consequences, Crylen highlights the Sphere’s multifaceted utility (indeed it is veritably overdetermined functionally); its link to home and popular aquaria of the early twentieth century; its sole movement attribute of “scan[ning] the outside space like a swiveling head”; and its role as a sort of paratextual, exhibitionary item in Williamson’s lecture tours.⁵³² For his part, Hass is primarily interested in Williamson’s development of a giant octopus/cephalopod used in sequences

⁵²⁷ Starosielski, 152.

⁵²⁸ Crylen, “The Cinematic Aquarium,” 21.

⁵²⁹ Crylen, “The Cinematic Aquarium,” 21. The anecdote in question involves Williamson recounting an episode wherein he and his crew find their Photosphere tossed against a coral reef, fearing that the glass will shatter and their “experiments under the ocean would be over.”

⁵³⁰ Starosielski, 153.

⁵³¹ Crylen, “The Cinematic Aquarium,” 23.

⁵³² Crylen, “The Cinematic Aquarium,” 30.

for *20,000 Leagues*, which he wryly remarks (in 1973) “is still a property much in demand in Hollywood.”⁵³³

In an interesting media-archaeological move, Crylen layers Williamson’s approach over subsequent submersible work on film, such as that of Cousteau or, in a more “advanced” vein, IMAX cinema and James Cameron’s *The Abyss* (1989) and *Deep Sea Challenge* (2014). Most profound in this critical reappraisal of both Williamson and contemporary undersea cinema, aside from the representational elements they share, is Crylen’s focus on “the Pennsylvania steel towns and the factories therein” that produced and shaped the four ton Photosphere.⁵³⁴ Here, steel (material cause), mill-working (efficient cause), and—of course—Taylorism (final cause?) combine, along with Williamson’s links with the US Navy, to paint a rather odd picture where “industrial conditions that damaged the environment and dehumanized workers underly recorded images of a seemingly pristine, nontechnologized nature.”⁵³⁵ Crylen thus rightly points out that the Photosphere technology itself is “the product of a wide range of convergent forces,”⁵³⁶ an insight in-step with Jue’s suggestion that “it is impossible to do responsible work about the ocean today without addressing anthropogenic effects,”⁵³⁷ effects that needn’t be limited to the work (artistic, theoretical, industrial) performed underwater. In this vein, Hass’ tinkering experimentation, as well as his late-period views on sustainability, might take on renewed significance in our criticism.

⁵³³ Hans Hass, *Men Beneath the Sea: Man’s Conquest of the Underwater World*, trans. unknown (New York: St. Martin’s Press, 1975), 108. It is also the end result of one of the most bizarre and captivating patent sketches on record, q.v. Hass, *Men Beneath the Sea*, 107.

⁵³⁴ Crylen, “The Cinematic Aquarium,” 55-56.

⁵³⁵ Crylen, “The Cinematic Aquarium,” 57.

⁵³⁶ Crylen, “The Cinematic Aquarium,” 59.

⁵³⁷ Jue, 15.

Outside of the experiments in 1934-35 by Painlevé and the one time naval officer, now scuba inventor, Yves Le Prieur, experiments which Cahill admits “did not make it into the final cut” of *L’hippocampe, ou “Cheval marin”* [*The Seahorse*], this completes the prologue to Hass’ entry into the underwater filmmaking experience.⁵³⁸ However, it is still unclear what exactly to make of these *problemata*—some more arcane and extravagant than others—that precede Hass’ work on *Stalking* (photographed in 1940). On the one hand, the methods developed by Thompson, Boutan, Williamson and Painlevé, along with their assistants and production teams, are incredibly suitable for media-archaeological analysis. Their processes were often sites where, in Crylen’s phrasing, a number of “convergent forces” swirled, whether economic, military, industrial (hardly a rare triumvirate), environmental, aesthetic, or simply accidental. Each of the aforementioned approaches has something supremely singular about it, and while the individual attempts and the technical systems which subtend them may have been replaced or abandoned, they can be placed in productive dialogue with subsequent efforts to photograph from within the oceanic milieu.

Nonetheless, the question remains: were these experiments actually constitutive of *underwater filmmaking*? We could ask, by extension, whether Thompson’s 1856 image was in fact the first underwater photograph as such, but our focus will fall mainly on cinematographic processes. It is commonly held that Hass made the first underwater film in 1940, although reasonable minds differ, especially with respect to disciplinary boundaries (such as that between

⁵³⁸ Cahill, 173. According to Cahill, who suggests that for Painlevé and Le Prieur “The technical challenges of being underwater were matched by those of filming there,” the filmmakers attempted to dive and film using a lightweight camera system supplied by Pathé (170). One of the “problems” the pair encounter is that of light refraction, which we will spend some significant time on in the following section on Hass’ method. See Cahill, 168-74 for a rundown of Painlevé’s process on *L’hippocampe* as well as the Club des sous l’eau (Underwater Club), founded by Painlevé and Le Prieur, which “promote[d] scuba diving and underwater exploration” and “served as publicity” for both the scuba inventions and the films of Painlevé (174). It is unclear how the pair proceeded with underwater or “immersive” motion picture work (i.e. submerged filming, rather than aquarium work or filming in the shallows) in the aftermath of these 1934-35 overtures.

film studies and diving). Crylen speaks of Williamson's Photosphere work as the "first" undersea films, with the caveat that although his films were produced within an element-protection apparatus, they were effectively separate from previous films "shot on sets or through aquarium tanks."⁵³⁹ *Diving Almanac* credits Hass with shooting "the first underwater movie filmed by freedivers,"⁵⁴⁰ and *SplashCam.com* opines that "the earliest underwater video [sic] is generally accepted to have been filmed by [...] Hass."⁵⁴¹ Hass' *New York Times* obituary says little about any filmmakers other than its subject and Cousteau, while pointing out that Hass generally got there first in important matters.⁵⁴² *SportDiver* calls *Stalking* "the world's first underwater documentary film,"⁵⁴³ and Hass himself seems to agree.

We recall Comolli's injunction against "this fetishization of the 'first time,' which is both ideologically suspect and threatens to reduce film history to little more than a branching etiology, whereby the *first* is fixed and, being fixed (inscribed), conditions and stands as origin for all subsequent iterations."⁵⁴⁴ Viewed thusly, isolating and criticizing something—or someone—as the first instance of *x* is not simply normative, but both "the constation and the prescription," in a Derridean sense.⁵⁴⁵ It likewise effaces important differences and disjunctions within a media discourse while prizing a readily scannable constellation of influence and the increasing "perfection" of both technics and technique. As Comolli says, to approach firsts in this way is to

⁵³⁹ Crylen, "The Cinematic Aquarium," 16.

⁵⁴⁰ See <https://divingalmanac.com/first-underwater-movie-filmed-freedivers/>, accessed June 18, 2021.

⁵⁴¹ "In-Depth Look at Underwater Video Cameras: History and Uses," *SplashCam*, accessed June 20, 2021, <https://www.splashcam.com/in-depth-look-at-underwater-video-cameras-history-and-uses/>.

⁵⁴² Paul Vitello, "Hans Hass, Early Undersea Explorer, Dies at 94," *New York Times*, July 3, 2013, <https://www.nytimes.com/2013/07/04/science/earth/hans-hass-early-undersea-explorer-dies-at-94.html>.

⁵⁴³ "Who Is Hans Hass: Hass' Place in Diving History," *SportDiver*, March 18, 1999, <https://www.sportdiver.com/who-hans-hass-place-diving-history>.

⁵⁴⁴ Jean-Louis Comolli, *Cinema Against Spectacle: Technique and Ideology Revisited*, trans. Daniel Fairfax (Amsterdam: Amsterdam University Press, 2015), 206.

⁵⁴⁵ Jacques Derrida, "Declarations of Independence," trans. Tom Keenan and Tom Pepper, *New Political Science* 7, no. 1 (1986): 11. In other words, "two discursive modalities, the to be and the ought to be, [...] the fact and the right." N.B. Derrida's own (doubled) use of "and yet" in this piece (11).

create “empirical, ahistorical object[s]” at the expense of the various factors (social, technical, signficatory) of which they are also effects.⁵⁴⁶

To speak of Hass as the *first* to make underwater motion picture images is thus fraught. However, the value in doing so is that it prompts us to pay careful attention to how milieu—if not associated milieux—functions in cinematic craft and experience, and how Hass’ *problemata* differ from antecedent experiments fundamentally. Placing Hass in a primary position in this chapter isn’t just useful because of the emphasis placed on *sporting* underwater filmmaking in his work and his own reflections, to a much greater extent than previous attempts; it is useful inasmuch as it allows us to consider myriad other underwater endeavors, before and since, anew, if we carefully attend to what makes the Hasses’ work unique in terms of reconfiguring relationality in oceanic image-making. As we will see, Hass did not perfect cinematographic work under the waves, nor should his oeuvre be read strictly as “evolutionary” and with an eye to “logic,” as Comolli writes, “bracketed off from the determinations of the social totality.”⁵⁴⁷ But his approach inaugurated a different sort of underwater filmmaking, perhaps best phrased as *filmmaking within water*: placing the camera in a functional, dynamic relation between the operator’s body and the ocean milieu was also to instantly activate buoyancy and the behavior of light as co-constitutive factors in the process to lengths radically distinct from experiments such as the Photosphere, which effectively *displace* the surrounding milieu as a precondition for recording. Thus Hass reconfigures what we mean by

⁵⁴⁶ Comolli, 206: “From the moment we read a technical procedure ‘for itself’ [...] by cutting it off from the signifying practice of which it is not only one of the factors but also one of the *effects* [...], we transform it into an empirical, ahistorical object which, subject to minor adjustments (technical refinement, etc.) will stray from film to film, always-already there, always identical to itself [...], in spite of and in order to *mask* the system of differences in which it is necessarily inscribed” (emphasis in the original).

⁵⁴⁷ Comolli, 200.

being in the “middle” (medium?) of underwater cinematography, a revelation that subtends future work without prescribing its process.

4.3 “So, I Found a Black Smith”: Hans Hass and the Development of Underwater Camera Housings

The story of Hans Hass and his endeavor to produce images of underwater life—and the various *problemata* that took shape along the way—actually begins about as innocently and pragmatically as possible, if one takes it from the horse’s mouth, as it were. Looking back across his many decades of image-making, research, and authorship, Hass in 2008 suggested that he glimpsed Guy Gilpatric—a legendary high-stakes factotum whose career as a journalist is perhaps overshadowed by aviation and underwater escapades that strain credulity⁵⁴⁸—swimming and spear fishing, and approached him. Hass relates that he himself “was very good in sports—diving,” and his interest in Gilpatric’s use of “a long spear and small goggles” (Gilpatric is credited with “inventing” spear fishing) was enough to convince the younger Hass to tag along.⁵⁴⁹ Apparently, friends and acquaintances were somewhat nonplussed by Hass’ reports of his thrilling experiences and “adventures” under the sea with Gilpatric, a situation in dire need of remedy. Thus, says Hass,

⁵⁴⁸ Gilpatric’s literary output includes short stories about ship engineers and sailors, one of which was serialized in the *Saturday Evening Post* before release in book form. In 1938 he wrote *The Compleat [sic] Goggler: Being the First and Only Exhaustive Treatise on the Art of Goggle Fishing*, which may very well have been the first such book about spear fishing (diving websites recognize as much, and some suggest that his emphasis on certain freediving techniques “influenced the careers of Jacques-Yves Cousteau, Hans Hass,” and others). He “learned to fly at age 16; established the United States altitude record of 1,422 m (4,665 ft) flying a Deperdussion monoplane while carrying a passenger in 1912; flight instructor with the Royal Canadian Air Cadets in Toronto before becoming a fighter pilot for the U.S. Army during WWI...” See “Gilpatric, John Guy,” *Diving Almanac Book of Records*, accessed June 20, 2021, <https://divingalmanac.com/gilpatric-guy/>.

⁵⁴⁹ Svetlana Murashkina, “A Talk with Hans Hass,” *X-Ray Mag (International Dive Magazine)* 24 (2008): 54.

“I decided to make pictures to show everybody how it really was. So, I found a black smith, and he helped me to make a case, the first one for my photo camera.”⁵⁵⁰

While Gilpatric’s story is awe-inspiring, Hass himself cuts an interesting figure. He was seemingly one step ahead of Cousteau in many particulars, although he lived and continues to exist mostly in the shadow of the former. Certain of his books, such as *Manta: Under the Red Sea with Spear and Camera*, are tinged with a self-mythologizing bent worthy of Lawrence of Arabia, albeit with considerably less literary talent. Over time, his steadfast ethical imperative to respect and care for the creatures and systems that populate our planet’s bodies of water shifted slightly toward the mystical as well as the (Neo-) Malthusian; to this effect, his late interviews dedicate some space to discussing population control, namely the chauvinistic suggestion of women (worldwide) being limited to “two children, not more” (with caveats). All of this is wrapped up in the over-arching philosophy of Hass’ twilight years, the “Energon Theory,” which posits the shared origin of all forms of life, as well as the “acquisition of energy” as these life-forms’ connective tissue, so to speak.⁵⁵¹ Prior to Hass’ shift from diving and filmmaking to lecturing and behavioral research, his wife, Lotte, was always an integral part of his productions beginning in the late 1940s. Both in front of the camera (on land, underwater) and behind it, Lotte’s role is perhaps likewise overshadowed, in this case by the fame of a husband—who, it merits mention, is often generous with his credit to Lotte, both for her underwater photography chops and her “beauty” as an actress.⁵⁵²

⁵⁵⁰ Murashkina, 54.

⁵⁵¹ It appears that a European company, Energon, which specializes in sustainability and environmental protection, is so named after Hass’ theory and credits his influence on their declaration of principles. See “Principles,” Energon, accessed June 15, 2021, <https://www.energon.eu/principles/73.html>.

⁵⁵² See e.g. Murashkina, 56: “The reason for the great success of our films was partly Lotti [*sic*], because a woman underwater was more interesting. Lotta [*sic*] was not only very beautiful, but also brave. It is nice to have a mate for your life.”

Both Starosielski and Crylen offer fairly compelling reasons for mostly leaving Hass out of their narratives. In a footnote, the former makes clear that because Hass' films "did not circulate widely in the United States," his oeuvre and technical developments (along with those of Painlevé) would mostly be absent from the discussion.⁵⁵³ This jibes with Starosielski's goal of addressing the *popular* understanding of the ocean as rendered through, in this case, Anglo-centric cinema. For Crylen, despite the sweep of his dissertation, "important undersea filmmakers such as Jean Painlevé and Hans Hass get short shrift"; for Hass specifically, this absence is due primarily to the unavailability of English-subtitled films as well as the "lack of resources to conduct archival research."⁵⁵⁴ Crylen does mention, however, the need for "further investigation" of the contributions of Lotte Hass, whose diving and underwater photography were among the few exceptions to the rule in post-WWII oceanographic filmmaking of limiting "non-white-male" participants.⁵⁵⁵

To reiterate, the Hasses' approach effectively kicked off the mode of undersea filmmaking that entails an individual, "armed" with a waterproofed camera (of some sort), swimming unprotected by a separate apparatus. In other words, Hans Hass is the first—in the annals, if not in fact—to make moving pictures while free-diving underwater. His work (and that of Lotte's) is thus thoroughly *milieu-based*, in a way that that earlier experiments by Williamson, or certain later adventures helmed by someone like James Cameron, are not (Fig. 4.1). Secondly, from what I have gathered, the Hass approach is the first to be driven primarily by a sporting spirit, as it were. I have already intimated that Hass' initial interest in spear diving and capturing images was perhaps sparked by a mixture of his own athletic "prowess" and the allure of the sport of spear fishing. As

⁵⁵³ Starosielski, 166 fn. 13.

⁵⁵⁴ Crylen, "The Cinematic Aquarium," 20.

⁵⁵⁵ Crylen, "The Cinematic Aquarium," 96; 96 fn 41.

will become clear, his myriad writings on undersea photography and the experience of the depths are replete with mentions of sport, the sporting feel, and a fluid sort of athleticism.



Figure 4.1 Self-reflexive filmmaking in *Stalking Under Water* (1942)

A partial list of Hans Hass' references to sport are as follows. Tellingly, when he reports to his father (in 1937) that he will forego law school to explore undersea, he speaks of the ocean as a sort of Eden, where “countless possibilities” already recognized on land—“*sport, films, travel and tourism, art and invention*”—are not yet present “down there” (the pride of place of sport and cinema here is doubly revealing).⁵⁵⁶ The “new sport” of “daredevil” eccentricity (freediving) leads, naturally for Hass, to both profiteers and artistic tinkerers.⁵⁵⁷ “Hunting with a camera” ends up being “something far more” than hunting with a harpoon, though no less physically demanding.⁵⁵⁸ “There’s hardly a coast where diving enthusiasts do not indulge in their sport,” and many

⁵⁵⁶ Hass, *Men Beneath the Sea*, 9, emphasis mine.

⁵⁵⁷ Hass, *Men Beneath the Sea*, 10.

⁵⁵⁸ Hass, *Men Beneath the Sea*, 92.

underwater “team games have also been developed,” with the practice of freediving leading to “new sports hav[ing] been invented and energetically developed.”⁵⁵⁹ These examples make clear that sport and sporting movement, along with a healthy dose of play, had tremendous effect on Hass’ process.

Thus, both his impetus for and insights from diving and exploring with a camera are shot through with a sporting sensibility—in this case, one that again relies on the valences of both “conventional” sport and a playful, free-flowing experience.⁵⁶⁰ This is important for the chapter at hand, yet it also looks forward to the coda’s treatment of skateboarding videography. Underwater flow and athleticism are of course imbricated in the various devices and aesthetic effects of Hass’ work, and such movement is both shaped by and generative of novel technologies ancillary to cinematography, such as breathing aids. After the production of *Stalking*, Hass’ interest turned to remedying his hitherto “unsatisfactory open diving helmet,” which he suggests restricted his mobility and “tied him to the ocean floor and ‘damned’ him to walk-diving.”⁵⁶¹ He thus traveled to the “Draeger works in Lübeck,” where chief engineer and “practiced diver” Hermann Stelzner developed with Hass a novel rebreather system.⁵⁶² Michael Jung explains that, among the device’s nuances, the “breathing bag was moved to the back” so as “to produce an advantageous center of gravity in all swimming positions,”⁵⁶³ an advance that will make clear explicit dividends when we

⁵⁵⁹ Hass, *Men Beneath the Sea*, 123; 215.

⁵⁶⁰ We may also add here another sense, 5a, “Something tossed about by natural forces, esp. the wind or waves, as if a plaything.” Cf. François Fenelon, *The Adventures of Telemachus*, trans. John Hawkesworth (Manchester, UK: Thomas Johnson, 1847), *passim*, e.g. “Telemachus, who was at first stunned by the fall, drank of the briny wave, and became the sport of the surge (127).

⁵⁶¹ Michael Jung, “Hans Hass: Pioneer of Swimdiving,” *Historical Diver* 9 (1996): 13.

⁵⁶² Hass, *Men Beneath the Sea*, 17-18.

⁵⁶³ Jung, “Hans Hass,” 14.

consider the concerns of buoyancy and pressure during filming. Jung’s description of what Hass refers to as his “virtual transformation into a fishlike being”⁵⁶⁴ runs thusly:

Although, technically, the swimdiving apparatus represented only a minor innovation, it was fundamentally different from all earlier equipment in its application. In contrast to the traditional practice of divers, who walked erect on the ocean floor while working underwater – (precisely in the position that produces the most resistance to water) – the swimdiving apparatus made it possible for the diver to move *in the only physically correct manner of underwater locomotion*, which all marine mammals also employ. That is, with the head forward and the flippers on the rear extremities.⁵⁶⁵

This “minor” innovation (Simondon would perhaps agree) thus has dramatic effect on diving as such, as well as photo- and cinematographic practice, fundamentally reshaping the available positioning of camera systems and reconfiguring the weighted relation between a moving physical body and said system.

It would not be the only groundbreaking technical individuation of Hass’ career, of course, and pride of place is generally given to his Rolleimarin camera and housing system, “the first underwater flash camera.”⁵⁶⁶ Developed with help from the Rolleiflex company’s technicians, the “Hans Hass Rolleimarin” (released 1953) “was the first [underwater] [still] camera which focussed on a ground-glass plate, and include[d] flashes, ancillary lenses, and other technical advantages.”⁵⁶⁷ The Rolleimarin’s advertisements, which, along with its effectiveness ensuring its status as the gold standard for underwater still photography for no short period, highlighted the camera’s “balance,” light weight (three pounds), and “casing guaranteed to 330 ft.” (Fig. 4.2).⁵⁶⁸

⁵⁶⁴ Hass, *Men Beneath the Sea*, 21.

⁵⁶⁵ Jung, “Hans Hass,” 15, emphasis mine.

⁵⁶⁶ Jung, “Hans Hass,” 17.

⁵⁶⁷ Hass, *Men Beneath the Sea*, 105.

⁵⁶⁸ This particular advertisement was originally sourced from a vintage scuba forum, but the image link has apparently expired.

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Figure 4.2 Advertisement for Hans Hass' Rolleimarin underwater camera housing

The Rolleimarin is therefore among the most well-known underwater photographic *problemata*, gathering together adjustments and elements that create new terms in the undersea relation while posing additional “quandaries.” It also stands as a perfect segue into the three major issues that arise, or take on new meaning, in the wake of Hass’ freediving adventures: underwater light refraction, buoyancy and weight-distribution, and chromatic rendering.

4.4 The Other 1.33:1, or: *problemata refractivam*

*Again, ships in harbor seem to landlubbers –
mistaken –
To be battling the waves, sterns crippled at
the waterline;
For whatever part of the oar lifts up above
the dewy brine,
Is straight, and the rudders above the
surface, also straight and sound,
But sunk beneath, they all seem crooked,
twisted back around*

*So that they are bent upwards, and seem
practically to ride
Flat on the surface of the water.*

-Lucretius, *The Nature of Things*⁵⁶⁹

Among the many examples given by the philosopher-poet Lucretius in his *De rerum natura* (*The Nature of Things*) concerning the discrepancy between sense data and “truth”—“illusions of this ilk [...] to cheat and bilk / The credulity of the senses”⁵⁷⁰—one perhaps stands out as the most enduring, whether for its illusory effect or the commonality of its occurrence. Lucretius chooses an oar in ocean water for his model, yet both the object of the so-called optical illusion (oar) and the quality of the medium through which the illusion is achieved (sea) are in effect flexible; ponds, lakes, even certain swamp zones avail themselves to such a perplexing sight, which can also be readily glimpsed via a drinking straw in one’s translucent beverage of choice. A recent perceptual experiment on the Poggendorff Illusion (“parallel lines interrupting a transversal,” such that one’s impression of which transversal lines are colinear is generally false) relies, in fact, on just such an example: wading through competing—and often partial—theories on the illusion itself, the author “suggest[s] another rationale, namely, *everyday experience of light refraction by water*, for explaining or, at least, contributing to the Poggendorff illusion.”⁵⁷¹ The experiment’s discussion of such “everyday experience” focuses on figural illustrations of straws or sticks in glasses of water, spiritually invoking the Lucretian fascination with a harbored ship’s oars while striving for familiarity and universality.

⁵⁶⁹ Lucretius, *The Nature of Things*, trans. A.E. Stallings (London: Penguin Books, 2007), 119-20 (book IV, lines 436-42).

⁵⁷⁰ Lucretius, 120 (book IV, lines 462-64).

⁵⁷¹ Sergey I. Bozhevolnyi, “Light Refraction by Water as a Rationale for the Poggendorff Illusion,” *Perception* 46, no. 1 (2017): 79, emphasis mine.

I likewise invoke the experiment by Sergey Bozhevolnyi—and, through his work, the musings of Lucretius—to capitalize on such “everydayness,” with the added benefit of pointing out how scientifically, philosophically, and poetically charged such perceptual illusions remain. It so happens that the refraction of light is one, if not *the* preeminent factor that must be kept in mind while photographing in an underwater milieu, and examples of the myriad problems it can cause to both operator and camera system are well-known to almost everyone in some form or fashion. A closer look at what, exactly, refraction entails, and how its effects were so to speak *engraved* into Hass’s filmmaking equipment and process—how he arrived at novel *problemata*—is the first step.

The phenomenon of light refraction, as well as its “ability” to complicate the status of “objects” available for a perceiving “subject’s” sense organs, is no less radical in terms of its effect on cinematic concerns of indexicality, illusion, and temporality than the role of the Latham Loop as analyzed in the previous chapter. Refracted light vis-à-vis photographic devices and their handlers makes explicit Deleuze’s broader claim about perception, fittingly made amid a discussion of waves, folds, and flow, all of which are of great import here: “*Every perception is hallucinatory because perception has no object.*”⁵⁷² This is a strange if effective way of saying that every perception is of waves, of vibrations, and the primary role of which is to *differentiate*

⁵⁷² Deleuze, *The Fold*, 93, emphasis in the original. He continues: “Conscious perception has no object and does not even refer to a physical mechanism of excitation that could explain it from without: it refers only to the exclusively physical mechanism of differential relations among unconscious perceptions that are comprising it within the monad [per Leibniz]. And unconscious perceptions have no object and do not refer to physical things...” See the following page (94) for a discussion of “hallucinatory perception’s” complicated and—perhaps—mismanaged status in the field of psychology, owing to it “overlook[ing] the properly Leibnizian conditions.” Also see Gilles Deleuze, *Francis Bacon: The Logic of Sensation*, trans. Daniel W. Smith (Minneapolis: University of Minnesota Press, 2003), *passim*, including the introductory and afterword work of Smith and Tom Conley, on sensation versus perception, forces and folding, and (even if not so named) hallucinatory perception; and Gilles Deleuze, *Essays Critical and Clinical*, trans. Daniel W. Smith and Michael A. Greco (Minneapolis: University of Minnesota Press, 1997), 23-26, on “the problem” of “all perception as such being the perception of perception,” *viz.* the cinematic (and psychological?) problem of subject-object dualism.

flows and folds, not necessarily objects (and subjects)—an observation that does not exclude photo-sensitive mechanisms, yet calls for clarification, which we will arrive at shortly. Pete Romano’s *American Cinematographer Manual* entry on underwater cinematography makes clear the stakes: “Refraction is the source of most of the problems that are encountered in underwater photography.”⁵⁷³ Most of these issues, therefore, result from the fact that light *bends* as it “pass[es] through different mediums of optical density (the air inside the camera housing and the water outside the lens port).”⁵⁷⁴ This bending has ramifications for the operator (depth perception and reticular points viewed above the surface) as well as, of course, the lens system (different lens ports cannot account for the refraction; control of light entering the lens is haphazard). Further, both celluloid stock and digital sensors respond differently—and often with mixed results, at best—to the color of refracted light, causing further adjustments and guesswork. The thrill of “capturing” images underwater, especially in a sporting mode of operation, is thus tempered by the wholesale requirement of tuning and regulating both operator action and the camera system’s settings.

Romano suggests that light crossing a watery boundary “is refracted at 25 percent,” which is a not-wholly-useless shorthand that is nevertheless inexact. What Romano leaves out from his brief remarks, though, is a treatment of the *temporal* properties of refraction. In effect, he is describing primarily, and not without reason, the behavior of *light particles* as they bend, change direction, and merit adjustment to settings such as focal length and focus distance. But the *wave* aspect of light—its velocity as well as wavelength—is likewise altered in this process, and we are thus dealing with a shift in temporality as well. Filming from an underwater milieu might be

⁵⁷³ Romano, 357.

⁵⁷⁴ Romano, 359.

described as inhabiting for a time a wholly separate space, one where the paths of light shift and turn; yet it also entails inhabiting, no matter how insignificantly on the cosmic scale, a sort of *time slip*, wherein the speed of light is relativized (as it always is, *de facto*). Does the filmer who looks up through the surface at his ship—with or without oars—see the “same” vessel as those in the open air, at the same time?

He or she does not, of course, at least in theory. As incident rays of light are refracted by colliding with the water-as-medium, they significantly decrease in speed. Thus, a 45° incident-angled light, under laboratory conditions, would be refracted to about 32°, and its speed would be reduced by one-third, which still results in a tremendous velocity.⁵⁷⁵ This is a thought experiment—albeit one with practical stability—that makes a bit more manageable the oft-recited story of how “old” the light waves from stars are by the time they strike our perceptual system, or the camera’s for that matter. More manageable not because the time-slips are similar (the time it takes for starlight to reach us being almost infinitely longer), but because the process whereby the light reflecting off an object (a ship, say) bends and slows down occurs *so close to our location*, and so thoroughly are we embedded in the very milieu/medium which effects the shift.

Returning to Hass’ notes on his early experiments with underwater lensing fleshes out these somewhat lofty observations. During his work on what would become the film *Abenteuer im Roten Meer* [*Under the Red Sea*] (1951), Hass seems to be relying on a mixture of time-honored approaches to dealing with refraction as well as some novel and often comic adjustments. This much is true for both his still photography and moving image-capture. Early on in the series of

⁵⁷⁵ Steven Beeson and James W. Mayer, “The Refraction of Light,” in *Patterns of Light: Chasing the Spectrum from Aristotle to LEDs* (New York: Springer, 2008), 35; 40. This decrease in speed is even more pointed in terms of the refractive capacity of diamonds, which have a much higher refractive index than both water and glass, and where “a jeweler cuts a diamond to literally take advantage of its light-reflecting properties and to literally trap the light inside the stone” (45).

1949's Red Sea dives (“not only the warmest but also the saltiest of the world seas”⁵⁷⁶), the water's consistency as well as the presence of marine microorganisms “muddies” the already tricky light situation even further. In Hass' words, “[c]onditions of light were by no means easy here [a coral reef just off the sea bed]. Though the water at the lower depths was beautifully clear, just below the surface myriads of microscopic organisms were floating, turning the water to a kind of thick broth and only letting the sunlight through to an extent which depended on the density of the particular mass.”⁵⁷⁷ Early photographic experiments in the Red Sea—during which the Hasses are also beset by instances of waterlogged film, rusted gear, and the lack of “necessary” replacement equipment—appear as true trial and error pursuits, with even the development of film necessitating some sleuthing. When Hass obtains replacement supplies for his oxygen cylinders (from a firm across the island), his concern about the rebreather apparatus is paired with hesitancy toward the ability to further develop any film until the trip's end; in effect, although the “first two films [...] had come out well,” the various liquid temperatures in his ad hoc darkroom (a bathroom) had shifted, and therefore Hass “could cool off the developer and the sodium hydroxide fixing salt to 65° here all right, but not the rinsing water, and this, even after hardening, would affect the fineness of grain in the film.”⁵⁷⁸ Tellingly, Hass is willing to forego development of film stock for the rest of the trip if and only if, it seems, he “now knew how the filters worked and that [he] had judged the light correctly.”⁵⁷⁹ Experimental “confidence,” in his words, outweighs the risks involved in further darkroom work (see Fig. 4.3).

⁵⁷⁶ Hans Hass, *Manta: Under the Red Sea with Spear and Camera*, trans. James Cleugh (Chicago: Rand McNally, 1953), 55.

⁵⁷⁷ Hass, *Manta*, 74.

⁵⁷⁸ Hass, *Manta*, 102.

⁵⁷⁹ Hass, *Manta*, 102-03.

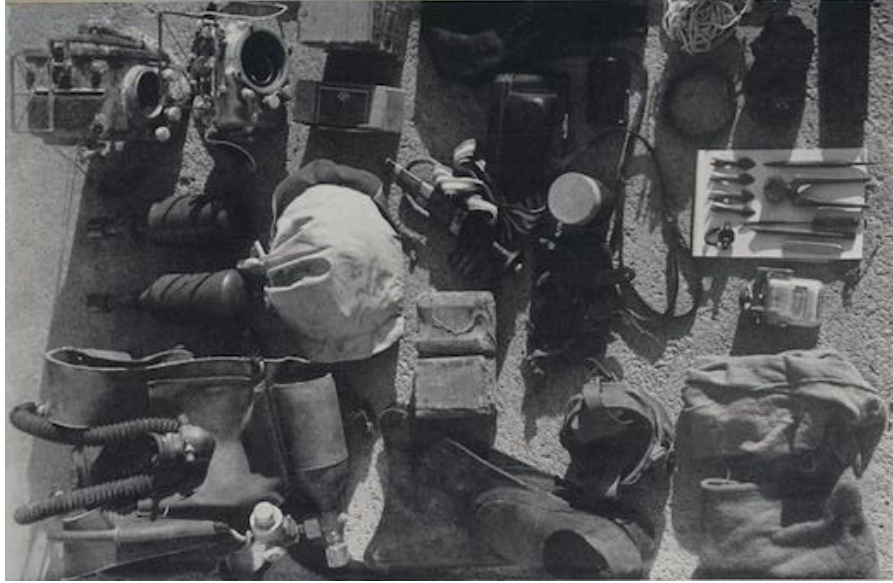


Figure 4.3 Tools and image-making *problemata* from the Red Sea expedition in 1949

Image from Hass, *Manta*, 33

What sort of experimentation; what sort of *problemata*? With typical flair, Hass sets the stage. “A tall old Sudanese sells the tickets and hires out bathing trunks. A second Sudanese stands behind an ice-cream counter under an awning and mixes cold drinks [...]. Both attendants perform their functions in slow motion. [...] *My behavior in this pool was only just able to arouse a flicker of interest in them.*”⁵⁸⁰ The “performing of functions” that Hass undertakes includes laying prone at the rim of a basin-style pool with his camera submerged and “photographing a long strip of wood into which I had hammered fifteen nails.”⁵⁸¹ This bastard instrument—not the last Hass will wield in the Indian Ocean—so terrifically makes manifest the often unwieldy process of sport cinematography, both in terms of the provisional status of objects that extend or aid the camera’s system and operation and the media-archaeological insights gained from a closer look at the

⁵⁸⁰ Hass, *Manta*, 124, emphasis mine.

⁵⁸¹ Hass, *Manta*, 124.

seeming detritus, wherever it now lays, that was once inseparable from a singular filmmaking experience.

This device—now ready-to-hand in Heideggerian terms, and perhaps a *primitive artisanal technical element* per Simondon—functions of course to “index” focus distance, which is a problem for Hass both in general (underwater milieu) and, specifically, for filming in the Red Sea, since “it was perfectly possible that the refraction values given by the waters of the Mediterranean and Caribbean seas would not apply here.”⁵⁸² Tellingly, the information gleaned from these test images isn’t perfect, nor whole—but it is *translatable*:

I had therefore hammered nails into a lath at precisely measured distances, and by photographing these nails under water, I could see on the developed film which of the nails was most clearly outlined, and therefore in focus. The result was a somewhat altered figure, in accordance with which I converted all distances. I entered the corrected distances on a yardstick, which thenceforward I always took with me on fish-hunting expeditions with the camera.⁵⁸³

Translatable, then, not only from the incipient hammer-and-nail tool to the notched yardstick, but also from familiarity and practiced use with the latter to a sort of absorption of the distance values. In Hass’ words, “After a few days *my eye had become so accurate that I was hardly ever off more than three inches in a yard.*”⁵⁸⁴ Such accuracy is gained not by using the stick to measure the distance between camera and the target of the shot (fish, manta ray, &c), but rather by familiarizing oneself with the area and measuring focus relative to nearby matter (a reef, a downed ship, and so forth). This includes both preparatory work under the auspices of “scouting” as well as on-the-fly focal-measurements utilizing objects in some proximity to the ocean creatures, which, unsurprisingly, are hardly thrilled to have a yardstick thrust toward them.

⁵⁸² Hass, *Manta*, 125. See Simondon, *Mode of Existence*, 29-30.

⁵⁸³ Hass, *Manta*, 125.

⁵⁸⁴ Hass, *Manta*, 125, emphasis mine. Also see Hass, *Men Beneath the Sea*, spec. 99-104, for a discussion of aids to focus and the eventual felt knowledge resulting from such tool-use.

And a *sharpened* yardstick at that; a veritable lance to go hand-in-hand with the aforementioned camera-shield, perhaps: “I sharpened one end of [the stick], so as to be able to use it as a weapon in case of need; for to carry the [actual] spear as well as the camera would impede my stalking maneuvers.”⁵⁸⁵ The “primitive” craft/artisanal functions of the yardstick as technical element, in Simondonian terms, are thus striking and thrillingly multiple. I say “primitive” and “artisanal” here because, for Simondon, it satisfies the “made-to-measure” requirement; it remains “abstract” inasmuch as its evolution has not (yet) been concretized, i.e. industrialized and realized in its own “intrinsic measure”; and it displays a relatively “weak correlation between the sciences and technology,” not that this is to be taken necessarily in the negative.⁵⁸⁶ In short, both the nail iteration of the focus-assist and the yardstick are yet contingent, as they lack internal coherence while “correspond[ing] to an open system of requirements.”⁵⁸⁷ They are thus “inessential,” even if they remain of the essence, in this case, for Hass’ achievement *hit et nunc*.

Most of the Hass films and television episodes provide some sort of self-reflexive sequences detailing certain of the crew’s production parameters. The use of the sharpened focus-stick is dramatized, for example, in *Adventures in the Red Sea*. Early in the film, Lotte and other crew members call out rather theatrically for “Herr Dr. Hass,” who is nowhere to be found on their landed base of operations. The film cuts directly to a roaming, dreamlike underwater shot, with the camera operator bending gently around a coral reef. Although we expect this shot to stand as Hans’ point-of-view, or at least to be an imaged response to what he is busily “doing,” the shot

⁵⁸⁵ Hass, *Manta*, 125.

⁵⁸⁶ Simondon, *Mode of Existence*, 29-30; 40.

⁵⁸⁷ Simondon, *Mode of Existence*, 29-30. The use here of *contingent* differs from that of the previous chapter. In Simondon’s idiom, “what can be made to measure are inessential aspects, because they are contingent,” viz. adjustments made in order to respond to contingent situations or milieux take us further away from the concrete technical object’s “essence” (30).

ends by locating Hass in frame as he takes still images of ocean life. The voiceover plays into this momentary confusion, as we hear Hans ask “And where am *I*?” What follows is a series of shot/reverse-shots that shift from images of fish close to the lens to images of Hass setting and adjusting focus with reference to the sharpened stick (Fig. 4.4). More clarity is delivered through voiceover, as Hans discusses how he is simply “taking the distance” with the use of the “spear,” not using it as a weapon of any sort.



Figure 4.4 Hans Hass wielding the sharpened focus stick in *Red Sea* (1951)

Aside from the specific interest this sequence holds for our discussion of the Hasses’ various bespoke devices, it also makes clear how fundamentally reflexive the pair’s freediving films tend to be, a point to which I will return below. This does not necessarily mark the Hass films as unique with respect to self-reflexivity or “behind-the-scenes” footage, but it reminds us that, from the start, freediving underwater motion picture work was as fascinated by the images of marine life it could capture as by the very technical and embodied experimentation on which this capture relied.

Returning to Simondon's split between various "phases" of technical individuation: to say that a technical object—or technical element—lacks "intrinsic measure" or intrinsic coherence is also to recall that such an object's "norms are *derived from the outside*."⁵⁸⁸ In other words, its function is derived from the energy of the milieu as the latter generates information vis-à-vis the object and its operation, in process. This is perhaps where Simondon's separation of "stages" of the technical object's evolution, its individuation or ontogenesis in his larger work, is most in need of finessing with respect to cinematic devices in sport cinematography. Of the primitive and abstract technical object, he writes that "it is the translation into matter of a set of notions and scientific principles that are deeply separate from one another, which are attracted only through their consequences and converge for the production of a desired effect."⁵⁸⁹ This already rings the bell of hylomorphism that Simondon (rightly) rails against from the start, and it also suggests that it is little more than an "application," in his phrasing. And yet, certain aspects of Simondon's separation between the abstract and concrete technical object seem to blur the boundaries in the case of Hass' focus gear, not least that it "incorporates a part of the natural world that intervenes as a condition of functioning."⁵⁹⁰ In this fashion, to remove the yardstick from the water is effectively to render it useless, unless its physical status is changed. Moreover, does Simondon not ask whether "The only thing that counts is the exchange of energy and information within the technical object or *between the technical object and its milieu*?"⁵⁹¹

⁵⁸⁸ Simondon, *Mode of Existence*, 29, emphasis mine.

⁵⁸⁹ Simondon, *Mode of Existence*, 49.

⁵⁹⁰ Simondon, *Mode of Existence*, 49. He continues: "...and is thus part of the system of causes and effects," which perhaps explains why something like the yardstick would not pass muster in terms of functioning "concretely." Does it "cause" anything to the underwater milieu, in the way that a turbine is both cause and effect of "nature"?

⁵⁹¹ Simondon, *Mode of Existence*, 50-51, emphasis mine.

However, the focus-yardstick is no machine. It functions, but it does not produce, nor does it transfer energy unilaterally. The same can be said for the hammered block of wood, which is not the same tool yet rests necessarily as an antecedent of (and traced within) the latter. In effect, the information and energy derived from these tools are locatable in the link between object and milieu, albeit only in potential; this knowledge or information must be actualized via the operator—“man as conductor” or “coordinator” of machines and tools, in Simondon’s idiom. What interests us most, ultimately, about the status of these devices is less their taxonomic or classificatory status with respect to cinematic “items,” or whether or not they are effectively attached to the camera system, than the significant yet contingent role they play in the ontogenesis of underwater image-making. In the first chapter, I used the term “milieu” to reconfigure our understanding of Muybridge’s motion studies and the sporting sensibility of the period, yet I also gestured toward moments where the transfer of information between technical and “natural” milieux is such that we can speak very explicitly about the cinematic associated milieu. It will be recalled, though, that Muybridge’s own motion study laboratory effectively created a “non-place” for animals and athletes to perform, in which the anthropometric grid structure posits an objective environment that nonetheless aims to clarify how bodies move in the world outside of this enclosure. It could be asked, however provocatively, whether Muybridge’s experiments in fact “proved” whether a horse in motion would fully leave the ground’s surface *outside of the specific theater of operation*, or whether the information gleaned from the athletic studies effected results of a piece with measurements made in the field or the arena. In other words, how does the milieu condition the effect, aesthetic as well as physical? Here, a question arises as to whether the effects of underwater cinematography can be detached from the milieu within which they are generated. Do the optics of the Hasses’ films, the peculiar movements therein, and the viewer’s sensory

engagement with the images transcend that environment? And do aids such as the focus-stick, when left behind—or absorbed as a sort of habitual, bodily inscribed information—separate from the result, cast off into the deep, so to speak?

To arrive at an affirmative answer is not the goal; rather, I wish to suggest that underwater filmmaking is the limit case in milieu-specific production that *pushes us to recognize the validity of these questions more broadly*. The chapters of this dissertation treat these concerns from a variety of vantage points relative to sport's relationship with cinematic technology and film style, but they need not be restricted to explicitly sporting or play-based production. Under the waves, light dramatically slows and bends, the milieu/medium is physically (if not violently) pressed to the lens's edge, color renders differently, and the body's sensory-motor system must also respond differently vis-à-vis both camera and environment, the nuances of this last to be discussed shortly. Further, unique tools for adapting or co-opting such "discrepancies" are often necessary. But none of these considerations disappear above ground, absent the obvious and pressing demands they place on us underwater; their scope may be limited or their qualities changed, but they remain. There are always a suite of forces at work which act on both the bodies of those producing cinema and the image itself, even as these filmmakers supposedly "shape" the image or impose a perspective on an "outside" (form on matter). The central point from which to build is the middle, amid process.

Parikka has a lovely way of wording this, during his own description of media's polysemy: "Media are a contraction of forces of the world into specific resonating milieus: internal milieus with their resonance, external milieus affording their rhythms as part of that resonance. [...] In this context, sensations, percepts, and affects become the primary vectors through which entities

are co-created at the same time as their environmental relations.”⁵⁹² In Whiteheadian terms, this is a way to discuss prehensions and nexus (plural) amid “drops of experience.”⁵⁹³ The emphasis on co-creation also invokes the famously pithy description of creativity: “The many become one, and are increased by one.”⁵⁹⁴ But it also explicitly brings us back to ocean water as a medium, the forces of which affect the medium of cinema. Water’s refractive index is 1.33:1, compared to 1.0003 for air. It is a fortuitous link to the 4x3 aspect ratio of Edison’s films and the years of “Academy aperture,” another one-time “standard” that likewise only takes on vital meaning when compared to other options. Although Romano speaks of a refraction of 25% in water, Hass’s suggestion of “about a third” jibes with the scientific standard.

This “other” 1.33:1 crops up periodically in early accounts of underwater image-making, including in Boutan’s report on his first attempts at photographing the depths. In a passage wherein he lists as one *sine qua non* of underwater photography the availability of an “exceedingly powerful light” (not unlike the flash of the Rolleimarin, decades later), he makes clear that “it is necessary to find the exact formula of the objectives [lenses] to be used in the water, a medium which is much denser than air, and the index of refraction of which is different.”⁵⁹⁵ Painlevé’s opening underwater salvo was partially ruined by water entering the camera system, but also to blame is the fact that he and his colleague “struggled to calculate for light refraction underwater when trying to get the appropriate focal lengths.”⁵⁹⁶ (It is unclear here whether Cahill—or Painlevé—means to discuss the focal length of lenses, i.e. their mm length, or the point of focus; nonetheless, both are affected by underwater refraction). Crucially, this difficulty is not

⁵⁹² Parikka, *Insect Media*, xiv.

⁵⁹³ Whitehead, *Process and Reality*, 18.

⁵⁹⁴ Whitehead, *Process and Reality*, 21. For Parikka on Whitehead, see Parikka, *Insect Media*, 60-63.

⁵⁹⁵ Boutan, 46.

⁵⁹⁶ Cahill, 170.

confronting a filmmaker unfamiliar with *any* sort of marine cinematography. In 1934, Painlevé had already produced films of underwater creatures in the shallows as well as those filmed via aquaria, which still require adjustments to focal considerations. This is yet another indication that the rules of the game are fundamentally shifted when moving from images *of* a fluid milieu to those *within* one—as are the aesthetic effects thereof.

In terms of lens length specifically, water of all sorts (ocean, lake, pool) has interesting consequences for adjustments in millimeter selection. As Romano suggests, hand-in-hand with refraction prompting changes to focus distance, it effectively “magnifies” the image, “(i.e. a 35mm lens becomes a 50mm lens when used behind a flat port underwater).”⁵⁹⁷ *Becoming* is apt here, and of course nicely Simondonian; the information exchange between milieu and lens system is processually altered, yet not wholly fixed. If a 35mm lens “becomes” 50mm when submerged, the image is therefore made to seem “closer” and less distorted horizontally. As such, operating a flat port motion picture camera underwater means, after a fashion, that one’s lens is being “zoomed in” *without* holding the focus as it was “properly” set, either by eye or using a measure, if one hasn’t corrected for refraction. The objects photographed will appear closer and the camera system’s focus must necessarily also be set closer, bringing us back to Hass’ descriptions of the yardstick aid. This entails perhaps a mixture of blind—though by no means unfounded—faith in the eventual results of the image, wherein one focusses for and selects a lens for a position incommensurate with the “actual” target of capture, and an acceptance that underwater cinematography as such scrambles our comfortable conception of indexicality, inasmuch as the milieu’s operative force in the equation is maximized relative to other environmental “media.”

⁵⁹⁷ Romano, 359.

The upshot is that *the water itself is in fact part of the lens system*. Since compound lenses are, in effect, a collection of different elements which work together to collect and shape (focus) light, there seems no reason to suggest that the medium of the water is *outside* of this system. The simplest—if most reductive—example to explain this position is that of a photograph or moving image taken *from* underwater, focusing on an object *above* the water/air boundary, although the inverse situation would also add some clarity. In essence, if one is filming from below the surface and looking at, say, a ship in harbor (Lucretius’ ship, perhaps), the light rays that will ultimately reach the celluloid or sensor are reflecting off the vessel, and then passing through a series of *media*; they first refract upon entering the water (at the 1.33 index, and bent), then—in an instant, certainly—they pass through and are harnessed by the optical elements in the lens barrel (which are often refractive themselves), before striking the imaging surface. The seeming “disparity” between watery medium and “traditional” camera lens elements dissolves further if we recall that “lens element refractive materials can be glass, plastic, crystalline, liquid or even chemically vapor-deposited (CVD) materials.”⁵⁹⁸ The infamous term *objectif* seems, at this point, further away than ever before.⁵⁹⁹

There exists, however, a “corrective” option to the refractive issues posed by photographing with a flat port lens, although it is less a “fix” to the virtuality of flat port underwater imaging than a different screen at the border between camera and milieu, or perhaps a different individuation in the technical ontogenesis of nautical filmmaking. The “dome port” lens chamber was introduced in 1931 and has become widely used over time, although Romano remarks that

⁵⁹⁸ Iain A. Neil, “Lenses,” in *American Cinematographer Manual Vol. I*, 9th ed., ed. Stephen H. Burum (Hollywood: The ASC Press, 2007), 147.

⁵⁹⁹ See, e.g., the important passage in Bazin’s “Ontology” essay, wherein Hugh Gray notes parenthetically that “Bazin here makes a point of the fact that the lens, the basis of photography, is in French called the ‘objectif,’ a nuance that is lost in English” (13).

“both [ports] have their place in underwater photography.”⁶⁰⁰ In effect, dome ports uses convex properties and “significantly reduces the problems of refraction, radial distortion and axial and chromatic aberration.”⁶⁰¹ The science behind dome port functionality is tremendously dense, not that flat port optics are in anyway straightforward; however, much rests on refraction, again, albeit this time the emphasis is on the camera lens’ refractive capacities. With a flat port, light reflecting off underwater objects will still refract when it strikes the lens, especially toward the element’s edges (this accounts for radial distortion and “vignetting”). The dome port’s exterior element allows for these light waves to travel through unrefracted, “which allows the ‘in-air’ lens to retain its angle of view.”⁶⁰² Nonetheless, the image still appears “closer” than to the naked eye, and focus must be adjusted to the port.

Things get veritably crazy, however, when we consider that “the dome port makes things look closer *but it also shrinks them*,” thus “cancel[ling] out the ‘magnification’ effect.”⁶⁰³ This is what Romano means when he suggests that the dome port allows the “‘in-air’ lens to retain its angle of view.”⁶⁰⁴ Whereas I have indicated that flat port underwater photography entails a certain sort of “virtual” engagement with one’s surroundings, in dome port work this is made manifest, since “[o]ptically, a ‘virtual image’ is created inches in front of the lens,”⁶⁰⁴ meaning, paradoxically, that “the focal length is strictly negative.”⁶⁰⁵ Focusing closely, which limits certain optical systems, ensures that one can “focus the lens on the virtual image, not the subject itself.”⁶⁰⁶

⁶⁰⁰ Romano, 359. To clarify, “Flat ports were all that were available for underwater photography from its beginning in 1893 [with Boutan?] until 1931.”

⁶⁰¹ Romano, 360.

⁶⁰² Romano, 360.

⁶⁰³ Jeremy Somerville, “Understanding Flat Port and Dome Port Theory,” Oceanity, last modified April 5, 2021, <https://oceanity.com.au/blog/view/understanding-flat-port-and-dome-port-theory>.

⁶⁰⁴ Romano, 360.

⁶⁰⁵ David W. Knight, “Finding the Focal Point of a Dome Port,” Cameras Underwater Ltd., 2017, http://g3ynh.info/photography/articles/dp_theory.pdf.

⁶⁰⁶ Romano, 360.

Here, once again, the system is relying on the phenomenal structure of the underwater milieu to generate information that can interface with a specific camera system, and which frustrates our habitual understanding of cinematic optics (the dome port's effects are negligible on land). The operator who has successfully aligned the dome port structure, and whose lateral—and to an extent vertical—movements do not overly accentuate the curvature resulting from convex optics, is thus the active coordinator of and in a complex system of media.

Jeremy Somerville asks whether the flat port, despite hardly ever being spoken about in these terms, likewise produces a “virtual image.” In effect, his point is that since light is refracted (doubly), both as it enters the watery medium and as it strikes the flat port lens, creating magnification, the necessity of focusing to a “counter-intuitive” point equates to targeting yet another virtual image.⁶⁰⁷ Reasonable minds may differ on the particulars or the classifications. But it seems clear that each system has an important sense of the virtual about it, which is partly activated by the milieu, responded to by technical invention, and generative of distinct aesthetic yields. Simondon's discussion of novel associated milieux is extremely relevant here, inasmuch as he speaks of “new forms that only maintain themselves because they exist all together as a constituted system”:

It is in a similar manner that the geographical world and the world of already existing technical objects enter into a relation in which concretization is organic, and which defines itself through its relational function. Like an arch that is stable only once it is finished, this object that fulfills a function of relation maintains itself and is coherent once it exists and because it exists; it creates its own associated milieu from itself and is really individualized in it.⁶⁰⁸

⁶⁰⁷ Somerville: “Contrary to popular belief, a flat port does actually create a virtual image. It's just nobody [*sic*] talks about it. [...] In my searching I couldn't find a single article that discusses the virtual image created by a flat port. [...] As you can see in the diagram below [and in Oceanity's flat port virtual image calculator], when light travels through water and is refracted by a flat port it's angle is changed thus creating a virtual image. In this case the virtual image appears closer to the lens than where the actual object is.”

⁶⁰⁸ Simondon, *Mode of Existence*, 58-59.

We might consider here in particular the status of the convex dome port structure, an “already existing” technical object that undergoes a specific individuation, after which its continued functioning is dependent on a milieu, and in particular the associated milieu which it co-creates, or arrogates to itself. This is not just a question of “actualizing” heretofore potential or virtual experiences, but of “a futural function” coming-to-pass, or what Simondon refers to as “the conditioning of the present by the future” (by the not yet, which becomes).⁶⁰⁹ And while the behavior of light within the medium of water is a critical element of this novel relational ensemble, the physical behavior of the camera operator is no less crucial. We can now look more closely at the unique situation of underwater operation, beginning with both the theoretical and practical stakes of “floating” in, and through, cinema.

4.5 Underwater Space, Buoyancy, and Floating

I will turn in the following chapter to Scott Richmond’s work on proprioceptive aesthetics and the cinema as a technical system—though not necessarily a *dispositif*—that modulates perception, partially in an attempt to make sense of certain curious experiences of Olympic cinema wherein our tether to athletes as they fly through space is manifoldly disorienting. In that section, Richmond’s musings on our bodily resonance with the filmic world—and thus, ultimately, with *technics*—as well as his understanding of how “flying” and “floating” are rendered on screen is useful in parsing such distinctly kinesthetic encounters.⁶¹⁰ However, whether the pro-filmic spaces

⁶⁰⁹ Simondon, *Mode of Existence*, 60.

⁶¹⁰ Scott C. Richmond, *Cinema’s Bodily Illusions: Flying, Floating, and Hallucinating* (Minneapolis: University of Minnesota Press, 2016).

through which the viewer glimpses “a” world are Olympic stadia, the ocean depths, or (per Richmond) either the outer space of *2001: A Space Odyssey* or the *inner* space of Dadaist illusion, there are two shortcomings of his treatise which can be nuanced here. In short, *Cinema’s Bodily Illusions* may smartly do away with “representation” and provocatively argue for an ersatz-Kantian proprioceptive disinterest, yet for all of the illuminating arguments the book makes about the body vis-à-vis the cinema, they are predicated on an evacuation of the bodies that interact in its very making.

Two fundamental issues weaken Richmond’s theoretical edifice. The first is a matter of absence, and thus appears less crucial: in a book dedicated to analyzing “flying” and “floating” as rendered cinematically, there is nary a mention of underwater movement or the apperception of motion below the surface. The second issue is more structural, even if it also bespeaks a sort of lack: Richmond’s avowed “central thesis,” “that proprioceptive aesthetics lies at the heart of the cinema as an aesthetic medium and as a technical system,” allocates zero space to any bodily, perceptual, or properly proprioceptive input on behalf of any of the films’ makers.⁶¹¹ For Richmond, proprioception, a wildly overlooked and misunderstood physiological system as far as cinema studies goes, and one certainly described with care and creativity in *Cinema’s Bodily Illusions*, stands for “the set of perceptual processes whereby we orient ourselves in and coordinate ourselves with the world.”⁶¹² As such, he argues that cinema is, in effect, a system for the perceptual modulation of our (primarily proprioceptive) faculties; that it is an aesthetic system first and foremost of appearances and some affects, not of representation; and that *illusion*—herein reclaimed as both “positive” and distinctly of the cinematic type—avails itself most expressly in

⁶¹¹ Richmond, 6.

⁶¹² Richmond, 6.

images that treat in experiences such as floating or flying through space. Richmond summarizes thusly:

[I]n proprioceptive aesthetics, aesthetics appears primarily in its sense of the mystery of my receptivity to the world. Proprioceptive cinema restages, in its aesthetic and technical process, the unaccountable and inevitable and mysterious fact that I am bound to and bound for a world, that I resonate with that world, that I am thrown open to that world. In proprioceptive aesthetics this fact is not elucidated or rendered the object of critical or philosophical reflection. It does not need to be converted into something of value by a process of criticism or philosophy but appears as immanent self-relation and affective intensification.⁶¹³

There is a respectable *mélange* here of Deleuze-inflected “logic(s) of sensation,” a sort of Heideggerian *thrownness*, and the “perceptual faith” of—variously—Merleau-Ponty, Gibson, and Bazin, which matches the almost breathless prose in intensity. And yet, what dominates the system that Richmond has generated is in fact a sort of return to the notorious *epochē* that he himself has sought to nuance, as well as the ever-lingering presence of dualities, separateness, subject-object thinking, and the term “self” (even if “self-loss”). This is likely why he turns primarily to Merleau-Ponty, who, despite tremendous profundity, still did not “leave” the subject-object schema behind, whereas thinkers such as Simondon, Whitehead, and James are only mentioned in passing. In any case, I open this section with a digressive recap of this approach not just to lament Richmond’s gaps; his attention paid to proprioception, as well as intero- and exteroception, is hugely beneficial to studies of the moving image of all sorts.⁶¹⁴ It is also a wonderfully compelling bridge between (often loose) theories of “the body” in film studies and much exciting work being done in sport and labor studies on proprioception, such as the recent essays by John Hockey and Jaquelyn Allen-

⁶¹³ Richmond, 141.

⁶¹⁴ Saying “as well as” is a bit misleading, since interoception and exteroception are, as Richmond says, two modes of perception that find proprioception as their “mediat[or]” (7). In his words: “*Exteroception* names perception of the world beyond our bodies, typically by the canonical five senses [...]. *Interoception* names the perception of the interior of the body, indexed by visceral sensations [...]. *Proprioception* names the perceptual processes that mediate between these two, that coordinate the interior of the body with the external world (7, emphasis in the original).

Collison as well as by Barbara Keys.⁶¹⁵ I will thus rely on his approach to proprioception and proprioceptive *perception*, while returning the properly proprioceptive *work* of production into the equation. For whether one appeals primarily to the autobiographical or phenomenological reportage of a figure such as Hass to furnish accounts of bodily experience, or simply reads from the moving image a sort of trace or indexing of production labor, I see no reason to foreclose the “front end” of the film experience as pertains to sensory concerns. This Richmond does by, among other things, considering the postulates of both apparatus theory and theories of media technics for how the cinema “works” on an “I.” Whither those whose work works to get us there? In the end, Richmond’s “cinema” can be eye-opening (or perhaps muscle-twitch-inducing), it can be fun and free, and it may very well tell us much about what happens *to* and *through* our bodies when we interact with a screen. It is also among the loneliest theories of film that we have, despite its discussion of “being in the world.”

Shifting gears, does freediving not also entail a certain kind of loneliness, or at least a dramatic shift in scale, in perspective? For Jue, a critical element of scuba diving, and *fathoming*—as well as “submerging” theory in the depths—is “immersion,” wherein one is literally plunged within the milieu “they are measuring.” Thus, fathoming “does not position the human at the center in terms of the Renaissance idea of man as the measure of things but as participant in a buoyant, watery, and pressurized milieu.”⁶¹⁶ No Archimedean points in the sea, only middles, midsts...proliferating, wherever you find (or lose) yourself. At times, movement underwater seems strangely simple—once practiced and ingrained—while at others, for instance when saddled by

⁶¹⁵ See e.g. Barbara Keys, “Senses and Emotions in the History of Sport,” *Journal of Sport History* 40, no. 1 (2013): 21-38; John Hockey and Jaquelyn Allen-Collison, “Grasping the Phenomenology of Sporting Bodies,” *International Review for the Sociology of Sport* 42 (2007): 115-31; and John Hockey and Jaquelyn Allen-Collison, “The Sensorium at Work: The Sensory Phenomenology of the Working Body,” *The Sociological Review* 57, no. 2 (2009): 217-39.

⁶¹⁶ Jue, 65-66.

camera and breathing systems, it can be Herculean, even if the objective is to remain “still.” An anecdote from Hass in the Red Sea is telling here, since it is notably the *absence* of extra filming gear that unlocks free-wheeling motion:

It was an incomparable delight to be able to concentrate, without interference, on looking for and estimating every kind of photographic angle. If I wanted to make an upward leap of fifteen feet, I simply gave myself a little push up and there I was. If I wanted to descend thirty feet, I simply bent forward and glided down like a bird. [...] [I]n my case gravity did not count at all. I could glide in whatever direction I Chose, and I could with equal ease remain perfectly motionless in space.⁶¹⁷

Of course, while Hass is suggesting the liberties of movement achieved when photographing the depths armed only with a minor *problema*, so to speak, he also speaks as a practiced diver, one whose proprioceptive faculties and muscular command has been habituated to and through the underwater milieu. As he himself remarks at the outset of *Men Beneath the Sea*, “Everyone who wants to dive must impress upon himself that our inborn behavior pattern is not adapted to life in the water. Being in the water is for man something new and strange.”⁶¹⁸ It can thus be lonely “down there” if one is not practiced, yet the dynamic engagement with one’s surroundings can also forestall a sense of separateness.

Alert Diver’s report on neutral buoyancy succinctly phrases things: “The physics of floating and sinking are simple concepts, yet achieving practical control of your buoyancy when outfitted with scuba equipment and immersed in water is an entirely other matter.”⁶¹⁹ In short, these are matters of habitual learning. As in the case, perhaps, of technical individuation undersea, where camera systems and elements are necessarily shaped by milieu-based experimentation, so too does the body need conditioning to achieve sporting familiarity, with additional “problems”

⁶¹⁷ Hass, *Manta*, 90.

⁶¹⁸ Hass, *Men Beneath the Sea*, 46.

⁶¹⁹ Marty McCafferty and Eric Douglas, “The Importance of Buoyancy Control,” *Alert Diver Online*, November 1, 2011, <https://dan.org/alert-diver/article/the-importance-of-buoyancy-control/>.

resulting from equipment-loading. Jue cites Cousteau's writing on the development of an "aqualung" system as an example of the proprioceptive experience of diving leading to new, better apparatuses that aid in undersea exploration. In her words, his requirements for the novel device "suggest an interface that is not a matter of conscious interpretation so much as a matter of nonconscious proprioceptive feedback—an awareness of the body's position, movements, and internal state, independent of vision."⁶²⁰

Why independent of vision? In the main, this can be chalked up to the proprioceptive characteristics of feedback from the muscles and tendons, which, whether or not "nonconscious," are certainly operative *infra* optical systems, though they are no less vital. Pushing further, it appears that underwater experience also doubles—or trebles—the importance of such vision-independent bodily awareness; whether simply diving, or operating a film camera the optical feedback of which is subject to the aforementioned intricacies of refraction and distortion, there is a sense in which vision is always illusory, proprioception always in the ascent. It is, in effect, the playing out of a relationship oft taken for granted on firm ground, an ocularcentrism writ large, whereby vision is privileged not just above the other "canonical" senses but also at the expense of the so-called "sixth" sense, proprioception. We will have recourse to treat this further in the final chapters, which will deal with the difficulties of conveying embodied gestures and practice in both Olympic athletics and "extreme" sports, both of which are primarily proprioceptive pursuits. To this end, Massumi suggests that cognitive studies of orientation in space indicate that "the proprioceptive self-referential system [...] was more dependable, more fundamental to our spatial

⁶²⁰ Jue, 45. Also see Jue, 46, for a discussion of proprioception and "pain" indices. For Jue's somewhat idiosyncratic use of "interface," see 40; 175n20.

experience than the exoreferential visual-cue system.”⁶²¹ And even if he highlights “vision itself” as the delivery system, with further recourse to phenomenological retreat, Richmond refers to cinematic illusions as presenting an encounter wherein “I discover the mute know-how of my body.”⁶²²

What these approaches share is thus a focus on something just beyond (or before?) words, something always-already inscribed yet nonconscious, something learned somewhat passively from the body’s own response to milieux. For Richmond, “[t]he proprioceptive boundary between self and world is an ongoing phenomenon, arising from the flux of my perceptual resonance with the world.”⁶²³ Read *world* here as, variously, organic matter or the light-play from a cinema screen. Certain films, such as *Gravity*, with its topsy-turvy floating aesthetics, can thus play up “the incredible plasticity of the human capacity for orientation and orientedness.”⁶²⁴ Jue, in turn, reminds us how significantly “interpretation” underwater is tied to proprioception, via ongoing processes of muscular and joint-based feedback. They meet, curiously, at a threshold, one unwilling to admit the proprioceptive work that generates the film product, the other leaving little space for how such work can be registered in the image. What these thinkers share, I think, is a commitment, each in their own way, to what Simondon means by metastability, which we recall is apt for describing technical objects as well as living individuals. Potential energy, tension, and disparateness prefigure individuation, the process of which unfolds through “an interlinking of successive resolutions.”⁶²⁵ Critically, though, such resolutions do not rid living or technical bodies

⁶²¹ Brian Massumi, *Parables for the Virtual: Movement, Affect, Sensation* (Durham and London: Duke University Press, 2002), 180.

⁶²² Richmond, 50.

⁶²³ Richmond, 109.

⁶²⁴ Richmond, 122.

⁶²⁵ Simondon, *Individuation*, 237.

of the “posed problems” to which they have responded. Rather, new tensions and novel problems arise, and both body and milieu are altered.

With respect to floating, proprioceptive awareness, and the potential transmission of sense experience from the filmmaking process to the viewer, Stephanie Merchant’s audience studies approach to underwater filmmaking brings together some of these complexities. For Merchant, any attempt to “study the senses in the act of sensing” might make productive use of phenomenological methodologies, ethnographic accounts, or autoethnographic reports.⁶²⁶ However, these “traditional” methodologies not only run up against the problem of making “embodied experience” that is not “outwardly expressed” into something legible, but they also often fail to account for the “becoming” of an experiencing “subject,”⁶²⁷ for instance, “tourists ‘becoming’ divers as they learned to leave behind their land-based and/or swimming techniques, in the process of generating a submarine habitus.”⁶²⁸ What Merchant proposes is a participatory videographic approach to the “submarine sensorium” that relies on filmic and sonic records to, among other things, “explore the potential videography provides for recording, replaying and by extension allowing for a re-embodiment of sensuous experience and engagement with space, since neither film nor video are ever solely visual.”⁶²⁹ Her attention paid to “vestibular, proprioceptive and kinaesthetic senses” makes clear the potential for—and difficulty of—using underwater experience and image-making to address cinema’s “multi-sensuous” capacities, and it also suggests how much of this experience is non-cognitive as well as non-remembered, hence the attempt to deploy videographic records to boost subsequent expression of what it *felt* like

⁶²⁶ Stephanie Merchant, “The Body and the Senses: Visual Methods, Videography and the Submarine Sensorium,” *Body & Society* 17, no. 1 (2011): 55.

⁶²⁷ Merchant, 55.

⁶²⁸ Merchant, 56.

⁶²⁹ Merchant, 69.

underneath the waves. Such an attempt to “read for” various senses need not be restricted to those who have had the experience of scuba-diving, even if that is the most express directive of this type of work.

4.6 Steady as She Goes

Questions of buoyancy and bodily control are intimately tied to the production of underwater images, and tradecraft articles about swimming with various *problemata* generally pair these topics with a focus on how to achieve steadiness. Romano’s section on underwater cinematography is explicit in this regard, as he invokes camera-stabilizing systems when discussing “neutral” buoyancy: “Your buoyancy control is a very important consideration when shooting underwater. At certain times you will want to be neutral *so you can swim the camera like a Steadicam® [sic] and crane combined, or you might be stationed on a set of parallels in a tank without wearing your fins, heavily weighted for stability.*”⁶³⁰ Steadiness and stability are the watchwords here, whether Romano is speaking about going for a Steadicam “feel” or remaining stable while steadily rotating or moving the camera.⁶³¹ A simple, pragmatic thought experiment: are all underwater shots *ipso facto* “steady” shots, by virtue of the milieu within which the camera operates? Is there a baseline environmental production element that effectively smooths out all movement, linking these shots to those achieved with something like the Steadicam, Panaglide, or

⁶³⁰ Romano, 356, emphasis mine.

⁶³¹ On this question of “feel” and the Steadicam’s images, see Bird, ““Dancing, Flying Camera Jockeys.””

Hydroflex systems?⁶³² And, if not, how are we to separate these two modes of image-making, both in terms of their (onto)genesis and their aesthetic yields?

Note that Romano does not mention *using* a Steadicam underwater, only trying to swim the camera *like* one, in tandem with elements from crane work. (His syntax is also revealing, if puzzling: one can swim a camera like a Steadicam—not swim *one's body* like a Steadicam system. The descriptive muck seems not unimportant here). So, is it possible to use a Steadicam underwater? A scan of camera operation message boards returns a small number of questions pertinent to “bringing” a Steadicam underwater. Overwhelmingly, it appears that such a pursuit is a no-go, whether because of the shift in operator situatedness (Steadicam walking to swimming), the availability of contemporary waterproof stabilizing systems (e.g. Polecam, Hydro Gyro, HydroFlex),⁶³³ or the fact that a hidden cut or other low-budget option could be cost effective without sacrificing aesthetic merit.⁶³⁴

Two famous long takes that intermingle above-ground steadiness and eventual submersion are worth mentioning here, returning us to the spirit of chapter two. In P.T. Anderson's *Boogie*

⁶³² See “Biography: Pete Romano,” HydroFlex.com, accessed May 28, 2022, <https://hydroflex.com/about-us/biography-pete-romano>. HydroFlex began with Pete Romano's custom built housings in 1985, and “it wasn't long before one of the local camera rental houses wanted to offer the HydroFlex housing as a rental option.” Romano's credits (as Director of Photography, or second-unit D.P.) are numerous, and the company which took the name of his first major housing now offers a suite of camera systems, stabilizer and remote technologies, and (for select clients) bespoke rigs. Various publications linked on HydroFlex's site make clear that experimental housings and systems designed for a specific film—or a specific *shot*—end up folded in to the company's larger market output. See e.g. Pauline Rogers, “2nd Unit DPs—Pete Romano,” *ICG Magazine* (2010), for an anecdote about Romano developing a Remote AquaCam for a single shot in *Message in a Bottle* and winning a Technical Achievement Award.

⁶³³ The Polecam system includes a “FishFace housing” that can be submerged for use with small cameras; the Hydro Gyro, a digital-stabilization system, is primarily for use in “the harshest of filmmaking environments,” and is “waterproof up to 30'.” On the latter, see Romano, 228.

⁶³⁴ See esp. Russell Bell, “Steadicam shot to underwater [*sic*], is it even possible?” *SteadicamForum.com*, September 11, 2008, <https://steadicamforum.com/index.php?app=forums&module=forums&controller=topic&id=8537&page=2&app=forums&module=forums&id=8537>.

Nights (1997), Robert Elswit, ASC and Ronald Vidor⁶³⁵ craft a two-minute shot that features the camera ambling about a pool party before following a character under the surface, where it remains for a time until peeking out from below to witness the protagonist launch off the diving board. Anderson's long take—the *second* most widely-discussed of the film—pays homage to the opening sequence of Mikhail Kalatozov's *Soy Cuba* (1964), a radically kinesthetic wide lens shot that likewise ends with the camera entering a pool after nearly six minutes of panning, tilting, and craning about a bustling Havana hotel and its surroundings.⁶³⁶ What interests me most about these two shots (which is saying a lot) is that they are *not* the result of Steadicam systems, and they *are* sometimes spoken about as examples of stabilizing systems being transferred from above to below the surface. In the aforementioned Steadicam Forum thread both shots are mentioned, although it remains unclear if the implication is that the long takes from *Boogie Nights* and *Soy Cuba* are, like the original poster's question, actually Steadicam.⁶³⁷ A series of laudatory blog posts by Andrew Sullivan of *The Atlantic* discusses the pool shot from *Boogie Nights*, culminating in a brief disclaimer that “[a] reader gently points out that my favorite one-take tracking shot scene was a) not a steadicam [*sic*] as such but a handheld camera and b) inspired by [...] ‘I Am Cuba’ as early as 1964.”⁶³⁸ In the main, this bespeaks yet again some terminological confusion, since “steadicam as such” and “one-take”—as opposed to “long take” (*plan sequence*) or even “one-shot”—add

⁶³⁵ Elswit is the film's cinematographer, Vidor one of the two credited Steadicam operators per IMDB. While the shot in question is *not*, in fact, Steadicam, Vidor is also listed as performing “underwater photography (uncredited)” on the website. Lacking further clarity on the matter, I have chosen to credit Vidor as the shot's likely operator. The film's other Steadicam operator (and second camera op.) is Andy Shuttleworth, who, even if not the prime mover of this specific long take, likewise deserves credit and features heavily in the film's Steadicam work.

⁶³⁶ The cinematographer for the film was Sergey Urusevsky, the camera operators Boris Brozhovsky and Alexander Calzatti. Per Film Reference, Urusevsky photographed the 35mm film with 9.8mm lenses, which straddle the line between wide- and fisheye-lensed. The black and white film was also shot on infrared stock, furthering the already dreamlike quality achieved by the lensing. See Dina Iordanova, “Sergei Urusevsky,” *Film Reference*, accessed December 19, 2020, <http://www.filmreference.com/Writers-and-Production-Artists-Ta-Vi/Urusevsky-Sergei.html>.

⁶³⁷ It merits mention that *Soy Cuba* was produced well before Brown had developed the Steadicam system.

⁶³⁸ Andrew Sullivan, “The Inspiration For That Boogie Nights Shot,” *The Atlantic*, July 8, 2008, <https://www.theatlantic.com/daily-dish/archive/2008/07/the-inspiration-for-that-boogie-nights-shot/214372/>.

little to our understanding. More to the point, I surmise that the culminations of both of these shots (especially in the case of *Boogie Nights*, with Anderson's penchant for the Steadicam), as the camera operator becomes an ersatz diver-operator, retroactively conditions one's experience and memory of the take as at the very least *steady*, if not Steadicam.

Brian Henderson recognized this thorny issue of the "end" of long takes nigh on five decades ago when he reflected on "the odd quality of the intra-sequence cut."⁶³⁹ For Henderson, the cutting of intra-sequence shots differs from our standard discussion of montage because the latter relationship "does not relate, arrange, or govern the whole of the pieces it joins."⁶⁴⁰ When longer takes are linked (intra-sequence), there is less of an immediate rhythmic—or even connective, or analytical—relation. Rather, the cut primarily serves to "reflect" on or condition what has passed, not so much commenting on the shot via rhythmic montage, but fixing its affective charge: "The cut which ends a long take—how it ends as well as where—determines or affects the nature of the shot itself. [...] The cut is the limit or boundary of the shot and this boundary enters into and determines the nature of the shot itself."⁶⁴¹

There is an uneasy *telos* at play here, and Henderson in fact pivots directly to Hegel. The previous chapter tried to resist the urge to read the end of long takes as "fixing the mark" on what came before, opting rather to hold fast to process and a different understanding of cinematic "presents." There is some merit to this position, however, and both Henderson's observations and my own suggestions about the "pressure of time" signal that the cut which ends the long take—and effectively *makes* the long take—as well as the content or environment of the take as it comes to a close does have a large role in coloring our appreciation of its totality. As such, to plunge the

⁶³⁹ Brian Henderson, "The Long Take," *Film Comment* 7, no. 2 (1971): 9.

⁶⁴⁰ Henderson, 8.

⁶⁴¹ Henderson, 9.

camera into a body of water after roving about the environment, to *render it more steady*, may at once suggest the difference between embodied camerawork above and below the surface while it retroactively collapses and unifies such difference. Recurring to the previous section on refraction and the water's surface as a boundary (of sorts), we might say that the surface more effectively acts as threshold, as membrane, as tissue. One could call the shift from air to water a "cut" of sorts in and of itself, but more aptly it is a sort of *soft wipe*, or a folding.

Circling back to Hass' own descriptions of steadiness as it pertains to buoyancy and pressure allows us to shift from considering steady movement *through* underwater milieux to the necessity of a kind of dynamic stillness, or stationary steadiness. Many of Hass' films pair shots that travel forward in a kind of dreamlike sway with those that linger and dwell, the camera shifting ever slightly as light and ocean creatures play within the frame. Often these are achieved with slightly wider lenses, which can both offset the magnification effects of various ports and effectively "eliminate much of the water column between the camera and the subject to produce the clearest, sharpest image."⁶⁴² However, he also speaks in 1973 about a "secret weapon" camera system, which "has never been marketed," developed—*individuated*—to "record these idiosyncrasies of swimming or fin movements in various types of fish."⁶⁴³ In effect, the Frankensteined camera kit, the details of which remain a bit sketchy, was put together to allow for slow-motion, telephoto lens close-up work on the fishes' body parts.⁶⁴⁴ Ancillary lenses are applied

⁶⁴² Romano, 361.

⁶⁴³ Hass, *Men Beneath the Sea*, 104.

⁶⁴⁴ Patrick McCooole has put together a guide detailing the various cameras and camera housings Hass used on his motion pictures, although it is unclear how accurate some of the entries are. They *seem* airtight, being mostly based on the films, Hass' published books, and discussion with Michael Jung of the Hans Hass Institute. If Hass did in fact use the Arriflex for this "secret weapon," it was probably used on the film *Unternehmen Xarifa* [*Under the Caribbean*] (1954). McCooole suggests that while the Arriflex was deployed during this time "in a custom-built housing," Hass "favoured the compact and reliable Siemens 16mm cameras for many of his earlier films." McCooole's work was presented at the Second International Vintage UW (Underwater) Camera Meeting, November 21, 2014, in Barcelona.

to an already long (telephoto) lens, through which close-ups of small fins, for example, can be photographed in full frame from a distance of five feet.⁶⁴⁵ However, this novel optical situation problematizes stillness/steadiness greatly, which leads to a further augmentation:

I therefore had a housing made for an Arriflex camera, with an optimal centre of gravity for water and with a focus I could adjust while looking through the lens even under water. Since I had to avoid even slightly jolting the camera, I had fitted to the handle on the right side a lever which controlled an electric motor inside, which continually changed the focus. Thus, the setting dial was moved by cogs. After weeks of effort, I learned to “play” on this lever as if it were a piano.⁶⁴⁶

Thus, this “special movie camera” is forged in a crucible involving improvisation, milieu-specific feedback, tactile technical ensembles, and habitual learning. The “optimal centre of gravity” does not, in any case, *ease* the physical demands of remaining still during filming. Rather, it aids the endeavor by responding effectively to the operator’s dynamic effort to steady him or herself while equipped with the system. Per Hass: “Purely from the physical aspect, taking these pictures was a climax *for it demanded that my whole body adjust to the water*, to every current and every movement.”⁶⁴⁷

The constant movement of the milieu, and its association with a temporary “inhabitant,” renders supremely dynamic even bodily measures that appear (physically, aesthetically) to be nigh effortless, or at least steady, stationary. Thus Valéry’s “sporting philosophy”—“the swimmer, the dancer, who are going nowhere.” *Going nowhere does not mean that you are not going. It means that you go, you move, without import placed on coordinates nor “wheres” as such.* Marcus Steinweg calls this the dream of “active immobility or agile passivity,”⁶⁴⁸ Erin Manning “incipient

See Patrick McCoole, “Hans Hass: His Early Underwater Filming Cameras,” TauchHistorie., accessed October 3, 2021, https://www.tauchhistorie.eu/th-zusatz/th04-hh_kameras_mccoole.pdf.

⁶⁴⁵ Hass, *Men Beneath the Sea*, 104.

⁶⁴⁶ Hass, *Men Beneath the Sea*, 104.

⁶⁴⁷ Hass, *Men Beneath the Sea*, 104-05, emphasis mine.

⁶⁴⁸ Marcus Steinweg, *Inconsistencies*, trans. Amanda Demarco (Cambridge, MA and London: The MIT Press, 2017), 109. N.B. this aphorism is titled “Doing Nothing,” in effect a spiritual pair to Valéry’s “Going Nowhere.”

action.” For Manning, following Simondon, “standing still”—or going nowhere—“is a metastable activity: the stillness demands precise adaptation to the micromovements of a shifting equilibrium. To stand still you have to move.”⁶⁴⁹ Standing still might be the metastable activity *par excellence* in Simondonian terms, since it so fundamentally alters our habitual understanding of the rest-movement dyad, or stability-instability per the Greeks.⁶⁵⁰ But the underwater operator is likewise once again a sort of limit case in these terms, a convenient example for us to point out that the process of camera operation is often the result of “whole body” adjustments, especially proprioceptive ones, that are subordinated either to the purely optical expression of cinematography or a limited understanding of camera “movement.” As such, it calls for fresh approaches to our understanding of how one moves—and moves *with*—camera equipment within a particular milieu, as well as how such equipment can move the operator.

It is during these meditations on the bodily demands of underwater filmmaking and the proprioceptive challenges of floating that Hass most frequently recurs to the spiritual, after a fashion. Here we return to the sea as at once cruel and inviting, at once a place of discord and harmony. In an aforementioned section on the diver’s toolkit and the problem of turbidity, Hass enumerates a slew of items—pencil, small light bulbs, a collecting net, actual trailed buoys—that, although “optional,” take on urgency as the diver-photographer challenges progressively deeper and/or more turbid areas. When assessing the difference between truly “free” diving and submerging with the support of myriad equipped items, the latter referred to as “like the body’s

⁶⁴⁹ Manning, 42.

⁶⁵⁰ See e.g. Simondon, *Individuation*, 5: “The Ancients only knew stability and instability, rest and movement, but they did not know metastability clearly and objectively. In order to define metastability, it is necessary to establish the potential energy of the system, the notion of order, and the notion of the increase of entropy; it is therefore possible to define this metastable state of being, which is quite different from stable equilibrium and rest and which the Ancients couldn’t establish in their search for the principle of individuation because they lacked a clear physical paradigm that could clarify its utilization.”

own organs” or “artificial sense organs,” he notes that one’s ability to retain control and coordination over such a system is ever-tenuous when confronted with the so-called “rapture of the deep.”⁶⁵¹ Such rapture, variously referred to as euphoric, nirvanic, blissful, and like “alcoholic delirium,” has (at least momentarily) pulled many a diver into its centripetal tug, not least Hass—and plenty of experienced underwater sportsmen and sportswomen have “succumbed” to its pull. Hass cites explicitly both the “Buddhist long[ing] for the end of Samsara [cycle of birth and death]” and the “well-spring of all life” that one “returns to” as a sort of rapidly-approaching fringe locatable for divers who go too deep, whether or not they ultimately realize such dissolution.⁶⁵² In a wonderfully Zen anecdote, the Koan-like bent of which he seems to recognize, Hass recalls, “[w]hen I dived down to 260 feet on an outer reef of the Maldives for exploration purposes, I wrote down in advance on the aluminum slate a list of what I had to do down below. The last item on the list was ‘swim up to the surface again.’”⁶⁵³ *Logos* prevails, here, as long as the message (*inscription*) hasn’t yet disappeared; and many decades later, the Maldives council would return to a nearby locale—albeit one less deep—to make a message of their own, about a different kind of survival.⁶⁵⁴

⁶⁵¹ Hass, *Men Beneath the Sea*, 32.

⁶⁵² Hass, *Men Beneath the Sea*, 42.

⁶⁵³ Hass, *Men Beneath the Sea*, 32.

⁶⁵⁴ See Jue, 67-70; 114-16, and John Roach, “Microsoft Finds Underwater Datacenters are Reliable, Practical and Use Energy Sustainably,” Microsoft Innovation Stories, September 14, 2020, <https://news.microsoft.com/innovation-stories/project-natick-underwater-datacenter>. There continue to be, of course, attempts to recalibrate this notion of the sea as *logos*-swallowing. Jue touches on two, explicitly: the Maldives Council Meeting and Microsoft’s Project Natick. In 2009, select cabinet members of the Maldives government held a meeting underwater, an admirable attempt to highlight the need for rapid climate change action. The meeting included the standard signing of documents, which had to be prepared and worked upon through the use of water-safe materials, with the members also employing hand signals and white boards to communicate during the process. The meeting was both a move to “re-sensitize”—or, in the face of general climate change denial, to simply make aware—and to stage, after a fashion, a photo-op for the wider spread of an increasingly dire message (Jue, 67-70). One cannot help but notice, however, the latent meaning signaled by the meeting (which was, after all, part of its purpose): if climate change is not addressed, this is what our home will look like. We can bring the tools here to temporarily communicate, but it cannot last. We are not at home here. In a different vein, Microsoft has recently extracted its large data center from the North Sea, a massive container full of servers and storage that was submerged in 2018. Part of the company’s plan to “become carbon-negative by

There is likewise an invocation of Freud in these pages, although Hass glosses over the “death-wish” or death drive as “no longer a tenable hypothesis.”⁶⁵⁵ Nonetheless, he hedges a bit, even using this chapter’s adverbial leitmotif: “*And yet* at that moment [of rapture] one is kindly disposed towards death, towards finality.”⁶⁵⁶ One thinks immediately of the recent film *Free Solo* about Alex Honnold’s free climb of El Capitan’s most treacherous run, the whole of which seems designed to ask questions about risk and death-drives as pertains to both climber and camera crew. It would perhaps be more apt to turn to the long legacy of adventure, mountaineering, and nature documentary films made at tremendously high altitudes under adverse conditions.⁶⁵⁷ Such filmmaking practices—both in their physiological demands and their often Sublime, or spiritual, milieux—likewise signal a mode of making wherein the lines between operator, mechanism, and environment blur; where the experiential process, however rapturous, is the message, one that cannot be circumscribed by mere representation. If underwater filmmaking is the *primus inter pares* among these pursuits, though, it is likely due to the peculiar, comforting, yet tenuous phenomenon of floating, and the act of coordinating one’s body within the watery milieu. There one finds oneself “more truly and more strange,” to bend the words of Wallace Stevens.

Just don’t forget to swim up again.

2030 through advancing the efficiency and sustainability of its cloud infrastructure,” the project (“Natick”) revealed that the servers in question sustained “a failure rate of one-eighth that of land-based data centers” (Roach). These results, as well as other carbon-reducing measures, may very well point to a bright future in ecologically-minded technologies; and yet, for our purposes here, it is hard not to see the photographs of a silt- and grime-covered tank emerging from the depths with some misgivings. The Microsoft logo(s?), which was only revealed after a vigorous pressure-washing, seems like the flag flown after a Pyrrhic victory of sorts, and one wonders about the dubious ethical questions of “dumping” our storage—in tank form—into an undersea habitat. Furthermore, and not unlike the very earliest methods of underwater cinematography, the “hermetically sealed” vat effectively has no positive or coefficient relationship with the ocean itself (Jue 115). It does not really make association with this milieu, for sound technological reasons. In effect, the storage unit is placed in the ocean, and *can only function if the ocean is completely sealed off from it*. Rhetorically, we may ask if (and why?) it’s really *in* the ocean.

⁶⁵⁵ Hass, *Men Beneath the Sea*, 42.

⁶⁵⁶ Hass, *Men Beneath the Sea*, 42, emphasis mine.

⁶⁵⁷ On this see Bird, “Sporting Sensations.”

4.7 Under Pressure?: Chromatic Aberrations

Jue rightly points out that *pressure*—like refraction and buoyancy—is a useful inroad for performing “milieu-specific analysis,” in terms of both its conceptual purchase and the very real force it exerts on bodies.⁶⁵⁸ Her treatment of pressure as a phenomenon that can reconfigure our understanding of conceptual “interface” is sound, and it also relies on writing by both Cousteau and Sylvia Earle. However, Jue seems curiously unwilling to consider whether pressure is a useful focus for aesthetic yield and effect on the spectator of underwater media. She suggests that pressure is “an effect that does not come under consideration with screen technologies or terrestrial conditions of perception,” yet admits that high-elevation climbing—and mountain photography, by extension—is a notable exception.⁶⁵⁹ More to the point, Jue claims that one reason for the absence of pressure as a factor in “literary readings and media analyses” is partly “because pressure is not easily represented in visual terms.”⁶⁶⁰ This is true, to a point: pressure is certainly not available for indexicality and signification the way that velocity, steadiness, or certain optical phenomena are; however, the pressure of a milieu does interact with photo-sensitive systems at the same time that it effects the bodily situatedness and mental faculties (recall the “rapture of the deep”) of diver-operators.

In fact, the pressure and density of bodies of water—each with their own qualities—have nearly as much effect on the image-making process as does the behavior of light as it passes media thresholds, and the two are intertwined. Color values shift significantly even mere feet below the

⁶⁵⁸ Jue, 17.

⁶⁵⁹ Jue, 36; 175 n 5. See Hass, *Men Beneath the Sea*, 124, on the “affinity” between “menfish” underwater camerapersons and “members of the mountaineering fraternity.”

⁶⁶⁰ Jue, 17.

water's surface, and the effect is compounded the deeper one gets. In a sense this is actually inseparable from the aforementioned discussion of refraction, since the change in wavelength and light behavior is the prime mover of chromatic "aberration." As Romano reminds us, "as light travels through water, the long wave lengths of light—reds, oranges, and other warm colors—are dominated by the blue-green (cyan) effects just a few feet below the surface. All water acts as a continuous filter, and water depth added to the distance of the subject to the camera equals the total water path the light has to travel."⁶⁶¹ Here, the water (medium) is once again referred to as a sort of lens element, as a part of the extended camera system—all lenses are, to an extent, *filters*. Furthermore, the point raised by Romano also analogizes the water to the more "properly" termed filters in cinematographic practice, which are placed in front of light sources or over the lens to change color temperature while necessarily "blocking" some exposure. Thus filters adjust the quality, intensity, and to a certain extent the path of light by removing (subtracting) or blocking energy from certain parts of the spectrum. In this sense, there is something to the notion that ocean, lake, swamp, and pool *filters* are always already operative in underwater image-making, and that these bodies of water are inseparable from the lens/camera system of which they are a part.

Hass' most simplistic run-down of water-as-color-filter states, "[o]ne difficulty: the colours are wrong. Water filters out the red and yellow components of sunlight, so that even at a depth of 15 or 25 feet everything appears only in shades of green, brown, and especially blue. Only by artificial light can one bring out the real—'true'—colours of the fish, corals, and sponges."⁶⁶² An increase in depth and pressure necessarily increases these so-called aberrations, which Hass

⁶⁶¹ Romano, 357.

⁶⁶² Hass, *Men Beneath the Sea*, 99. This "one difficulty" is an explicit reference to the problems still posed when using the Rolleimarin camera system that Hass developed, which uses a focusing screen to adjust difficulties in "normal" focus.

illustrates via an anecdote about tradecraft risks: “If you injure yourself on a coral at a depth of 130 feet and look at the blood that runs out, it is grey or even black. No trace of red.”⁶⁶³ This discussion leads him to an interesting question: “What purpose do the hidden colours of the deep serve?” To whom are they hidden? Leaving aside the obvious fact that perceptual apparatuses differ greatly among species, we might ask if the colors are really hidden at all. They appear the way they appear in their habitat, amid varying depths and pressure, yet only when removed from said do we claim to have “revealed” what was hidden. How does the solution of “artificial” light serve, therefore, to demonstrate underwater *truth*?

It is important to recall that many of Hass’ early films, as well as certain still photographs, were produced in black-and-white. However, the issues presented to celluloid or a digital sensor by pressure and “scattering” are yet present even without color processing systems.⁶⁶⁴ When faced with especially turbid waters (highly particulate), which Hass refers to as the “natural enemy of the underwater photographer,” color filters are still used to balance the aberrant effects of pressure and particulate, often refractive matter.⁶⁶⁵ In early underwater cinematography, then, pressure exerted a threefold burden on the process: it threatened to induce nitrogen narcosis; it quite literally dented (pressurized) the brass housings of primitive camera elements;⁶⁶⁶ and it so to speak *squeezed* the color waves that contribute to celluloid image-making, whether color or monochrome. Jue’s section on pressure, interface, and “pneumatic media” goes to great lengths to indicate both the shortcomings of our current conception of interfacing and the multiple ways in which we can rethink “breath” underwater. Yet the lack of attention to the material and aesthetic

⁶⁶³ Hass, *Men Beneath the Sea*, 100.

⁶⁶⁴ Scattering caused by suspended underwater objects is the process whereby light is further weakened and color further desaturated as it strikes plankton, debris, and so forth. See Romano, 357.

⁶⁶⁵ Hass, *Men Beneath the Sea*, 101.

⁶⁶⁶ Hass, *Men Beneath the Sea*, 165-66.

outcomes of pressure on cinematic media is made more marked by her use of “saturation,” which misses the opportunity to address pressure as desaturating force vis-à-vis human and photo-chemical perception. Amid a discussion of saturation diving (temporally long enough to balance bodily tissue with the breathing gas components), Jue cites her own co-authored essay as “theoriz[ing] saturation as a material heuristic that ‘directs us toward the volumetric capacities, the spectrum of visual opacity and clarity, and suspended states of objects-subjects relations that are modeled by the world of bodies of water,’ a spatial focus that ‘highlights saturation’s ability to articulate terrestrial space as not just a container, but rather as volumetric thickness.’”⁶⁶⁷ It seems apt to pair these insights with a treatment of color (de)saturation, perhaps going some way toward remedying Jue’s suggestion that “screen technologies” and visual “representation” are difficult vessels through which to explore the effects of pressure. It might not always be easy to see, but pressure is visible, and pressure can be felt or sensed. Although shifts in color might be easier to track, in the black-and-white work of the Hasses we find moments of terrifically rich contrast which index such force. Reviewing these films, one learns (hand-in-hand with voiceover that mentions how deep the divers are) how to *feel* the various depth pressures, and how to hold fast to the bodily experience of its participants and operators while still attending to the image.

Although there have of course been streamlined and mass-produced underwater camera systems and housings in the years since the Hasses produced their films, attending to reports by contemporary operators is often useful in revealing various bespoke units used to generate underwater images. For example, take the work of Peter Zuccarini, an underwater cinematographer

⁶⁶⁷ Jue, 52. See Melody Jue and Rafico Ruiz, eds., *Saturation: An Elemental Politics* (Durham and London: Duke University Press, 2021).

whose most notable credits include the *Pirates of the Caribbean* series (2003-11) and the dual *Avatar* sequels (expected 2022-24). The director of *All Is Lost*, J.C. Chandler, summarizes his innovations: “Through all the work [Zuccarini has] done over the years [...] he has developed his own underwater camera housing that is just amazing—smaller, lighter and more efficient than any underwater housing I’ve ever seen. Some of the most dramatic shots in the film are when the camera can go from underwater to above water with that feeling of bobbing right at the surface. His system does that wonderfully.”⁶⁶⁸ Elsewhere, Zuccarini confirms that these sorts of shots—which straddle the “line” separating water and air, or oscillate between the two—had been fascinating him for some time: “One of the things I’ve gotten really interested in lately is including scenes that transition into the water from the air, or from the air into the water, shots that include two different worlds in one movement. In this way we can really feel the difference.”⁶⁶⁹ Pressure, refractive indices, buoyancy: all are elements of this difference as we shift between milieux. We are thus reminded of the long takes from *Boogie Nights* and *I Am Cuba*, but also of Hans Hass’ various *problemata*, arrived at through experimentation. According to Zuccarini, he and Steven Ogle, an “underwater camera housing pioneer,” have explored numerous options for the “curvatures of the glass that goes inside the waterproof housing.”⁶⁷⁰ Different types of lensing (wet vs. dry) and a range of glass curvatures return singular optical results, especially when placed in a relationship with the remarkably unpredictable behavior of light at and around the ocean’s surface. Zucarrini reminds us, though, that it is not simply a case of capturing a milieu from “within” a

⁶⁶⁸ Qtd. in Jay Holben, “Taking on Water,” *American Cinematographer* 94, no. 11 (2013): 56.

⁶⁶⁹ Qtd. in Darrell Nicholson, “Exploring the Art of Underwater Cinematography with Pete Zuccarini,” *Saw Palm: Florida Literature and Art* 6 (2012): 43.

⁶⁷⁰ Qtd. in Nicholson, 43.

camera housing, since the “dynamic changes” of these shots point up the oft-overlooked fact that “the water becomes a lens.”⁶⁷¹

Ultimately, then, the rudiments and dictates of underwater cinematography lead to a range of provisional methods and tools for image-capture, some of which gain staying power and await further individuations based on the requirements of other operators as well as broader shifts in lensing and film- or sensor-speed. Close attention paid to these *problemata* can tell us much about the sporting bodies involved in their coming-into-being and the ways in which milieu-based experimentation—not limited to underwater environs—often produces surprising results. But as Zucarrini reminds us, when the water “becomes a lens” it is also the case that a contraction of natural forces plays a critical role in the relation between human body, technology, and milieu. The ocean may swallow or smother *logos*, but it has also been telling its own story for over a century, in visual form, through the mediating elements of pressure and refraction.

4.8 “But I Make One Condition”: Lotte Hass (Minor Key)

The position of Lotte Hass (*née* Baierl, or Bayerl) in the corpus of Hans’ films is, to force the metaphor, refractory. At times she appears as a model or actress, at others as a camera operator within the diegesis. She wields still image *problemata*, and the shots that she produces are part of the visual fabric of certain of the films as well as their marketing materials, even if it can be difficult to parse who captured specific images. There is so to speak an overlapping or concentric set of lacunae in the extant analysis of the Hasses’ output: the films themselves are

⁶⁷¹ Qtd. in Nicholson, 43.

often overlooked, for reasons summarized above; Hans' writings rarely make it into the discussion, if at all; Lotte's diverse roles are hardly ever fleshed out; and, in the blankest recesses of these gaps, Lotte's own writing resides.

Girl on the Ocean Floor is a terrifically rich autobiographical document, its insights as profound as its rarity.⁶⁷² Turning to this book might not wholly reshuffle the narrative about the filmmaking duo, but it provides necessary qualifications to the accepted account. Although Lotte would become a rather famous diving icon herself, referred to as the "First Lady of Diving" in a 2015 obituary, her work *behind* the camera is relatively untouched in the literature on the Hasses' films. If Hans' origin story involves "finding a blacksmith" and hammering out the rudiments of his experimental camera system, Lotte's is a bit more surreptitious: in 1949, having just become Hans' secretary, Lotte wasted little time in appropriating for herself Hans' still camera equipment and practicing underwater image-making, unbeknownst to her future husband; she had already been training daily "for half an hour in an indoor swimming-pool" before work, these exercises likewise *sub rosa*.⁶⁷³ Thus Lotte's interest in zoology, paired with gumption and increased photographic experience, carried the day over her budding career as a secretary (see Fig. 4.5). While Hans traveled to South Tirol (Italy) for a lecture tour, Lotte seized the opportunity:

I went on a private expedition. I knew now exactly how the underwater camera worked and I was an expert diver; if necessary I could hold my breath for two minutes. Taking fins, mask and camera with me, I made my way to the Alte Donau all by myself. It was late autumn and a weekday and there was not a soul about. Carrying the underwater camera, I slipped down into the jungle below the surface.⁶⁷⁴

⁶⁷² Used copies, which are sparse, circulate from time to time for asking prices between \$120-300.

⁶⁷³ Lotte Hass, *Girl on the Ocean Floor*, trans. Eva Sawers and Robin Sawers (London: Harrap, 1972), 11. See Tim Ecott, *Neutral Buoyancy: Adventures in a Liquid World* (New York: Grove Press, 2001), 156.

⁶⁷⁴ Hass, *Girl on the Ocean Floor*, 10.

Lotte's first "expedition" was a success: the photographs, having been shown to the *Wiener Illustrierte*, were accepted by the managing editor "on the spot"; the secretary-photographer appeared on the magazine's cover, camera in hand; and the "camera was back in its place, carefully cleaned."⁶⁷⁵ The secret, therefore, didn't last long.



Figure 4.5 Lotte Hass with camera and spear in *Unternehmen Xarifa [Under the Caribbean]* (1954)

Hans, despite being impressed with the quality and notoriety of the photographs, remained unwilling to let Lotte join the planned expedition to the Red Sea. This changed somewhat when Anton Schuchmann, who directed Sascha-Filmproduktion, suggested the necessity of a "pretty woman" or "leading lady" for the picture.⁶⁷⁶ In Lotte's words, "[t]he net result of the conversation was that the party for the expedition was increased by one person—by me. I stayed quite calm and collected, but in reality I would have liked to have given director Schuchmann a good hug."⁶⁷⁷ But all did not go swimmingly in the preparations: according to Lotte, Hans was initially less interested in discussing Lotte's photographic role on the film, or even the dictates of her position as actress-

⁶⁷⁵ Hass, *Girl on the Ocean Floor*, 11. See Hass, *Manta*, 27.

⁶⁷⁶ Michael Jung, "Lotte Hass: A Pictorial Biography," *The Journal of Diving History* 16, no. 3 (2008): 56; Hass, *Girl on the Ocean Floor*, 12.

⁶⁷⁷ Hass, *Girl on the Ocean Floor*, 13, emphasis mine.

model, and more concerned with “her” gendered status on the expedition writ large. Despite Hans’s longstanding interest in the discussion of “Manfish”—a neologism he shared with Cousteau—he nonetheless posited a ruthlessly dualistic man-woman divide, even if there was some slippage allowed. Hans’s *Manta* is not as explicit as Lotte’s autobiography in the details of the pair’s preparatory dialogue. Although Hans does mention a discussion about Lotte aiming to prove that woman can be an asset on this sort of expedition, and perhaps even the equal of man,⁶⁷⁸ Lotte’s account is more punctual (whether or not genuine):

[Hans]: ‘Please don’t be offended, but from today you are a man.’

[Lotte]: ‘I’m what?’

‘A man. Just forget that you’re a woman. We’re now on an expedition and we’re all men. It’s clear to me that it won’t be exactly easy. But if we want to form an effective team—and we must—then we can’t afford to make allowances.’

‘All right. *But I make one condition.*’

‘And that is?’

‘You must also accept me as a man and not treat me as half and half. Being a man implies not only a duty, but also a right.’⁶⁷⁹

I find Lotte’s slippery, pluralistic role—on the expedition, within the films’ diegesis—to be a particularly rich element in the Hasses’ work. However, the current literature on the film and televisual output of the pair more often than not blunts much of its edge. Just after recounting the terms of this conditional “contract,” Lotte includes a diary entry in which she bemoans the anal, “pedantic” and “dogmatic” behavior of both Hans and Gerry Weidler, behavior as relevant in Hans’s editorial hand (Lotte as secretary) as in Gerry’s displeasure about Lotte’s inclusion in the film (Lotte as expedition member). Speaking of Gerry, Lotte presciently notes that although the former likely believed he would be the “star” diver of the film, “as a girl I will steal some of his thunder—because in the film I will still be a girl...”⁶⁸⁰ Does this mean that Lotte is at once

⁶⁷⁸ Hass, *Manta*, 25-26.

⁶⁷⁹ Hass, *Girl on the Ocean Floor*, 15, emphasis mine.

⁶⁸⁰ Hass, *Girl on the Ocean Floor*, 16.

conditionally *man*, and thus a full member of the expedition, and yet still *girl, woman*, in this case an irruptive element in the otherwise fully male crew and film—in other words, *difference in itself*, or the charge of the differential?

Yes and no. There are concrete examples of Lotte's role in these films that hardly rely on such a lofty, abstract description of her plural position. But it is also the case that meditating on her role as *differenciator* rescues the films' gendered and representational networks from the jaws of ideological reduction. Put simply, the history of the Hass media objects, when it has been written at all, has heretofore taken back much of the thunder Lotte stole. I remain unconvinced by this history, which evacuates Lotte's layered importance to the films and seems to rely on the pincers of representation and ideology critique to do so. In other words, Lotte Hass is viewed as a moving piece which operates variously as a damsel within the fabric of Hans's films, as a photographer always already circumscribed by or subordinate to the men of the expeditions, or as an explorer whose mishaps guarantee the superior problem-solving aptitude of Hans et al. For Vinzenz Hediger, Lotte performs a double role in films such as *Red Sea* and *Caribbean*, inasmuch as she and other women function "for the audience as vicarious beneficiaries of Hass's explanations," while also being "shown as a competent diver and photographer. In promotional still photographs for the theatrical films and the television series, she is equipped with cameras and diving gear on equal footing with her partner/husband."⁶⁸¹ This much is true. Hediger continues, however, suggesting that when Lotte is shown "pointing the camera at locals," no longer "taking great care to hide the camera from view," the situation must be remedied by Hans: "the problem disappears

⁶⁸¹ Vinzenz Hediger, "Chance Wrote the Screenplay, Reality Directed the Film: The Exploration Films of Hans Hass," in *Cinema of Exploration: Essays on an Adventurous Film Practice*, eds. James Leo Cahill and Luca Caminati (New York and London: Routledge, 2021), 96.

once the white male operator, who knows how to properly conceal the camera, takes over.”⁶⁸² And with respect to the films’ renderings of human-shark interaction—which recall our discussion of Bazin’s “danger”—Hediger points to specific instances of Lotte fainting, being threatened, or otherwise finding herself in danger, in effect bringing these mishaps on “herself because, unlike [Hans] Hass and his male assistant, she fails to establish a pattern of dominance.”⁶⁸³ Jue likewise shorthand’s Lotte’s participation in the film: in her only mention of Hans, she writes that in “*Under the Red Sea* (1952), [Hass] fictionalize[s] an intrepid female diver, only for her to encounter trouble and be saved by a brave rescuer (and love interest).”⁶⁸⁴ In short, all of Lotte’s qualifications nonetheless remain provisional, always ready to be called into question by patriarchal strictures.

Must it be so? I believe there are two ways in which this reading collapses in on itself; one is dramaturgical, the other historiographical. Hediger’s treatment of the films’ narrative structures is not without merit. And yet, one wonders how much of this supposed narratologico-representative charge is worth the analytical candle. It is well and good to suggest that the triangulation of Hans/Lotte/“Indigenous agent” in these films betrays a hierarchical structure, which Hediger sketches as White Expert Man/Technically Proficient White Woman/Other (= “[object] of inquiry without access to the technologies of knowledge production”).⁶⁸⁵ But this rings of an ideological critique overlay, which reads the film—from the would-be enlightened present—as either an instantiation of a particular power dynamic or an element contributing to a scientific discourse of sobriety and gendered knowledge. Very likely this film, as well as others of the Hass corpus, contains moments that make for such a simplistic reading. But this tells us nothing much about the

⁶⁸² Hediger, 96.

⁶⁸³ Hediger, 98.

⁶⁸⁴ Jue, 58.

⁶⁸⁵ Hediger, 96.

cinematic text nor its production—if anything, it tells us what we already know about mid-century power dynamics and colonial, ethnographic impulses; furthermore, it perhaps reinforces the accepted stance on such dynamics. There must be a way here to swim against the tide.

An initial way to finesse this sort of reading might be found in the work of two authors who, although neither treat underwater filmmaking, each remind us of the contradictory impulses and affects at work in early-to-mid twentieth century documentary filmmaking. Rereading Jennifer Lynn Peterson’s *Education in the School of Dreams* after becoming familiar with the work of the Hasses and Cousteau, I am struck by how elegantly her stance on the “travelogue” film overlaps with these more explicitly oceanic documents. *Under the Red Sea* and *Under the Caribbean* are, after all travelogues: they took viewers to new, “exotic” locales, both above ground and below. In Peterson’s terms, they both “[defined] popular images of global landscapes”—and seascapes—and “were regularly celebrated as a form of virtual travel experience.”⁶⁸⁶ We recall, however, that the Hasses’ cinematic works are rather generically slippery, at once functioning in terms of documentary, fiction, and self-reflexive renderings of photographic-exploratory process. In this way the Hass films are perhaps especially primed for Peterson’s deconstructive approach, which considers travelogues not as “seamless purveyors of imperial ideology [...] but fractured images containing multiple meanings.”⁶⁸⁷ In short, such films tend to “undermine what they show,” a valence which Peterson applies in the spirit of Deleuze and Guattari’s “minor” key.⁶⁸⁸

The fact that these films may be “leaving openings for resistance” in their supposedly unbroken imperial-ideological edifices does not imply that such resistant or minoritarian charges

⁶⁸⁶ Jennifer Lynn Peterson, *Education in the School of Dreams: Travelogues and Early Nonfiction Film* (Durham and London: Duke University Press, 2013), 2-3.

⁶⁸⁷ Peterson, 6-7.

⁶⁸⁸ Peterson, 16. See e.g. Gilles Deleuze and Félix Guattari, *Kafka: Toward a Minor Literature*, trans. Dana Polan (Minneapolis and London: University of Minnesota Press, 1986), 16-27.

readily announce themselves.⁶⁸⁹ Often they must be (re)activated. Such reactivation is at the heart of Shilyh Warren’s recent monograph, *Subject to Reality: Women and Documentary Film*. The most explicit link between Warren’s work and Lotte Hass is likely the former’s interrogation of Osa Johnson and Frances Flaherty, inasmuch as each were explorers, each played a role in documentary and ethnographic filmmaking, and each “worked in the looming shadows of their more famous husbands.”⁶⁹⁰ Hediger recognized as much, suggesting that Lotte and Hans “form[ed] the most glamorous heterosexual couple of onscreen explorers since Martin and Osa Johnson in the 1920s.”⁶⁹¹ But it is Warren’s broader approach to feminist documentary practice and criticism that most interests me here. Her stance aligns with Peterson’s in that it pays heed to the films’ colonial/imperial attachments while remaining available to moments of rupture: “I ask how women filmmakers and filmmaking collaborators responded uniquely to the colonial desire to visualize, fix, and know otherness,” ultimately with the aim of “both destabilizing and expanding the canon of women’s production throughout the long history and future of documentary.”⁶⁹²

A sterling example of this potential rupture, I think, is found in *Red Sea*, wherein Lotte (not for the last time) aims to get closer to a shark with her still camera. In this sequence, Hans rebuffs her attempt. As Hans and Lotte descend, we are told that they are roughly “one hundred and five feet down,” and the tremendously rich contrast of the images bears out this fact with respect to the aesthetic effects of increased pressure. Long shots of the two divers are intercut with shots of the swirling shark, and once Lotte—again, not atypically—moves to head off on her own and get closer to the animal, the camera poised in front of her face, Hans grabs her by the back and pulls

⁶⁸⁹ Peterson, 31.

⁶⁹⁰ Shilyh Warren, *Subject to Reality: Women and Documentary Film* (Urbana, Chicago and Springfield: University of Illinois Press, 2019), 22.

⁶⁹¹ Hediger, 94.

⁶⁹² Warren, 6; 145.

her around. The film's voiceover adds a somewhat playful bit of "speech" by Hans, to the effect of "hey, hold back—after all, sharks are among the most dangerous beasts of the world." A romantic melody blooms on the soundtrack as Hans points for Lotte to retreat with him. The pair moves off, without the desired close-up still images (Figs. 4.6-7)



Figure 4.6 Lotte, armed with camera, pursues a shark in *Red Sea...*



Figure 4.7 ...and Hans rebuffs her attempt

Once again, because of the films' mixture of documentary realism and heightened narrative theatricality, it can often be difficult to make sense of which images are "reshuffled" for dramatic

effect. It is also hard to be sure which sequences correspond to the various reports in both Hans and Lotte's written works, but *Girl on the Ocean Floor* is candid time and again about the balance Lotte felt between fearing the more dangerous ocean creatures and wishing to continuously get nearer to them. For instance, at one point she discusses an episode wherein a smaller shark harries the crew. Hans "was filming and did not see it. As I had a harpoon I did not stop to think for long. I dived and swam towards the shark."⁶⁹³ Although Lotte bravely frightens the shark away, her diary entry for the day displays bitterness that Gerry and Leo gave her so little thanks, since "I did after all chase away that shark and a few appreciative words wouldn't have cost them anything."⁶⁹⁴ Elsewhere, describing another Red Sea shark encounter during which Lotte photographed a few of the animals (two "thin" ones and a "fat" one), Lotte reports that she was already in the water when the group circled: "It occurred to me that this time I had an underwater camera myself—a still camera. If any sharks passed me I wanted to snap them right away."⁶⁹⁵ Communicating via hand signals and barely legible breathing-tube speech with other crew members to gauge the correct f-stop, Lotte photographs the sharks, then thrusts at one with "the harpoon in front of me," before ultimately joining back up with the crew and getting boat-side. A perfect summary of the push-pull—the *and yet*—of Lotte's experience in the face of danger, armed with various *problemata*, runs thusly:

Hooray, I had taken my first photo of a shark! Perhaps Hass was also in the background of the picture. Was I afraid? I was concentrating so hard now that I had no time to think out the answer. Every time a shark came closer, the question formed in my mind: What if he now really takes a fancy to you—what then? But the thought was swept away.

*I wound on the film.*⁶⁹⁶

⁶⁹³ Hass, *Girl on the Ocean Floor*, 111.

⁶⁹⁴ Hass, *Girl on the Ocean Floor*, 115.

⁶⁹⁵ Hass, *Girl on the Ocean Floor*, 153.

⁶⁹⁶ Hass, *Girl on the Ocean Floor*, 155, emphasis mine.

Like other examples of Lotte drifting, exploring, getting lost, I find that there is nothing compelling us to read the above sequences in terms of her mistake (physical, technical) that must be remedied by a man's intervention, by the intercession of man as bearer-of-the-camera-and-scientific-mastery. To do so is to stifle any potential—experiential or cinematic—of these specific encounters, whether they are fictionalized or documentary (often indeterminable in these films).

Once again, Lotte is slippery, pluralistic—on the expedition and within the films' diegesis. She is “man” and “girl,” both or neither, prismatic. She is the trickster, one of the “freest” of the explorers, and who wouldn't celebrate this? Sneaking away to train, making herself a place amid the all-male crew, diving unprotected with spear and camera, she is ever playing with the limits of the Hass enterprise. And in terms of production specifics, we can once again consider the multi-medial status of these films; each expedition and each dive represents a middle (milieu) through which bodies interact with technology, and from which is generated research, still images, and moving images. The projects are thus likewise prismatic, refractive. Lotte's still photography should therefore be considered as a vital element in the process, and the films thankfully give us plenty of self-reflexive sequences wherein we glimpse her floating, diving, and experiencing with camera in hand, perhaps allowing us a different felt sense of what went into the image-making. And in her words: “Only when I am diving do I still sometimes have the feeling that I am wide awake and my experiences are real...”⁶⁹⁷

In closing, two parting thoughts on Hans and Lotte as a team. If we continue to take a wide angle, multi-media view of underwater production, we also note experiments, such as one from *Caribbean*, in which film lights were brought down to a coral reef for the first time. In this we again recognize Lotte's flexible role, in this case acting (with other members) as

⁶⁹⁷ Hass, *Girl on the Ocean Floor*, 148.

underwater electrician, or a floating gaffer if you will. In these varied moments I find that Lotte’s presence is critical for the seemingly simplistic reason that she, as Man-Girl so to speak, blazes multiple trails. She is integral to the expeditions’ genesis of still images and she also at times acts, with Hans, to display and explain equipment to the viewer. But she also takes on roles that we might generally ascribe to distinct craft practitioners, and which were steadfastly gendered. Eighty years later, Indian underwater cinematographer Priya Seth (one of the few women D.P.s in that country) would reflect on the “pre-requisite” of “being a man” in cinematography, and the added layer of gatekeeping that comes with the difficulties of sporting, underwater camerawork.⁶⁹⁸ For Seth, although she claims she mostly refused to listen to the masculinist noise, it is nonetheless clear that if cinematography and camera operation have long been a male-dominated sphere of filmmaking, the underwater element only magnifies this chauvinism. Jill Heinerth, another professional underwater image-maker, says much the same, reporting, “I’ve often been the only woman on a project or the only woman trying to seek a position in a male-dominated world. I’ve often had to be creative in marketing my skills and convincing various entities that I can do the job as well as a man in the same role.”⁶⁹⁹ Although such anecdotes are not exactly surprising given the historical gender imbalance of filmmaking cultures, the fact that Valerie and Ron Taylor, another filmmaking couple, would provide underwater (especially shark-related) cinematography for films such as *Blue Water, White Death* (1971) and *Jaws* (1975) would lead one to believe that

⁶⁹⁸ “Indian Cinematographer Priya Seth,” Bio and Podcast Transcript, with Brett Stanley, *The Underwater Podcast*, June 30, 2020, <https://theunderwaterpodcast.com/indian-cinematographer-priya-seth/>. Also see Harshit Bansal, narrator, “Priya Seth and the Art of Underwater Cinematography,” *The Humans of Cinema Podcast*, October 27, 2020, <https://www.listennotes.com/podcasts/the-humans-of-priya-seth-and-the-art-of-qFuzl7ZC9P3>. For Seth’s collaborative group, The Indian Women Cinematographers’ Collective, see <https://iwcc.in/>.

⁶⁹⁹ “Meet Jill Heinerth,” NOAA Ocean Exploration, accessed May 24, 2022, <https://oceanexplorer.noaa.gov/edu/oceanage/13jheinerth/welcome.html>.

the dynamic would long ago have adjusted.⁷⁰⁰ Much further work on the subject is needed, but it is clear that while some things have changed since Lotte made her arrangement with Hans to be at once “man” and “girl” on their expeditions, women in underwater cinematography are still frequently met with sexist gatekeeping, both tacit and express.

I also want to think for a moment about Lotte’s moving image work, or at least its phantom. Multiple cameramen are credited across the Hass films, and we often see images of motion picture operators in frame. It can be hard to tell who is recording, even using a process of elimination. Did Lotte also film with the cine-cameras? Michael Jung of the Hass Institute told me that there is no evidence Lotte also took motion picture shots on the various Hass films, and I have no reason to doubt his knowledge. In part it may be that I am trying to *imagine* certain of the shots being taken by Lotte, especially since when one watches so many films in which the sporting movements of a large crew are part of what tethers the viewer to the images themselves, it is hard not to pair the various swimming (and floating) motions of each participant with shots that do not often announce their provenance. Plus, Lotte was a more-than-accomplished still photographer, and she also lent a hand to rigging lights, developing film, and preparing other instruments. But it is in the syntax of some moments from *Girl on the Ocean Floor* that my suspicions are most forcefully kindled. Recall that when Lotte was speaking about the shark encounter, she wrote: “I had an underwater camera myself—a *still camera*.” Why clarify, if she only ever used a still camera? Consider, also, the following: Lotte sketches a conversation

⁷⁰⁰ Valerie, rather comically, suggests that “I never ever thought of [diving] as a man’s sport. I was frequently the only female, but I thought that was because most women didn’t like getting around looking like a drowned rat.” Douglas David Seifert, “Ron & Valerie Taylor: A Pair of Aces from Down Under,” *TDISDI*, accessed May 24, 2022, <https://www.tdisdi.com/diving-pioneers-and-innovators/ron-and-valerie-taylor/>. Also see Terry McCarthy, “Underwater Legend: *Playing With Sharks: The Valerie Taylor Story*,” *American Cinematographer*, October 27, 2021, <https://ascmag.com/articles/playing-with-sharks-valerie-taylor>.

between Hans and Leo (another cameraperson), with the two talking about cine-cameras. Hans then says “I’ll take the camera with the telephoto lens, and you can take the wide angle camera. When you get close to the head of a manta and see pilot fish, you can film them too.” The following line of dialogue, by Lotte, reads: “Are they the same ones as those that swim along with the sharks,” *I asked*. Did Lotte mean that she operated the wide-angle camera? Is she using “you” here as a slippage, imagining herself as the other cine-operator? Is she interjecting? Or is it just lost in translation? I like to imagine the first of these options, but tricksters often keep their secrets. Without proof, however, it seems as though Lotte did not wield what the crew termed their cine-cameras.

And yet...

5.0 Experiments in the Cine-Olympic Cycle

Question: Who waits?

Answer: ...

Every term for the past two-and-a-half years, regardless of what course I am teaching, I have found an excuse to screen *Tokyo Olympiad* (1965), Kon Ichikawa's record of the 1964 Olympic Summer Games, which were held in Japan. There are seemingly infinite inroads to a discussion of this mesmerizing and perplexing work of cinema, but I always begin in the same way. My students and I screen the men's 100-meter dash section of the film, which unfolds in a rather interesting temporal fashion. First, we are treated to a deliriously quick panning move to the left that tracks the finalists in motion. As the camera bobs slightly—exacerbated by the extreme telephoto lensing—to capture Bob Hayes as he crosses the finish line, decelerates, and is congratulated on the performance by his peers, it becomes apparent that this must have been the Gold Medal race. Why else would the crowd roar so? Why else would the second and third place finishers embrace Hayes in this way?

Why, furthermore, have we just seen the outcome of the event at breakneck speed (24-fps, rapid telephoto panning) with no “padding” to speak of, no introduction to the race, its participants, and its stakes? *Tokyo Olympiad* then rewinds a bit, granting us access to shots of various sprinters as they hammer their starting blocks down, pace around, and wait for the race to begin. We know, of course, that the race—the event—has already begun, will always have started before the supposed *start* of the sprint. We know this not just because we have some inkling of what it means to prepare for a sporting or athletic display, but also because *Tokyo Olympiad* shows us as much—

visually, temporally, narratively: here is what we call the event; now *here* is the event, if we attend to it. These shots are extreme telephoto images with high-fps rates, dreamlike in their suggestion of an almost suspended sense of time, returning us to the Kierkegaardian meditation on “the moment” from chapter two. They are languorous and oneiric, yet charged with suspense, with anticipation. How is it that they still elicit such sensations, knowing, as we do, the race’s outcome?

Ultimately we return to the starting blocks. In one of the most exquisitely composed shots in all of cinema, we see the eight finalists arrayed in their blocks, stretching all the way across the widescreen (2.39:1) Techniscope frame. Still in slow-motion, and still in extreme telephoto, the athletes are nearly motionless, save for one runner’s dangling necklace and other minute movements expressing last-second nerves. We hear the penultimate message (“ready”), then the sound of the gun, and they’re off. The camera pans right to follow the athletes’ lower bodies, as the sixteen poised arms are replaced by the kinetic engines of quadriceps, hamstrings, calves. The remainder of the sequence is an eighty-second shot of Hayes’ winning run and its aftermath, again with an extremely high fps. In another interesting temporal move, it takes around thirty-three seconds for the (sub-)ten second race to be run, yet the film’s announcers recount the action in breathless fashion *as if it is happening in real time*. This is among the most peculiar and affecting plays with “subjective” temporality in a film that is bristling with such experiments.

Having done all of this, having gotten to know the “event,” I return us to that moment just before the gun sounds and the runners leave their blocks. I pause the film prior to the brief (single frame) flash of light that accompanies the gun’s report. *Who waits?* I ask. The responses follow a now-predictable pattern. “The runners,” a student says, “obviously.” Very true. *Who else waits?* “The crowd, the spectators.” Ah, an interesting link between sport and cinema: do we mean the crowd in the stadium, the event’s spectators? “Yes,” I hear, and then: “Well, we also wait, the

spectators looking at the screen.” Good, good. But others wait, surely? *Who else waits?* I sometimes get a few ancillary answers that surprise me, in a good way. The man with the starting pistol, the judges, the coaches. Likewise well and good, but we are missing something.

I have yet to perform this exercise without one of the most crucial elements of the process being named *last* in this mosaic of waiting. *The camera operator*. This is perhaps not without reason, for the shot is held for seventeen seconds before the gun sounds, and in these seventeen seconds the camera itself is impeccably still, clearly mounted on a tripod (likely on a “baby” leg tripod, or the even lower “high hat,” since the barrel of the lens cannot be more than eight to ten inches above the track’s surface). It is only when the runners exit their blocks and speed past the lens that the camera moves, in a smooth rightward pan made even more fluid by virtue of the slow-motion rendering. But I believe the more general omission follows a standard tendency to forget, bracket, or have no real interest in the body operating the technology. This might be due in part to the historical legacy of either the “disembodied” camera eye or the bracketing of a human operator in an attempt to more fully submit to the illusion of the diegesis, the illusion of narrative immersion. Even in the documentary field this impulse is strong. In short, it is felt that careful attention to the rudiments of the camera’s operation as well as its technical, chemical, and material (both negative and print) elements complicate a proper close-reading disposition. These are thought extraneous vis-à-vis the moving image’s form and language. When they are discussed—and they *are* discussed—it is as if the discussion must be held off-screen, as it were, stuffed into a production studies packaging that can be suggestive about the cinematic object but never *seamlessly* woven into engagement with that object.

Why? Let us return, again (and again), to the pressure of time, to the starting gun. Reviewing and reviewing this sequence with my students has led to an extremely useful exercise

for thinking relationality in cinema. We now begin with the bright red flash that pairs with the starting gun, and which explodes onto the screen for but a single frame. It casts a ghostly, pinkish-red hue over a few of the runners, likely the result of a lens flare. Call this Frame 1, for the sake of ease. Moving forward, frame-by-frame, things get interesting quickly. Frames 2-9 contain slight movement on the part of a few runners, but not all. Furthermore, it isn't until Frame 10 that nearly all of the runners start to inch up and out of their blocks, with heads raising in unison (previously only the runner second from the lens was moving back and upward perceptibly). By Frame 21 all hands have left the deck, and the runners are pushing off from their marks. At Frame 25, although trail feet are still pressing into respective starting blocks, the heads of multiple runners have in effect exited stage right. Everyone is in motion, blurred somewhat, and they're off toward the finish line.

Frame 26. Much rests on this frame, I think. The first suggestion, nearly imperceptible, that the camera moves. That the camera operator's body is moved by the movement of the sprinters, and that this body moves the camera, moves with the camera. At Frame 50, the camera has "caught up" to the kinetic charge, and momentarily all sprinters are in frame again and compressed in the telephoto space as if united in one colossal expression of speed and propulsion. They pass by and once again exit frame right, before the film cuts to the long take of Hayes' sprint (Figs 5.1-3).



Figure 5.1 Lens flare (“Frame 1”) from the race's start in *Tokyo Olympiad*



Figure 5.2 "Frame 26": the camera operator begins to pan with the sprinters



Figure 5.3 "Frame 50": the camera catches up with the sprinters as they pass by

It is impossible to discern the actual length of time between the firing of the gun, the sprinters' initial push, and the onset of the camera move. This is due of course to the use of an unknown fps rate. Nonetheless, it is worth meditating on the twenty-four frames—a happy accident—between the light heralding the race's start and the camera operator panning the tripod-

mounted camera. I believe that these frames tell us much about the complexities of cinematic relationality as well as the difficulty of discussing “waiting” on—and off—screen.

The question of *who waits* has occasioned a few answers in film and media studies. What might spring most readily to mind is the sardonic phrase that signals how most of Hollywood’s productions lurch forward: *hurry up and wait*. For Elena Gorfinkel, waiting and “weariness” are useful heuristics for approaching art cinema, specifically with respect to diffuse figurations of fatigue that pass through and weigh down the woman’s body.⁷⁰¹ While certain types of film and certain “gestures [...] and affects of exhaustion” form the basis of this inquiry, Gorfinkel is right to realize its applicability to cinema more broadly—and to sociopolitical existence under late capitalism:

[T]iredness also presents a set of exegetic problems in terms of its visibility and invisibility, and at the level of an experienced, sensed temporality. That is, fatigue, weariness, tiredness, and exhaustion emerge from a relation to a sense of time that passes, passes on, and passes through the actor’s laboring body, but also never ceases to pass on, to pass through. This is the constancy of an indeterminate state of abeyance, of lassitude, torpor, the intertwining of its metaphysical, aesthetic, and political dimensions.⁷⁰²

Critically, though, these concerns are inseparable from endurance or “endurance,” from a “potentiality never shorn of struggle,” and from a certain charged relationship to what might come and snap us out of weariness and waiting.⁷⁰³ Waiting, in other words, is elastic. It often points toward future action, action which is never given or guaranteed as such but, if realized, is inseparable from its lead-in phase. Whereas Gorfinkel privileges the “tired bodies” of art cinema—both the laboring bodies of its actors and the diegetic figurations of these fatigued bodies—Jordan Schonig turns to Bergson’s discussion of waiting to account for movement in “slow” cinema,

⁷⁰¹ Elena Gorfinkel, “Weariness, Waiting: Endurance and Art Cinema’s Tired Bodies,” *Discourse* 34, no. 2-3 (2012): 311-47.

⁷⁰² Gorfinkel, 311-12.

⁷⁰³ Gorfinkel, 342.

metamorphosis, and duration.⁷⁰⁴ Stillness, which seems an obvious component of slow (and/or art) cinema, avails itself as a counterpoint to movement. But Schonig wisely intimates that this is a “false dichotomy,” since “stillness is not opposed to movement, but rather is a kind of movement.”⁷⁰⁵

Erin Manning would agree: “Standing still is a metastable activity: the stillness demands precise adaptation to the micro-movements of shifting equilibrium. To stand still you have to move.”⁷⁰⁶ In this Simondonian approach, where metastable equilibria replace the dictates of movement and rest, concerns of stillness, waiting, and posture are immanent to what we call dynamic movement; Manning’s phrase for the “incipiency of movement” as it phase-shifts from perceived stillness to motion is “pre-acceleration,” which is always on-the-way.⁷⁰⁷ These terminologies are of course tailor-made for an analysis of sporting bodies and Olympic cinema, and Manning recognizes as much when she pairs a focus on dance and the flux of animation with a treatment of Marey’s chronophotographs and Leni Riefenstahl’s *Olympia* (1936 [1938]). Once again, though, bodies behind the lens are bracketed off in these discussions, leading to another profound yet unidirectional account of sporting experience.

Why might *waiting* help us to generate a more productive sense of the relationality between athlete, technology and operator? Most importantly, perhaps, because it can be a very difficult relation to read for or to sense. The men’s 100-meter sequence from *Tokyo Olympiad* is a case in point. It *seems* a perfect example for us to consider the process of waiting as it encompasses various

⁷⁰⁴ Jordan Schonig, *The Shape of Motion: Cinema and the Aesthetics of Movement* (New York: Oxford University Press, 2022), 81+. The Bergson example in question, from *Creative Evolution*, has to do with “waiting for sugar to dissolve in water.”

⁷⁰⁵ Schonig, 2.

⁷⁰⁶ Manning, 43.

⁷⁰⁷ Manning, 13-15.

elements and experiences. In the idiom of the previous chapters, what is given is that there is *waiting*, there is process; the question of *who waits*, then, even when it leads to various and important (partial) answers, makes of the experience a series of asymmetrical mappings (X waits, Y is waited upon, Z's waiting must be bracketed, &c). Furthermore, how could we ever know how long such waiting extends? Options proliferate: the Olympic cycle spreads its entries over many years; the 100-meter dash is one of the most awaited events; the camera operators have likely been “in place” for hours; each athlete has been waiting for this moment for how long?

Such concerns about how far to “stretch” elements of process, bracketed as they must be by the rudiments of cinematic or televisual arrangement (e.g. editing, framing), point also to renewed interest in the “deep time” of media and an understanding of duration that needn't track with anthropocentrism.⁷⁰⁸ Not unrelated here are the myriad nature documentaries and series that, in the words of Cubitt, use their “amazing, awesome, marvelous, wonderful sights and sounds” to suggest that “techne is the only route through which we can now sense the world.”⁷⁰⁹ If series such as *Blue Planet* and *Planet Earth* are likewise privileged texts for thinking through waiting, this is due to their increasingly public meta- and *para*-textual records of production practice. Although the technologies—and technical mentalities—presented or implied by these paratexts are diversely positioned on what we might call an ethical spectrum, it is clear that what is generally most privileged is a balance of excitement toward technological experimentation and the massive labor of the production teams as they wait...and wait...

To wit: “It took about 300 hours of filming to capture the bird of paradise. Producer Paul Stewart's solitary birdwatching vigil in the remote highlands of New Guinea started at 3:45 a.m.

⁷⁰⁸ See e.g. Siegfried Zielinski, *Deep Time of the Media*, trans. Gloria Custance (Cambridge, MA: MIT Press, 2006); and Parikka, *A Geology of Media*.

⁷⁰⁹ Cubitt, *EcoMedia*, 59.

and lasted eight or nine hours each day. [...] ‘It’s rather like standing on a train station on your own, waiting for a train that may or may not arrive,’ Stewart said.”⁷¹⁰ Or: “According to crew members, any substantial scene where an animal performs a specific behavior probably took between three or four weeks to capture. The *Planet Earth II* episode ‘Mountains’ [...] took much longer than usual. The snow leopard scenes alone required an entire three years to complete.”⁷¹¹ Such reports and featurettes pay heed to labor as well as the inseparability of processes of waiting, fatigue, and weariness from the packaged product. In this they are of great value. Nevertheless, they most often exist as ancillary to the “texts” themselves, a point hammered home by the exclamatory titles from news featurettes (“filming [*Planet Earth/Blue Planet/Our Planet*] Was/Is Even More [Crazy/Mind-Blowing] than the [Documentary/Series] Itself.”)

But the filming *is* the documentary, is the documenting—it need not be discussed as something extraneous or superadded to a “text.”⁷¹² The intersections and overlaps between sporting and animal bodies, and between sports media and the nature documentary, are profound if still overlooked. This dissertation’s bibliography hides numerous observations, some more fleeting than others, on such a link, and we could marshal others.⁷¹³ In either mode of image-

⁷¹⁰ Sara Boboltz, “Filming ‘Planet Earth’ Was Even crazier Than The Documentary Itself,” *HuffPost*, May 18, 2015, https://www.huffpost.com/entry/making-of-planet-earth_n_7287508.

⁷¹¹ Rachel Souerby, “The Making of Planet Earth [I and II] Is Even More Mind-Blowing Than The Series Itself,” *Ranker*, June 8, 2020, <https://www.ranker.com/list/behind-the-scenes-planet-earth/rachel-souerby>. See also Charlie Ebbers, “The Making of the Most Unprecedented ‘Planet Earth II’ Episode,” *Outside Online*, February 17, 2017, <https://www.outsideonline.com/culture/books-media/making-most-unprecedented-planet-earth-ii-episode/>; “500 Hours In A Sub | Blue Planet II Behind The Scenes,” *BBC Earth*, November 7, 2017, https://www.youtube.com/watch?v=4Mfa7sh_QKs; and *Our Planet: Behind the Scenes* (Netflix, 2019).

⁷¹² (I imagine a world in which these various production companies and streaming platforms release the “Behind the Scenes” featurettes first, as *the* text. Bonus features would then include the series, made paratextual [stripped of its reflexivity and device-baring qualities; stripped of its supposed “primacy”]).

⁷¹³ Consider e.g. Valéry’s obsessions with a “sporting” philosophy and one that is fundamentally about the “dressage” of the mind, about “sensibility” as a “creature capable of flying starts” (274); Muybridge and Marey’s twin model paradigms: the animal, the athlete (which interpenetrate); Hans and Lotte Hass’ oft-contradictory but always productive writings about “manfish” and underwater sport; Elie Faure’s celebration (1923) of “cineplastics,” as attuned to the motion of Chaplin and other “cinemimics” as to the “precipitate or retarded movements, such as the slow movements of those galloping horses which seem to be made of living bronze, of those running dogs whose

making, absent a direct, “empirical” reportage on the production parameters, we can still pay heed to such configurations of bodies around and with the technology; it is the aim of this chapter to do so with respect to a particular period of Olympic filmmaking, before returning to the overlaps between these practices to examine contemporary attempts to “capture” contingency and bodies on-the-move. Waiting is the (thickened) experience which, although not as overtly kinesthetic as various Olympic movements, conditions our analysis of these filmmaking processes.

5.1 Sporting Experiments and Authorship in the Olympic Film

We had to wait a long time for the considerably large output of Olympic filmmaking to be restored, packaged, and made deliverable. In 2017, the Criterion Collection released *100 Years of Olympic Films: 1912-2012*, a box set bringing together restored versions of fifty-three entries dedicated to cinematic coverage of the Summer and Winter Olympic Games. The project is notable for the rather “high” art imprimatur bestowed on the films by inclusion to the Criterion canon, as well as the participation of the International Olympic Committee (IOC), an authority that both shapes and sanctions—to an extent—the development of what I refer to as the *cine-Olympic cycle*. But this collection also offers us a rich and varied set of documents calling for studies of specific and idiosyncratic approaches to screening sport, as well as radically diachronic analyses of how

muscular contractions recall the undulations of reptiles” (“the majestic unity of masses in movement”); the proximity of “animals,” “children,” and “sport” in Balázs’ *Visible Man* (linked by the “natural” and “the pleasure of looking”); Marianne Moore’s timeless poetry, driven by a fascination with animals and athletes; and Darwin’s description of nature’s “sports.” Elie Faure, “The Art of Cineplastics,” trans. Walter Pach, in *Film: An Anthology*, ed. Daniel Talbot (Berkeley and Los Angeles: University of California Press, 1966), 7; Béla Balázs, *Visible Man*, trans. Rodney Livingstone, in *Béla Balázs: Early Film Theory*, ed. Erica Carter (New York and Oxford: Berghahn Books, 2010), 60-64. On Balázs and sport see Bird, “Sporting Sensations,” *passim*.

film technology, practice, and style have evolved in parallel to the games' fluctuations. Footage from the first three modern Olympiads may be lost to history—or, perhaps, it was in fact not generated at all, as Luke McKernan reports.⁷¹⁴ Nevertheless, “projected motion picture film and the modern Olympic Games appeared in the same year, 1896.”⁷¹⁵ This rather fortuitous confluence opens up a space to consider how cinema has been mediated by the recurrent events as much as it has played a role in mediating the feats of athleticism and sporting experience.

Thus, the cine-Olympic cycle might best be understood as a wavelike oscillation through the historical field of film, full of repetitions with crucial differences, motion studies to the *n+1*. Marey was certainly on hand for the 1900 games in Paris, performing motion studies of athletes from various nations, and the moving image would soon follow in earnest.⁷¹⁶ Michael R. Real recognized this situation over two decades hence, suggesting that “the now biennial Olympic Games attract the most breathtaking display of our technological capacity to capture, refine, and transmit messages of all types and to all places.”⁷¹⁷ Olympic events bring to the fore tremendous speed, improvisational agility, dramatic shifts in scale, and the importance of microscopic detail in terms both spatial and temporal. That the cycle of the games also passes through nations with distinct cinematic attitudes and different approaches to camera operation further challenges one to

⁷¹⁴ Luke McKernan, “Rituals and Records: The Films of the 1924 and 1928 Olympic Games,” *European Review* 19, no. 4 (2011): 564.

⁷¹⁵ McKernan, “Rituals and Records,” 564. Per McKernan, “there is no record of any film company sending a cameraman to Athens [for the inaugural modern Olympiad] in 1896,” and “the games in Paris in 1900 and St. Louis in 1904 were so chaotically organized that concrete evidence is hard to determine, but it seems that no film was taken of either.”

⁷¹⁶ Braun, *Picturing Time*, 204-06. As Braun points out, this “enormous testing program” included anthropometric measurements, chronophotographs, high-speed films, still photographs, nutrition and lifestyle questionnaires, and other “tests.” As such, Marey and Demeny’s “daunting assignment” was one that paired cinematic measurement and testing with a variety of athletic movements by sporting bodies from competing nations.

⁷¹⁷ Michael R. Real, “MediaSport: Technology and the Commodification of Postmodern Sport,” in *MediaSport*, ed. Lawrence A. Wenner (London: Routledge, 1998), 21.

account for what remains unique in each Olympic film entry and also to isolate overlaps.⁷¹⁸ Again, however, what is generally lost in discussions of Olympic filmmaking is any attention to the bodily experience and craft of the films' production crew and a careful analysis of the technological specificities often placed in an experimental situation vis-à-vis the scope and spectacle of the games' processes. Building on the work done in previous chapters, in what follows I develop a critical approach through which we can hold fast to very precise technical shifts as well as visual markers of the demanding and improvisational work of camera team members and editors without sacrificing the benefits of formal analysis. As such, this chapter turns most pointedly to the films themselves, attenuating somewhat the (film-)philosophical incentives of the previous sections.

The primary films I examine here—*The Grand Olympics* (Romolo Marcellini, 1961), *White Rock* (Tony Maylam, 1977), and *The Olympics in Mexico* (Alberto Isaac, 1969)—are notable for their distinct technological developments, shifts in film speed (in terms of film stock ASA), playfulness with widescreen aspect ratios, and embodied camerawork. I have chosen them for these reasons as well as the link I believe they draw with my discussion of measuring and aspect in Muybridge's sequences. But this selection is also strategic in a more general sense, meriting additional context and a further word about my approach here to production studies. As we have seen, there is something about sports media that often explodes our conceptions of auteurism and authorship. And yet, a majority of the extant studies on Olympic cinema focus on, or pass through, the overwhelming presence of Leni Riefenstahl's *Olympia* (1938). The second

⁷¹⁸ Some of the more obvious lures for this type of study might be, of course, the stylistics of Leni Riefenstahl's *Olympia* hand-in-hand with her *Triumph of the Will*; the widescreen and telephoto work on *Tokyo Olympiad* vis-à-vis the poetics of Ichikawa and Kurosawa (its initial director) and *Sapporo 1972*, directed by Masahiro Shinoda; and accounts which analyze the changes in specific-event coverage across different Olympia and/or different games held at the same location. Furthermore, it would be extremely interesting to compare and contrast how many of these films treat not only the opening ceremonies, but also the veritable alpha of each Olympiad, wherein the flame is lit in Athens and carried to the host nation. This process is visualized in many entries.

most widely treated film of the games is the aforementioned *Tokyo Olympiad*, a visually inventive widescreen project. *Tokyo* is almost always structured around a comparison to Riefenstahl's work, and recently David M. Sutera has extended this sequence to a triad of sorts, reading the oeuvre of Bud Greenspan as a talking-head, feel-good approach married to the Americanization of the international events and what Bill Nichols calls the "expository mode" of the documentary.⁷¹⁹ Greenspan is thus put forth as another branch in an arborescent diagram of Olympic cinema that traces ideology—via style—through benchmark entries that *must* be read in the shadow of *Olympiad* (and now *Tokyo Olympiad*), whether the goal is to emphasize divergences or to subsume such differences under the auspices of propagandistic nationalism.

But the fact that a film like *Tokyo Olympiad* relied on the labor and craft of "164 camera operators [...] and 57 sound people" should give us massive pause.⁷²⁰ It indicates that a retreat to notions of individual authorship completely miss the mark. At the very least, this sort of auteurist reading grants the director a sort of *ex post facto* control in planning that outstrips what could have been possible and emphasizes montage and structural decisions as the primary (sole?) conveyors of meaning. A 2001 roundtable discussion on the work of Kon Ichikawa consistently cycles back to the filmmaker's subjective signature while admitting that the question of the "auteurist model"

⁷¹⁹ David M. Sutera, "Riefenstahl, Ichikawa, and Greenspan: The Ideological Impact of Olympic Documentary Films," in *Identity and Myth in Sports Documentaries: Critical Essays*, eds. Zachary Ingle and David M. Sutera (Plymouth, UK: Scarecrow Press, 2013): 141-67. See 155-56 on Nichols' description of the "poetic" and "expository" modes of documentary as they pertain to *Olympia* and *Tokyo Olympiad* (poetic) and Greenspan's Olympic films (expository). Also see Ian McDonald, "Situating the Sport Documentary," *Journal of Sport and Social Issues* 31, no. 3 (2007): 208-25, and Bill Nichols, *Representing Reality: Issues and Concepts in Documentary* (Bloomington: Indiana University Press, 1991). Greenspan's output consists of films from the following Olympic games, nearly all of which are subtitled "16 Days of Glory" or "Stories of Olympic Glory," save for the first film of the 1984 Los Angeles Olympics, simply titled *16 Days of Glory: Los Angeles 1984*, Calgary and Seoul 1988, Barcelona 1992, Lillehammer 1994, Atlanta 1996, Nagano 1998, Sydney 2000, Salt Lake City 2002, Athens 2004, Torino 2006, and Beijing 2008.

⁷²⁰ Eric Cazdyn, qtd. in "Tokyo Olympiad: A Symposium," in *Kon Ichikawa*, ed. James Quandt (Toronto: Cinematheque Ontario, 2001), 333. The participants of this symposium, which includes sections such as "Ichikawa as Auteur" and "Genre: *Tokyo Olympiad*, Riefenstahl's *Olympia*, and the Sports Documentary," are Cazdyn, Abé Mark Nornes, James Quandt, Catherine Russell, and Mitsuhiro Yoshimoto.

is “vexing.”⁷²¹ Accounts contemporaneous with the release of *Tokyo Olympiad* were more explicit in their reduction of the film to a singular vision: Cid Corman asked, in 1965, how Ichikawa could have possibly “managed such an unwieldy mass of material,” ultimately arguing that “it is precisely as a cutting room labor, as editing, that the film *works*.”⁷²² What type of work *works*, then, and what do we lose when we view the work as uniformly rendered, overlooking the collaborative production process that we know to be the case? Although I do return to *Tokyo Olympiad*—which is *waiting* still, perhaps—in what follows, my decision to focus more specifically on these three films is thus an attempt to resist the impulse to read all Olympic entries against the “benchmark” auteurist films, and to instead concentrate on the multifarious work of camera operators and technicians.⁷²³

These films can also be situated more broadly within a period of great experimentation—both technical and formal—in the world of the sports documentary writ large. Among other cinematic entries, the 1960s and 1970s witnessed Bruce Brown’s seminal surf film, *The Endless Summer* (1964-1966); the rise of the nigh-monolithic NFL Films production company (1962-); and the film that would catapult Arnold Schwarzenegger into the limelight (and Hollywood) while also helping to shed the “sub-“ from the bodybuilding subculture, *Pumping Iron* (George Butler and Robert Fiore, 1977).⁷²⁴ This period also saw some rather curious contributions to the sports

⁷²¹ James Quandt, qtd. in “*Tokyo Olympiad*: A Symposium,” 323.

⁷²² Cid Corman, “Tokyo Olympiad,” *Film Comment* 3, no. 3 (1965): 39, emphasis in the original.

⁷²³ In addition to the aforementioned pieces on *Tokyo Olympiad*, a partial list of publications that lean heavily on an auteurist approach, weigh the film against *Olympia*, or combine the two—and which remain informative and often develop enlightening arguments—would include Dai Vaughan, “Berlin versus Tokyo,” in *For Documentary: Twelve Essays* (Berkeley: University of California Press, 1999), 90-110; Mervyn Hogan, “Sweat, Slow Motion and Solidarity: Ichikawa’s *Tokyo Olympiad* in Ireland,” *Visual Studies* 27, no. 2 (2012): 164-72; D. P. Martinez, “Politics and the Olympic Film Documentary: The Legacies of *Berlin Olympia* and *Tokyo Olympiad*,” *Sport in Society* 12, no. 6 (2009): 811-21; and Ian McDonald, “Critiquing the Olympic Documentary: Kon Ichikawa’s *Tokyo Olympiad*,” *Sport in Society* 11, no. 2-3 (2008): 298-310.

⁷²⁴ Although the coda of this dissertation will touch briefly on surf filmmaking, a full account will have to wait. Nonetheless, for an illuminating look at *The Endless Summer* vis-à-vis contemporary surf media, see Robert E. Rinehart, “Surf Film, Then and Now: *The Endless Summer* meets *Slow Dance*,” *Journal of Sport and Social Issues*

film genre by the likes of Werner Herzog (*The Great Ecstasy of Woodcarver Steiner*, 1974) and George A. Romero (*The Winners* series, 1973-74, and *O.J. Simpson: Juice on the Loose*, 1974), the latter recently garnering renewed attention during Pittsburgh's 2019 "Romero Lives" series.⁷²⁵ There was even an official "omnibus" film produced for the tragic 1972 Summer Games in Munich, *Visions of Eight* (1973), an almost kaleidoscopic treatment of the events including segments helmed by the likes of Miloš Forman, Arthur Penn, Ichikawa, and Mai Zetterling.

Therefore, these years comprise a unique and exciting period of transition for the sports film, wherein new subjects, rapid technological change, and stylistic experimentation combined to reconfigure how sports media could be produced, screened, and felt. Furthermore, although televised sports *were* becoming more prominent, not least with the introduction of ABC's *Wide World of Sports*, it wouldn't be until the mid-1980s that the rise of cable TV and the almost ubiquitous presence of sports media would converge, best reflected in the ascent of ESPN (and then ESPN2, and ESPNNEWS, and ESPN+...in effect becoming ESPN+I).⁷²⁶ In terms of the Olympics specifically, according to Real, "in 1960 television provided only 1 of every 400 US dollars of the cost of hosting the Summer Olympics. In 1972, 1 of every 50 dollars was from television; in 1980, 1 of every 15 dollars; and by 1984, 1 of every 2 dollars of Olympic host costs were paid for from television revenues."⁷²⁷ Of course, the increasingly televised nature of sport in the 1980s did not wholly do away with experimental form and technological "tests" as they pertain

39, no. 6 (2015): 545-61. On NFL Films, the supreme study remains Vogan, *Keepers of the Flame*. Also see Thomas P. Oates and Zack Furness, eds., *The NFL: Critical and Cultural Perspectives* (Philadelphia: Temple University Press, 2014).

⁷²⁵ See "Romero Lives!" *Pittwire*, October 1, 2018, <https://www.pitt.edu/pittwire/features-articles/romero-lives>, and for information on the University of Pittsburgh's George A. Romero Archive see <https://romero.library.pitt.edu/>.

⁷²⁶ See Vogan, *ESPN*, and Vogan, *ABC Sports*.

⁷²⁷ Real, 19.

to sports filmmaking, but this transition between eras does help us to frame a roughly twenty year span that begs for media-archaeological inquiry.

5.2 “A Huge, Muscular Ballet”: *The Grand Olympics*

Having just outlined some reasons for avoiding auteurism and the towering presence of *Olympia* in narratives of sports documentation, I must nonetheless admit that *The Grand Olympics* opens with a flourish that recalls Riefenstahl’s equally outsized—and more infamous—*Triumph of the Will* (1935). A series of helicopter shots, mostly with wide lensing, scans Roman ruins and Italian architecture, bringing the audience closer to—and eventually into and out of—one of the games’ stadiums, before capturing jumbo jets as they arrive for the proceedings accompanied by the symbolic torch. As a record of the 1960 Summer Olympic Games held in Rome, *The Grand Olympics* is often playful and a bit “mischievous” in its rhetoric and reportage, balancing a visual appreciation of the games’ grandeur with narration that suggests a kind of speculative ethnography. The film covers nearly all of the Olympic events, at least in brief, often bouncing from coverage in the vein of “actuality” filmmaking to novel and visually abstract renderings. It thus fits readily within the contradictory spirit that McKernan speaks about with regard to Olympic films of the 1920s and, after a fashion, many subsequent entries: “The Olympic film—by which is meant any documentary film about the Games released after the event—is unsure of the pleasures that it should offer us, but in that uncertainty lies its particular interest.”⁷²⁸ As McKernan himself suggests, a closer look at these films’ production techniques and technological specifics often

⁷²⁸ McKernan, “Rituals and Records,” 574.

makes clear their contradictory nature while challenging us to think critically about the experimental process of screening sport. The three primary elements marking *The Grand Olympics*' unique contributions to sports cinema are its increased frame width, change in film sensitivity (speed), and experiments with telephoto lensing.

The film's introductory sequence goes to great lengths in accentuating frame width as well as the Olympic site's hallowed expanses. Even when the camera ostensibly "tracks" a specific dome or modern stadium, there is a subtle panoramic sway to the images, coaxing the viewer to continuously scan the horizon and surroundings. The main title splash, with text ("LA GRANDE OLIMPIADE") expanding in size, further emphasizes the wide frame, calling attention to a canvas differing from previous entries in the cine-Olympic cycle and the sports film more broadly. Viewers of the film were thus confronted with a strange sort of cinematic doubleness: on one hand, the introductory images would not seem wholly out of place in an era of filmmaking rife with experiments in wider-than-standard aspect ratios; on the other hand, the visual canvas of the sporting world was being expanded, separated from the "normal" screen space of newsreel sport productions and the majority of theatrical renderings.

True, *The Grand Olympics* might not be considered terribly "wide" by our current standards (it looks to be 1.66:1, which would become a popular widescreen aspect ratio in Europe during the 1960s and '70s), but it certainly was for sports cinema in 1960. It appears to be the first of the extant films of any Olympiad to stretch wider than the Academy standard ratio (1.33:1) and here we may highlight the historical paradox in which the film stands as both a decisive step in pushing the boundaries of the sports frame outward and a return to some of the very earliest boxing

films of the Lathams et al, many of which settled somewhere between 1.6:1 and 1.8:1.⁷²⁹ In this chapter I follow Harper Cossar in treating widescreen cinema as any filmic document “at or in excess of 1.66:1,” although studies of what is referred to as widescreen “usually rely heavily on films [...] shot in aspect ratios of 2.35:1 and greater.”⁷³⁰ This allows us to consider distinct widescreen systems, both in their exhibitionary and aesthetic particulars, while at the same time thinking through how the general increase in frame width necessitated shifts in practice across different genres. In this sense it is tempting to lean too heavily on *The Grand Olympics* as a watershed moment—as one could, similarly, with *Tokyo Olympiad*’s use of Techniscope (2.39:1)—which conditions future filmic documents and might be read vis-à-vis contemporary HDTV (16:9) sports coverage.⁷³¹ It is more pressing, however, to consider the film’s production as a specific instance of widescreen experimental practice in a period of great aesthetic change in terms of image width and technological spectacle, and to place the film as a sort of fringe entry next to the larger criticism of widescreen poetics dominated by narrative cinema.

In a pair of essays, Federico Vitella has taken up the question of how much impact Hollywood widescreen technologies had on Italian cinema from 1953 to 1963, paying heed to the “normalization” of widescreen stylization and the diverse experiments from which such a standard

⁷²⁹ Setting aside the slew of widescreen and wide gauge films discussed in chapter two, it is worth mentioning some of the other mid-century sports films that experimented with various aspect ratios. 1958’s *Windjammer* (Bill Colleran), a film about nautical “sail training,” was the *only* film to be released in the “Cinemiracle” format (2.59:1, three-camera system). See Belton, *Widescreen Cinema*, 109. If this is one of the few feature length sports documentaries to use a wide frame after standardization and prior to *The Grand Olympics*, it certainly did not want for spectacle and curved-screen width. Also see Carr and Hayes, 40-45. As they report, “shortly after the first Cinemiracle feature [...] was released, it was relegated by a jealous Cinerama, Inc., to playing only in Cinerama houses. Cinemiracle was dead almost before it began” (43). It appears that Cinemiracle (and thus *Windjammer*) was “impressive enough for Cinerama to want it out of existence” (45), and the former technology was swallowed by Cinerama in a merger. One cannot help but think here about the Veriscope’s only film production (*Corbett-Fitzsimmons*), not least since that technology, while surviving as a projection system, was in effect only put to use once as a majorly idiosyncratic (and bodily integrated) system.

⁷³⁰ Harper Cossar, *Letterboxed: The Evolution of Widescreen Cinema* (Lexington: University Press of Kentucky, 2011), 7.

⁷³¹ See Mark Schubin, “Searching for the Perfect Aspect Ratio,” *SMPTE Journal* (August 1996): 460-78.

style emerged.⁷³² Vitella's "paradigms" split Italy's engagement with widescreen into three sections: 1953-55, 1955-59, and 1959-63.⁷³³ Although he uses the classification "paradigm" in part to emphasize possible overlaps and avoid an overly teleological reading, *The Grand Olympics* was nonetheless produced within the fuzzy zone that Vitella positions as a threshold between "experimentation" and "normalization." In other words, the 1960 Rome Olympics came about when Italian cinema was *narrowing* its sense of which widescreen techniques—whether in 1.66:1 or full "Cinemascope"—would become common. At this point "the Society of Motion Picture and Television Engineers (SMPTE) had [in 1960] accepted a new standard aspect ratio of 1.85:1,"⁷³⁴ and Vitella numbers Antonioni's *L'Avventura* (1960, shot in 1.85:1) among the Italian auteurist films of the period that partially acted as a fulcrum between the paradigms of experimentation and normalization.⁷³⁵ It is hardly surprising that these considerations would pass through such luminaries as Antonioni, Fellini and Visconti, not unlike the general reduction in studies of the Olympic film to the triad of Riefenstahl, Ichikawa and Greenspan. But *The Grand Olympics* is a tremendously interesting film to consider in this threshold moment of widescreen process and practice, especially because of—not despite—its absence of a recognizable authorial signature and the presence of a large group of camera operators.

⁷³² Federico Vitella, "Before Techniscope: The Penetration of Foreign Widescreen Technology in Italy (1953-1959)," in *Widescreen Worldwide*, eds. John Belton, Sheldon Hall and Steve Neale (New Barnet, UK: John Libbey, 2010), 163-73; Federico Vitella, "The Italian Widescreen Era: The Adoption of Widescreen Technology as Periodizing Element in the History of Italian Cinema," *Quarterly Review of Film and Video* 29, no. 1 (2012): 24-33.

⁷³³ Vitella, "The Italian Widescreen Era," 26.

⁷³⁴ Brad Chisholm, "Widescreen Technologies," *The Velvet Light Trap* 21 (1985): 67.

⁷³⁵ Vitella, "Italian Widescreen Era," 29-30. Vitella here emphasizes both openness/playfulness and the novel possibilities for figure-ground relationships in widescreen composition: "Antonioni plays with the openness of widescreen space, scattering the human figures in the landscape [...]. The new relationship between figures and background, typical of widescreen formats, opens up to Antonioni unprecedented possibilities for the representation of reality by giving importance to context over characters. Lastly, in *Il gattopardo* (*The Leopard*, 1963) [Luchino] Visconti takes advantage of the widescreen proportions for displaying his great visual talent without losing the visual 'contact' with the actors" (29-30). It is easy to see how Vitella's treatment of "new" figure-background (or body-milieu?) relations can be applied to the Olympic film—or, perhaps, how the sports documentary is an even more apt site through which to consider these shifts.

Cossar's *Letterboxed* is once again useful here for its call to frame "widescreen's significance in terms of experimental aesthetics that rupture (physically or stylistically) previous filmmaking trends."⁷³⁶ He rightly points out that studies of widescreen cinema often presuppose that certain genres ("Western, musicals, or science fiction") are best suited for an expanded frame, and that modern accounts of widescreen experimentation should expand the range of texts under discussion to emphasize these moments of "rupture."⁷³⁷ It is imperative to think through how *The Grand Olympics* uses its wide frame in ways seemingly borne from the very mise-en-scène of Olympic athletics as well as methods of a more exploratory register. Returning to the film's introduction, it appears that the cinematography features certain hallmarks of Vitella's first two paradigms, such as the dynamic "stylistic figure" of the "subjective travel shot"—a hyperkinetic helicopter shot that swoops into and out of the arena—and a reliance on panoramic work for outdoor shooting and vistas.

Vitella would refer to these "tropes" as affirmations of the periods of both "technological exception" and "experimentation" in Italian widescreen filmmaking, perhaps tethered to both the spectacle of novel technologies as well as the "attractational logic of shooting: moments where the style gets visible, and the cinema-machine displays itself and its own seducing performativity."⁷³⁸ We note in passing that the role of both director and camera operator (and, additionally, the helicopter pilot?) is vacated here. What remains is the cinema-machine as apparatus and its seductive capacities.⁷³⁹ To more firmly reinsert the bodies interacting with such technology we can move to *The Grand Olympics*' response to specific sports. The film plays with the width of

⁷³⁶ Cossar, 15.

⁷³⁷ Cossar, 192; 15.

⁷³⁸ Vitella, "The Italian Widescreen Era," 27.

⁷³⁹ Vitella is of course referring to Gunning's use of the term "attractions" (32 fn. 12). Later on I will return to these questions when discussing various sporting sections from an early Todd-AO promotional film.

the frame in diverse ways, teasing out—sometimes on the fly—how the very organization of the Olympic events may suggest distinct compositional strategies. The sports on display more often than not foreground the rectangle as a spatial principle; even the running and cycling tracks (more oval-like in their geometry) are more suited to the wide frame, especially for shots that aim to “set the stage.” Individual competitions with carefully defined lanes likewise offer ready-made vectors for subdividing the rectangular frame into aesthetically rich (if sometimes abstract) compositions, a sort of geometrical cinematic playground. But in rendering certain of Rome’s events, the camera operators also capitalize on the increased frame width to convey a distance traveled or to prefigure an athlete’s path across the frame—often from a forty-five degree angle, so as to not wholly flatten the movement. If the film’s opening sequence consistently *hints at* the increased possibilities, both stylistic and spectacular, offered by an expanded aspect ratio, the camerawork experiments with how to make use of the screen’s edges to evoke the sporting experience (Figs. 5.4-5).



Figure 5.4 Arrangement across the widened frame through wide lensing in *The Grand Olympics* (1961)



Figure 5.5 Using telephoto lens "compression" to capitalize on the widened frame

There is thus a sort of fusion here of Muybridge and Marey's compositional tactics. We recall the former's balance between perpendicular arrangements and 45° foreshortening, as well as the ways in which individual frame aspect ratio and "total" aspect ratio (of the sequence) both respond to and reshape various athletic movements. Marey and Demeny, for their part, needed to privilege a spatial arrangement that observed the movement to be (chrono-)photographed and then framed it such that bodies and their athletic accoutrements—whether the épée, the pole vault, or the tennis racket—could figure as crucial elements of the body's expressivity while entering into a legible relationship with the image's edges. Turning back to *The Grand Olympics*, we note many instances of the film pairing the wide frame with shorter-than-normal focal length lenses to emphasize diagonal movement through wide lens space, such as in the long jump or pole vault sequences. The pole vault shots (Fig. 5.4) make clear the curious balance struck between formal poetics and decisions based on proximity to the action. The pole's placement in this shot functions as a sort of fulcrum (as it does in the athletic event) for the athlete's motion across the frame's negative space. Note, however, the presence of both Olympic officials and other event photographers at the screen's edges. The lens, if it is to be placed at *this* spot (due to filming

restrictions), effectively has its lens partially selected “for it,” since it would behoove the operator to follow the action up close while allowing for enough lead room at both the top of the frame and its borders. As a pair of spectatorial “bookends,” photographer and official stand as formally rich compositional elements in the *mise-en-scène*, but is this by virtue of a composition decision *based on* the increased frame with, or a necessary visual padding *because of* the leftover space?

One of Marey’s more well-known chronophotographs, “Movements in Pole Vaulting,” exhibits a not dissimilar complexity. During the period in which he and Demeny photographed (and *odographed*, and *dynamographed*) athletes and military recruits at Joinville, improvements made to his hangar included “movable valences to reduce its height to what was strictly necessary for making chronophotographs” as well as the flexibility to photograph at exposure speeds of up to 1/2000 of a second.⁷⁴⁰ What I find most interesting in the resulting set of athletic and militaristic studies is the variety of aspect ratios, as it were. Here, although there is certainly planning of both scientific and aesthetic valences beforehand, the way that the chronophotographs are cropped *as well as the position and lens length struck between camera and moving body* suggest a certain multidirectional measuring at play. It is hard to review sequences such as 1890-91’s “High Jump” and “Pole Vaulting” without seeing in these images a process-based Cinemascope ratio *avant la lettre*. “Repeated Jumps” and “Hopping” are, by my own measurement, slightly greater than 3:1 in terms of aspect ratio, a width to make even Cinerama blush.⁷⁴¹ Abel Gance’s Polyvision format (4:1, three separate 1.33:1 frames aligned), a truly bespoke aspect ratio used only for *Napoleon* (1927), springs to mind. Although Muybridge’s zoopraxographs differ by virtue of their split into sequenced frames, this does not mean that such entanglements between sporting bodies and camera

⁷⁴⁰ Braun, *Picturing Time*, 104.

⁷⁴¹ See Braun, *Picturing Time*, spec. 111-25.

technology are not worthy of our attention. Many of the early animal-focused plates follow a rather squared-off framing, and the “full” sequences themselves, which are often arrayed 4x5 or 4x6, operate on a fractal sort of composition.⁷⁴² Outliers are those images with a man leading a horse, for instance, or the much more rectangular sequence of twin greyhounds sprinting. The manner in which the Penn locomotion studies are framed and/or cropped is more experimental, as we noted in chapter one. Taking an entire sequence in at once, perhaps in a more haptic sense, it is hard to take note of the often subtle shifts in framing and aspect for each individual image. In this viewing disposition, we see the Muybridge sequences as they are Marey-ized, so to speak—widescreen images which, unlike Marey’s, are generated from distinct camera placements. But a close glance at sequences such as Plates 164 and 165 (“Jumping; Pole Vaulting”) clarify not only how much height must be accounted for in certain of these sporting studies—in this case because of the pole vault, especially in down-the-line or 45° sequences—but also how individual frames are often adjusted in lateral sequencing to account for body positioning and shifts in acceleration. Thom Andersen’s film, *Eadward Muybridge, Zoopraxographer* (1975), dramatizes the difference in individual frame width somewhat, when his representations of certain studies result in a horizontal or vertical “blooming” when the ratio is adjusted within the sequence.

How much of this aspect ratio analysis springs solely from renewed attention to nineteenth century motion studies, how much from placing more contemporary media in a dynamic relationship with these antecedent practices? I find that layering such examinations is fruitful not just for historiographical accounts but also for an attempt to hold each period’s sporting motion studies in suspension and observe how they might speak to one another, not necessarily to render

⁷⁴² I.e. the “aspect ratio” of the entire sequence often mimics, in a macro sense, the ratio of the individual element frames.

them ahistorical or transcendent, but rather to consider what may be made “new” in so-called “old” media without forcing too direct a through-line. Whether the pole vault takes place in a Muybridgean or Mareysian milieu or the open air of 1960 Rome, image-making decisions (and their possible effects) are always the result of both the material and motion to be rendered and the bodily/technical response to such movement. Although these cases may differ widely, in each instance it is usually necessary to resist leaning too heavily on either of these explanations, or at least to refuse to lose either the creative-experimental or necessary-restrictive aspects of the mediated sporting experience.

At first glance, *The Grand Olympics*' use of very long telephoto lenses and its sometimes hasty zoom-lens work seems to privilege a reading that would rely on radically formalist and abstract compositions, to which I will return. But even a shot like that from the men's 110-meter hurdles (Fig. 5.5), combining slow-motion aesthetics with a flattened and rigid composition, might be interrogated for how much the event “constructs” a particular camera placement and angle. Once again, the decision to maximize frame width to include all of the finalists across the screen effectively dictates both camera position and lens length. That these are difficult situations to parse out—and that they often complicate our analytical perspectives—points to a need to recalibrate our current strategies for discussing sport media's representational characteristics. An approach that could pair textual analyses of how such films package “meaning” with close attention paid to the complexities and improvisational methods of production better prepare one to think through the often unchallenged meaning of *mediation* in sports media. Again, one of the things that makes Olympic filmmaking—or televisual coverage—so productive a site for this type of research is that its cyclical—and repetitive—nature provides plenty of opportunities to think through shifts in the deployment of technology vis-à-vis athleticism, the rules of the game(s), and proximity to the

action. For instance, the filmed record of the 1956 summer games forgoes the use of “head-on” cinematography in coverage of events that unfold in linear paths, opting rather for a mix of panning shots oriented diagonally to the axis of action. Eight years later, in *Tokyo Olympiad*, the camera crew would occasionally make great use of the technique deployed in Rome, foreshortening athletes’ paths and arraying up to eight participants across the 2.39:1 frame, most notably (once again) during the hurdles sequences.

In a broader sense, whenever critical language stalls, or grasps after the paradoxical, it is a sure sign that there is plenty in the media object worth exploring. A particularly effusive review of *The Grand Olympics* in a 1964 issue of the *New York Times* combines praise for the rhythmic cinematography with some rather unique metaphorical flourishes:

Thirteen Italian photographers, under the direction of Romolo Marcellini, have stalked the proceedings like whippets, moving in for moments of personal anguish, pulling back for color, sweep and spectacle. [...] Furthermore, the events and vignettes are flicked off with such a sure sense of technical style and tempo that the whole thing moves like a huge, muscular ballet.⁷⁴³

Myriad questions arise here. What is the reviewer’s “whole thing” supposed to represent—the whole Olympic games, the production of the film, or a combination thereof? How does this color register in tandem with “sweep,” and what is so remarkable about it? Furthermore, and with deference to ballet of any sort (which requires tremendous muscular and proprioceptive command), what is one to make of this strange phrase, the *muscular ballet*? Part of what this review is circling toward is a recognition different in degree, not kind, from McKernan’s claim about the interesting “uncertainty” of Olympic films; the fact that such documentaries are often composed of a material generated by a range of camera operators—the “whippets,” here, of which there were

⁷⁴³ Howard Thompson, “Screen: Great Athletes; ‘The Grand Olympics’ Recalls ‘60 Games,” *New York Times*, April 22, 1964, 57, ProQuest Historical Newspapers.

actually twenty-three, not thirteen—with their own uniquely embodied camerawork and distinct visual sensibilities, highlights these texts’ multivalence rather than simply their success through montage, or even preproduction planning.⁷⁴⁴ Often such “moving in” or “pulling back,” the motions and compositions that lend *The Grand Olympics* a particular kind of balletic muscularity, are the result of the sporting experience and milieu writ large, the “whole thing” that relies on energy from bodies in front of and behind the camera in process. It remains for us to look a bit more closely at how the film’s operators pushed the limits of telephoto lens work within this experience, but first a crucial word about *The Grand Olympics*’ palette is in order.

5.2.1 A Different Sort of Speed

The development and selection of film stocks as drivers of stylistic shifts are infrequently interrogated aspects of technological change in cinema studies. My aim in this section is to make the case for a reading of *The Grand Olympics*’ particular optical systems which can bridge dense technical specifics and a close-reading benefiting from this increased familiarity with production practice. Per the film’s closing credits (blink and you miss it), the filmmakers utilized Eastman Color Negative film stock, type 5250, released in 1959 just before the games were held. Certainly the film’s color palette is very rich, and the newly released stock lent a crisp warmth to the images, again setting *The Grand Olympics* apart aesthetically from many previous entries of Olympic cinema, whether newsreel or “official.” There had, however, been a shift in the wake of *Olympia* to deploy color cinematography in the games coverage: the official films of both the 1948 summer

⁷⁴⁴ Those credited are Aldo Alessandri, Francesco Attenni, Libio Bartoli, Cesare Colo, Mario Damicelli, Renato del Frate, Vittorio della Valle, Angelo Filippini, Rino Filippini, Mario Fioretti, Angelo Jannarelli, Luigi Kuweiller, Emanuel Lomiry, Angelo Lotti, Masino Manunza, Erico Mnczner, Ugo Nudi, Emanuele Piccirilli, Marco Scarpelli, Antonio Secchi, Renato Sinistri, Carlo Ventimiglia, and Fausto Zuccoli.

and winter Olympics, *XIVth Olympiad: The Glory of Sport* (1948), was photographed with a mixture of Technicolor two- and three-strip color negatives as well as color reversal stock.⁷⁴⁵

But there are certain indicators in the footage from Rome that this material modification led directly to novel technical configurations. In the main, Eastman Color's 5250 stock offered cinematographers and operators twice the film speed of its direct antecedent, type 5248, without sacrificing the grain structure of the latter. Both stocks are tungsten (as opposed to daylight) rated, for the 5250 boasted an ASA (American Standard Association film speed) of 50, compared to the 25 ASA of the 5248.⁷⁴⁶ *American Cinematographer*, in 1959, offered a recap of the benefits of the new stock, including a report of its original test footage which focused on the Ice Follies, an interesting tie-in to indoor Olympic sports.⁷⁴⁷ Given the reduced illumination needed for this stock, the brief article balances the promise of easier and more comfortable studio work with a suggestion about more inventive and experimental shooting, perhaps urging cinematographers to rely on increased image fidelity and new options for lens and depth-of-field length as a functional support that opens up more flexibility in composition and movement: "With greater latitude in depth-of-field and exposure control, cameramen should be better able to focus attention on the more creative aspects of cinematography," and—resonating with *The Grand Olympics*—

[d]ramatic impact of wide-screen spectaculars will be enhanced by the sharper long-shot definition possible with Type 5250. [...] A lone tree on the horizon [*sic*], for example, will present more detail to the wide-screen audience, just as the approaching horse-and-rider will be seen with more clarity sooner. ¶ In addition to more depth of field in difficult lighting situations, the film makes following moving action in close-ups easier. Smaller

⁷⁴⁵ Taylor Downing, "Olympia," in *British Film Institute Film Classics, Vol. 1*, eds. Edward Buscombe and Rob White (London: British Film Institute, 2003), 400. Downing himself has filmed for multiple Olympic games.

⁷⁴⁶ Merle L. Dundon and Daan M. Zwick, "A High-Speed Color Negative Film," *Journal of the SMPTE* 68, no. 11 (1959): 735-38. As an aside, all available evidence suggests that a list of prominent feature films to use 5250 before—or after—its discontinuation and replacement by the 50T 5251 stock in 1962 would include *Lawrence of Arabia*, *Spartacus*, *How the West Was Won*, and *Cleopatra*—differences in color processing and film gauge notwithstanding.

⁷⁴⁷ Frederick Foster, "A Faster Color Negative," *American Cinematographer* 40, no. 6 (1959): 364-69.

lens apertures will give cameramen a larger area of critical focus in which to frame moving subjects.⁷⁴⁸

Or, as Eastman Kodak put it in a 5250 advert, “You never know” whether “time, weather, [or] lighting” will scramble your cinematographic plans unless you use the new stock, because “with 5250 you’re sure!”⁷⁴⁹ In other words, the prime draw of the new 5250 film was that it was twice as sensitive to light as its closest predecessor, necessitating less illumination and providing more flexibility in terms of lens and focus decisions. If we look back at the indoor and evening sequences of the previous summer games film, Peter Whitechurch’s *Olympic Games, 1956* (1956), it is clear that this entry displays rather poor image fidelity even after its recent restoration, a partial consequence of limited options for aperture settings and depth-of-field.⁷⁵⁰

This seemingly minor detail cannot be overlooked: a full stop of light is no small matter, especially given the number of variables at play amid the Olympic events. But the flexibility offered by the faster, more sensitive film stock is hardly restricted to an ability to shoot under dark (or averse) skies, or to achieve more “pop” inside the artificially lit stadia. The full impact can be felt if one considers how the adjustment to exposure index (EI)⁷⁵¹ is inextricably linked to changes—however optional at times—to depth-of-field and the availability of specific telephoto lensing. For instance, even in situations where the extra light may not appear *necessary* in terms of aperture adjustment, it gave the operators much more latitude in terms of their depth-of-field

⁷⁴⁸ Foster, 368. For a similar report, also see *Business Screen* 3, no. 20 (1959): 24, and *Motion Picture Exhibitor* 62, no. 6 (1959): PE-13.

⁷⁴⁹ *Motion Picture Daily* 88, no. 113 (1960): 3.

⁷⁵⁰ For an extremely interesting take on this film, its complex restoration history, the battle over its authority (including the problem of a “Whitechurch original”), and political imbroglios, see John Hughson, “The Friendly Games—The ‘Official’ IOC Film of the 1956 Melbourne Olympics as Historical Record,” *Historical Journal of Film, Radio and Television* 30, no. 4 (2010): 529-42.

⁷⁵¹ Although exposure index and ASA/ISO (International Standards Organization) are not *exactly* the same, I use them here rather interchangeably, as is often the case. In short, although each specific film stock will come with its own given ASA, if exposing the film in certain ways (such as “pushing” or “pulling” the stock) then one is in effect adjusting the EI.

options and ability to select a certain focal rendering relative to the shot scale. Again, these are technological and material shifts addressed most often as “background” drivers of change in narrative cinematic style, if in fact they are addressed at all; but the playing field (or rink, or court), like the studio, is similarly a site for just such testing, experimenting, and the forging of novel configurations—likely more so, given the unpredictable and contingent nature of kinetic sporting events and the all-too-obvious impossibility of repeating the singular.

We might extend this notion of the “test” or experiment to consider how the doubled film speed of the 5250 stock might have opened up new possibilities for the camera crew in terms of feasible lens lengths. While *Tokyo Olympiad* would greatly extend the length of lenses in the 1964 games, *The Grand Olympics* was already moving toward an exploration of extreme-long lens cinematography in 1960. Even if the latter production relied on lenses somewhere in the vicinity of 800mm to 1000mm at maximum, the result would have been a significant limitation in terms of aperture settings; in other words, these longer lenses in general are not able to open to a very wide aperture (measured in f-stops), causing issues in low-light settings and restricting depth-of-field flexibility. Because the gap in widest available f-stops between, say, a 100mm telephoto lens and a 1000mm version might be *four full f-stops (sixteen times less light)*, one would be approaching a gap so wide that certain lenses would be at best usable under only the most restricted specifications—and, at worst, not functional at all. Absent a record of the specific devices used in *The Grand Olympics’* various locations, it is nonetheless clear that the introduction of type 5250 dramatically expanded where and when each piece of this technology could be operated, and with what creative leeway.

This is certainly recognizable in the film’s sequences that appear to “beat the clock” of nightfall, such as the high jump, the javelin, and the pole vault finals. It is a commonplace in many

contemporary sports broadcasts which take place outdoors over a long period of time—for example, golf tournaments or tennis matches—for the broadcast team to highlight a shot as day turns to dusk with an aperture that reveals how dark it “actually” is, drawing attention to their technical advances (modern lenses and light sensors can in some way “improve” image fidelity, or outstrip the human eye under limited illumination) and once again raising interesting questions about a supposedly normal or “natural” vision, which we know to be a lie agreed upon. Perhaps most striking in Rome’s low-light cinematography, however, are the images from a brief rundown of the games’ basketball tournament. Through an almost polar aesthetic coverage, the film volleys from a wide-angle bird’s-eye view of the court and its surroundings to telephoto shots that dramatically flatten and abstract the action (Figs. 5.6-7) The film breaks up these highly abstract framing images with “normal” lens and long lens camerawork isolating players and ball movement, making concrete the 5250’s advertised bona fides as it pertains to both interior focus options and the “ease” of following kinetic motion. But a not unrelated takeaway from this basketball sequence is that we are witnessing a radical defamiliarization of the sport, one that again relies on the wide frame and developments in color negative film stock for effect but pushes the experimental envelope. Whether the court appears as a “warped” space on which the miniscule players arc in motions that hardly resemble standard apperceptions of basketball, or their movement is foreshortened and geometrically framed by a blending of telephoto optics and a high camera angle, the “muscular ballet” is at once disorienting and, somehow, highly informative in terms of the sport’s processual development in space.



Figure 5.6 Wide lens abstraction in *The Grand Olympics'* basketball sequence, buttressed by increased film sensitivity



Figure 5.7 Low-light telephoto lens work while maintaining a large depth-of-field

The latter image (Fig. 5.7) utilizing a telephoto lens but *maintaining* a large depth-of-field across nearly half of the court so as not to allow the players at the frame's top and bottom to fall out of critical focus, is likewise a direct example of the aesthetic affordances arising from the newly minted film stock. One thinks here about certain tactics that NFL Films would rely on in the coming decades, specifically the tendency throughout a particular period of pro football filmmaking to emphasize wide-angle, often fisheye lens shots from the top of the bleachers (or from just next to the players while they warm up), these juxtaposed with exquisite extreme

telephoto camerawork, often from behind one or another end zone with a narrow—and fickle—depth-of-field under the very best of circumstances.⁷⁵² Above all, though, there is a palpable playfulness to these images from *The Grand Olympics*' basketball coverage, a willingness to see and feel differently, to be moved by the different sporting movements. It is perhaps fitting that the radically distinct optics of some of these shots seem composed by camerapersons whose perspectives *on* the event's process are as different as their (cameras') perceptions *of* it. In other words, the range of experimental optics and framing provides an almost kaleidoscopic sense of the sport, where technical decisions from a range of camera operators mark their unique assessments of and responses to the athletic—and aesthetic—experience.

In terms of dynamic movement, the film's cycling coverage offers some of its most arresting shots, once again achieved via very long lenses that isolate a team of riders, often stretched to the wide frame's edge with very little lead or follow room. There is a complex dance here between getting “close” to the action—in terms of lens length—and allowing for a stable enough frame within which to situate such movement. Although advances in film speed make possible a certain image fidelity in a darkened stadium, the space of critical focus remains extremely slim, and the riders are thus isolated against a track (and lawn) that blurs past them, a tactic made possible—or necessitated—by a camera position inside the track that functions

⁷⁵² NFL Films' early and formative decades are also inseparable from a palette that resulted, at times, from the distinct color and contrast rendering of 16mm reversal as well as negative film stock. See Vogan, *Keepers of the Flame*, 18-28. In this vein, it is also worth mentioning a “strange” cinematographic connection between NFL Films and American independent cinema. As Lance Acord, ASC, reports, Vincent Gallo's *Buffalo '66* (1998) not only blends professional football into its narrative, it also embeds the sport's cinematic materiality into its film stock: “There were two references that Vincent gave me for the look of the film. Elmer Batters' foot fetish book and *late sixties and early seventies NFL Films shot on high speed reversal stock in outdoor stadiums in wintry light*. [...] [This] was a way that he felt he could be directly involved, not just with the framing, but also in choice of the film's texture. The Kodak 160T 5239 used on *Buffalo '66* was the same stock used on [early] NFL films, the only difference being that it was perfed and cut for 35 mm.” Qtd. in Alexander Ballinger, *New Cinematographers* (New York: Collins Design, 2004), 10-11.

centripetally, with the operator rotating panoramically from a fixed position and maintaining a more stable, if still touch-and-go, point of focus (Fig. 5.8). Here, both rider and operator are “locked in” to their performance, fully in flow. The cycle(s) of the bike and camera reel both spin, but it is everything *around* this relationship that signifies the kinetic linkage: motion and precision irreducible to their constituent parts—a muscular ballet, perhaps.



Figure 5.8 Telephoto panning to track the Italian cyclists in *The Grand Olympics*

5.3 *White Rock* and the Minor

The official film of the 1976 Winter Olympics in Innsbruck, Austria, *White Rock* (Tony Maylam, 1977), is about as loud—visually as well as sonically—as it gets. In a move at once peculiar and very much of its era, the production staff effectively turned a select few events into occasions for constructing a veritable concert film,⁷⁵³ replete with an original score by the prog-

⁷⁵³ Almost exclusively the men’s downhill, 90-meter ski jump, biathlon, ice hockey, figure skating, and the bobsled/luge.

rock band Yes. The actor James Coburn stands in as a sort of viewer's-surrogate everyman, musing on the particulars of Olympic-level competition, experiencing the rudiments of sports such as the luge and biathlon, and framing the process of events. Paired with the sounds of Yes's musicians, as well as a combination of hyper-kinetic, wide lens POV shots and languid, dreamlike telephoto work, Coburn in point of fact becomes more of a surrogate in the face of the (widescreen) sublime. Often he pauses or hesitates, grasping for the right words to express what is suggested to be at the threshold of the inexpressible. In the most direct example of this linguistic breakdown, Coburn—photographed in a wide lens close-up by a camera attached to his own rapidly hurtling sled—shakes violently and gasps for want of speech, no longer able to maintain his role as guide.

White Rock is thus very much invested in conveying a sense of the overwhelming and sensorium-shaking experience of Olympic sport. More explicitly than *The Grand Olympics*, it takes the very motto of the games—*Citius, Altius, Fortius*: “Faster, Higher, Stronger”—and applies this spirit to its aesthetic disposition. The film is also interested, though, in questions of guidance and translation, and of what techniques, both bombastic and experimental, might evoke the range in Olympic scale. Minute detail and grand expanses are *White Rock*'s major notes, with little room for anything in between. But this sort of surface-level framing may also invite an examination of the film's rhetoric surrounding cinematic technology and the labor and craft of its production teams.⁷⁵⁴ Both the explicit rhetoric by the film's director (Tony Maylam) in interviews and some of the film's visual techniques raise important questions about how we might once again

⁷⁵⁴ The fifteen credited camera operators on the film are Christopher Challis, BSC, Tony Coggans, Ron Collins, Atze Glanert, Peter James, ASC, Herb Lightman, John Palmer, Herbert Raditschnig, David Samuelson, BSC, Michael Samuelson, BSC, Arthur Wooster, BSC, Mike Davis, Mike Delaney, Harvey Harrison, and Eric van Haren Noman. Wooster acted as the Director of Photography. The film was photographed using FujiColor negatives, perhaps type 8517, which was rated 100T (64D [daylight]) and released publicly outside of Japan in 1977, a year after the games were filmed. Other records suggest the public release was much later.

hold fast to the aesthetic and sporting markers of *White Rock*'s camera operators in action as they are moved by the motion they seek to capture. In parsing how the film makes these markers felt, I will restrict my attention to three interrelated factors: Maylam's discussion of the film's production and technics; the recurrence of nearly identical actions, both by the games' athletes and the production crew; and *White Rock*'s experimentation with a range of mounted camera rigs.

In an *American Cinematographer* article published just before the film's release, Maylam refers to his camera team on *White Rock* as though they were participants in an Olympic event:

It's very hard to find a cameraman who can stay with the action on the Downhill or the Slalom where you don't know precisely where an athlete is going to go. The first 15 guys coming down the Downhill will all take totally different lines of action. If you're shooting them with a 1000m or 2000m lens and the depth of field changes from head to chest and you don't know where he's going—well, that requires one hell of an operator. That's the kind of guys we've got on this film.⁷⁵⁵

There is plenty to unpack in this passage, not least Maylam's machismo and a hint of professional competitiveness that risks casting those not tapped for *White Rock* as unqualified. Nevertheless, there *is* a certain specialty cinematography at play, and the director's rhetoric about the *tests* of filming and performing sport make clear how the two pursuits may overlap. In other words, we see a profound collision (or overlap?) between the tasks of rider and filmer, seemingly worlds apart physically but paired via a common pursuit: the execution of a carefully planned act with the ability to adjust on the fly.

Both are thus striving to adhere to a physical—and conceptual—"mapping" while remaining available to the event as it unfolds; and both are (re)acting, often before thought can

⁷⁵⁵ Tony Maylam, "'White Rock'—A Different Kind of Olympic Games Film," *American Cinematographer* 57, no. 4 (1976): 403. Note Maylam's use of "guys" to refer to both the Olympic athletes and his camera team. On this long-standing problem in film production, see Bird, "Dancing, Flying Camera Jockeys," specifically the discussion of "macho athleticism" and the Steadicam (57); also see Miranda J. Banks, "Gender Below-the-Line: Defining Feminist Production Studies," in *Production Studies: Cultural Studies of Media Industries*, eds. Vicki Mayer, Miranda J. Banks and John T. Caldwell, 87-98 (New York: Routledge, 2009).

take shape, and not always to perfection. This is perhaps different only in degree, not kind, from how Katie Bird describes Béla Balázs' take on sport filmmaking, as well as her own analysis of the ski films of Arnold Fanck. Whether focusing on Fanck's Olympic film, *Das weiße Stadion* [*The White Stadium*] (1928) or the *Bergfilm* from 1931, *Der weiße Rausch* [*The White Ecstasy*], Bird suggests, in dialogue with Balázs, that "camera operators must think and move with their bodies to enhance an athlete's muscles, joints, fluctuations of skin, intensities of sweat, and the opening and closing of the face during the sporting activity."⁷⁵⁶ Even if the camera is not mounted on a skiing operators body in such cases, since for Bird the operator must both body and mind to compose and react, the "yearning of the dance or the striving of the sport" is effectively rendered.⁷⁵⁷

How might this track with the aforementioned discussion of telephoto camerawork in *White Rock*, when we find a "stationary" camera operator some hundreds of yards away from a careening athlete? Consider Maylam's treatment of the 1000mm to 2000mm lens work and resultant depth-of-field: to follow action with a lens of anything within this focal length, one would need to be positioned a vast distance away from the target. While setting the focal distance far from the lens *does* often allow for a largely increased depth-of-field, in this case the extreme telephoto nature of the lens (2000mm) combined with the camera's Panavision anamorphic qualities may still result in an area of sharp focus comprised of mere feet or inches ("the depth-of-field changes from head to chest") as the rider slaloms down an unpredictable track.⁷⁵⁸ Anamorphic lenses, because of their image "squeeze," tend to have half of the depth-of-field of "standard" 35 mm spherical lenses if achieving a similar shot scale and field-of-view. It is up to the operator—

⁷⁵⁶ Bird, "Sporting Sensations," 20.

⁷⁵⁷ Bird, "Sporting Sensations," 20.

⁷⁵⁸ Maylam, 403.

or, as is often the case, an operator and focus-puller responding in tandem—to adjust the point of focus on the fly. It is telling, then, that two of the film’s major downhill crashes correspond to drifts and lag in focus—perhaps the felt sense of where an athlete might be at a given point, based on previous experiments and trials, carried itself past the expected outcome, or the tactile handling of the camera didn’t exactly pair with operator intent (Figs. 5.9-10).



Figure 5.9 Super-telephoto lens work in *White Rock* (1977) with razor-thin depth-of-field



Figure 5.10 Focus goes awry, as does the run

Maylam calls one such moment “one of the most incredible shots I’ve ever seen,” citing cinematographer Arthur Wooster, BSC (British Society of Cinematographers) as the operator who tracked a Canadian skier in extreme long lens for the entirety of a fall that sent him into the slope’s protective hay bales, back out onto the course, and slowly rolling head first across the ground as

his skis and goggles bump gently down the snow untethered to their former user.⁷⁵⁹ Buttressed by the high-fps aesthetics of the shot, the oscillating shifts in focus—here, too near; there, too far; and back again—read as wonderfully poetic, yet they also register the improvisational recalibrations attempted by Wooster, the periodic disconnect between filmer and rider that may nonetheless be read as supremely *connective*. It would be unwise to categorize these lapses in focus as “mistakes” or to highlight them as instances of form following content. Rather, they are noteworthy because they add an interesting valence to one’s mediated experience of these events, a sort of twin engagement with athlete and cameraperson, more resonant if the minutiae of technological decisions are kept in mind.

This notion of athletic resonance between sporting bodies on both sides of the lens Bird reads according to Balázs and Siegfried Kracauer’s writings on camera setup, or *Einstellung*. According to Bird, this complex German concept, meaning both *attitude* and *approach*, further implies “a cinematography that is created by production, sutured within the film object, and experienced by the spectator.”⁷⁶⁰ Such “transmission” between the bodily efforts of the operator, their “consciousness,” and the spectator are perhaps heightened in the sports film, where “spectators’ viewing sensations [are] being *pulled between the bodies on screen and the bodies behind the scenes*,” especially for the often physically taxing modes of production and experimentation with radically mobile camerawork.⁷⁶¹ And yet, the extreme telephoto tracking sequences of *White Rock* (and like winter sports entries) add a wonderfully interesting valence to such readings. Because of the tremendous optical distortion/compression of Panavision anamorphic telephoto lenses, minute and often instinctual tactile shifts can have outsized visual

⁷⁵⁹ Maylam, 417. Maylam incorrectly identifies the skier in question as Canadian, when in fact it is an Austrian athlete.

⁷⁶⁰ Bird, “Sporting Sensations,” 28.

⁷⁶¹ Bird, “Sporting Sensations,” 12, emphasis mine.

effects. Glossing over these less “dynamic” movements of operation risks losing sight of the film’s grace notes, as it were. Returning to questions of *tracking* and *measuring* from chapter one, we might highlight the extreme long lens operation of *White Rock*’s downhill sequences as an almost hyperbolic rendering of the asymmetrical but not unidirectional relation between bodies. The speed with which these skiers careen down the mountain (70-90mph) approaches a limit of human velocity absent machine propulsion. And because of the extremes of lensing and distance-to-target, the most minute movements and gestures of the operator are required to follow the action. Although I will move shortly to consider modes of cinematography where the physical movement of production members through space more accurately mimics that of the athletes, it is worth meditating on these sequences that might initially be sketched as a relation between hyperkinetic sporting body and static, *immobile* operator. What we see here is a situation wherein the operator’s body, in tracking the skier, is at the same time tracked by the latter’s dynamic motion as it unfolds. That the results of this tracking are minute, precise, and nigh-imperceptible gestures (of the hands on the lens and focus wheel; of subtle shifts to the metastable equilibrium of a body’s posture) does not make them less worthy of discussion in terms of embodied camerawork.

There is always the danger of reducing these considerations to a sort of technological fetishization, or refusing to let them take on meaning outside the discourse of trade journals. After all, detailed descriptions of exact lens length, precise depth-of-field figures, and the specifications of film sensitivity are not exactly the bread and butter of film analysis. But attention to such matters, even if reports of technical specifications are not wholly accurate, can serve a two-fold purpose: it offers a richer understanding of the intricate process of mediation between bodies on both sides of the lens, and it urges a recalibration of our own lexical choices as viewers and scholars of visual media, as we are affected by the often surprising movements of both film and sport. It

does not necessarily *prescribe* a reading of certain filmic effects that follow from technical decisions and the often improvisational mediation of such technology by camerapersons—in other words, it would be a mistake to isolate such particulars and tether them absolutely to a “meaning” or a specific formal signification—but it begs us reconsider how factors such as depth-of-field, camera handling, and (of course) visual “imperfections” might be read for, and how such factors were generated and tweaked through the operator’s bodily situatedness within the sporting experience. One needn’t only ask what Maylam meant by “one hell of an operator” to signal awareness of which shots *work* perfectly well, or to champion cinematographic perfection; it is equally useful to keep such claims about craft expertise in mind when interpreting what filmic markers might say simultaneously about the processes of filmmaking and sport.

White Rock also offers an interesting editing tactic which appears to play up the importance of repetition amid such processes, giving the viewer a chance to examine the visual “tests” of the filmed events. To this end, two principal scenes appear to separate from the film’s narrative flow and to privilege repetitive images. The first is *White Rock*’s ski-jumping coverage, which forgoes any real description of which athletes the audience is watching and does not shy away from presenting fragments of each skier’s jump from the same camera angle, movement, and lens length. Maylam and editor Gordon Swire seem to craft these sequences in a way that builds upon and augments the cinematographic experimentation, and focusing on the cutting strategies at play affords us the opportunity to consider the contributions of other production personnel. Although Swire’s voice is absent from the *American Cinematographer* article, nor are there any other interviews with him readily available, his production credits pique interest: despite only working on eight major films, Swire edited Agnès Varda’s *Daguerréotypes* (1975) and collaborated with Maylam on *Genesis: In Concert*, released the same year as *White Rock*. Since both of these

Maylam-led films are, in a sense, “music videos,” it makes sense that the Olympic footage would be put to experimental use here, and the ski-jump sections seems to forego linearity while relying on a rhythmic and cyclical editing structure.

For example, rather than stitch the material together in an A, B, C fashion, with each rider’s attempt conveyed to the viewer in full, the scene volleys between successive long lens shots of different riders taking off; a cyclical triad of static shots; repetitive takes of the landings, shot from a tremendous distance away (overhead); and grouped, rapidly cut, high-fps shots of the skiers cresting the jump’s ridge and hovering just prior to impact. A peculiar effect of such emphatic repetition is that the spectator may linger on the indexed handling of the camera as the operators track each jump, as well as the seeming newness of every iteration. The minuteness of certain operator actions—whether “successful” or, after a fashion, *failed*—are thus made more legible by virtue of a difference-and-repetition portrayal, in which proximity encourages a more readily felt sense of bodily engagement. Fascination with the riders’ mixture of speed and grace is not blunted by these repeated images, but neither is the allure of the camerawork, for in many cases there is once again a palpable *straining* to flow with the movement, to follow its path. Bird argues that the sports film often mediates “the act of *attempted* expression by both the athletes’ and cinematographers’ bodies,” combining this striving with a spectator’s own bodily sensation while watching.⁷⁶² We might rather easily shift this concern with *attempts* and *striving* to the notion of the *test*. In the case of *White Rock*, the widescreen frame and super-telephoto lenses, if anything, further stress the quasi “test” nature of the relation between sporting bodies, and the history of Olympic visual media is of course peppered with the cyclical testing of novel technologies. In the ski-jumping sequences, *testing* here may be read in a twin sense: sweeping and tracking (while

⁷⁶² Bird, “Sporting Sensations,” 19, emphasis in the original.

holding focus) across a potentially accurate path in the hopes of capturing motion; and performing the move under incredibly difficult cinematographic circumstances, however self-imposed.

Benjamin had a very interesting take on the “test performance,” one that he linked in terms of filmmaking to sport itself. For Benjamin, one of the fundamental differences between acting (performing) on the stage versus for the screen had to do with the possible intervention of “specialists” in charge of managing and extracting from such tests the material which would become the filmic “record.” He writes:

This aspect of filmmaking is highly significant in social terms. For the intervention in a performance by a body of experts is also characteristic of sporting performances and, in a wider sense, of all test performances. [...] An action performed in the film studio therefore differs from the corresponding real action the way the competitive throwing of a discus in a sports arena would differ from the throwing of the same discus from the same spot in the same direction in order to kill someone. The first is a test performance, while the second is not.⁷⁶³

It is perhaps unsurprising that Benjamin would focus on the actor (or athlete) as the “tested” subject or body, given his claim that cinema becomes art “only by means of montage,” which necessarily selects the best available tests from the process.⁷⁶⁴ But this approach effaces any real “testing” elements involved in the production, despite Benjamin’s insistence on intervention—why, if such members (=experts) intervene, are *they* free from concerns of testing and experimentation? Very likely the answer lies in Benjamin’s focus on studio filmmaking, which is easier to consider thusly than documentary work. Furthermore, he uses this leveled discussion of the test to point out its widespread if diverse effects, which cinema heightens by aestheticizing them and exhibiting them publicly “to the degree one would desire”: athletes are tested by “nature,” workers are tested mechanically, the film actor is tested “in front of the apparatus,” and then the “masses fill the

⁷⁶³ Benjamin, 111.

⁷⁶⁴ Benjamin, 110.

cinemas, to witness the film actor take revenge on their behalf,” at once *against* apparatus and *through* it.⁷⁶⁵

Turning back to montage, then, we might consider this layered rendering of tests as it is channeled throughout *White Rock*. Doing so adds an additional valence to the cinematic process of testing and balances a strict attention to the bodily operation of camera personnel with the “interventions” of so-called “experts” in charge of image arrangement. Not unlike the ski-jumping sequences, Maylam and Swire also use the film’s luge and bobsled coverage to foreground a sort of rhythmic, conflictual editing pattern, repeating shots that feature rapid kinetic movement across the wide frame. In these scenes, repetition remains very much in the ascent, but Swire introduces a more dynamic use of back-and-forth movement between the frame’s edges and cutting patterns that destabilize one’s perspective and sense of groundedness. After easing the viewer into the scene with hypnotic, high-fps telephoto shots tracking bobsledders, twin long takes utilizing sled-mounted, wide lens rigs present a distorted alpine version of cinema’s time-honored “phantom rides.” In wrapping up this sequence, however, the film vacillates between a repetitive series of pseudo shot-reverse shots of both the luge and bobsled, typically (but not exclusively) framing or tracking the bullet-fast movement back and forth. Numerous shots of both spectators and various camera operators—professional and amateur—hold the scene together without quite suturing the material. Crowd reaction shots are of course part of the fabric of sports media, but the images selected in *White Rock*’s sledding section are as likely to guide or mimic the viewer’s suggested eyeline as they are to frustrate a clear spatial orientation, a frustration already complicated by shots that require quick tracking of sight to the screen’s wide edge.

⁷⁶⁵ Benjamin, 111.

Furthermore, in addition to takes that isolate individuals as they attempt to capture the event via their own camera (a 35 mm still camera and a Super-8 mm film camera), the action is punctuated by a hasty zoom out from a speeding sled to include one of the film's camera operators stationed on top of a truck, likewise trailing the riders (Fig. 5.11)



Figure 5.11 Panning and zooming out from the action to focus on the role of the camera operator in *White Rock*

Here the film reflexively acknowledges that although its operators' labor and expertise are to be highlighted, the operators also share with the gallery members a fascination with the contingencies of kinetic spectacle. Maylam, for his part, does describe *White Rock*'s filming approach as "experimental," bemoaning the lack of "control" that he has over a team he nonetheless praises, admitting that the events will have to take their course.⁷⁶⁶ Yet he also expresses tremendous excitement in anticipation of such unforeseen (and improvised) athletic and cinematographic tests, and it is not hard to imagine Swire and the director exploring how best to let the experimental camerawork inform their cutting strategies, which combine a meditative study

⁷⁶⁶ Maylam, 403.

of repeated motion with fragmented and destabilizing edits. Such a practice at times offers a wholly novel view of the games' power and grace, while at other it mimics the familiar experience of bewildered, enraptured Olympic spectators.

5.3.1 Side to Side; Fore and Aft

I have been describing the deployment of the CinemaScope aspect ratio in *White Rock* primarily for its usefulness in allowing objects to pass rapidly from side to side (to convey speed and dynamism) or to introduce specific montage effects (conflictual or repetitive motion). My analysis of the 1.66:1 frame from *The Grand Olympics* focused on its ability to open up novel compositional tactics that stretched across the screen, and there had of course been full-Scope-ratio documents of the Olympics prior to the experiments in Innsbruck, 1976, that likewise toyed with the aesthetic affordances offered by 2.39:1 frames. After *Tokyo Olympiad* broke ground with its formally exquisite use of Techniscope (2.39:1, spherical lensing rather than anamorphic), both *The Olympics in Mexico* (Alberto Isaac, 1969) and *Sapporo Winter Olympics* (Masahiro Shinoda, 1972) followed suit in terms of screen width. The subsequent section will examine Isaac's film of the 1968 Mexico City games in terms of its widescreen composition and experimentation with camera-stabilization systems. But since the 2.39:1 aspect ratio has not been used in any Olympic filmmaking post-*White Rock*, this "bygone" sports aspect ratio and the irregular techniques it may suggest or call for take on even more significance. In this vein, Tony Maylam, *White Rock*'s primary cinematographer, Arthur Wooster, and their camera team developed an interesting approach to capturing shots that isolate an athlete within the full space of the frame and allow the blurred background to which past.

In Godard's *Le mépris* [*Contempt*] (1963), a 2.39:1 Franscope anamorphic film, Fritz Lang claims wryly that "CinemaScope is fine for snakes and coffins, but not for people." What about Olympic athletes, not least those trapped in a coffin-like enclosure as it speeds down any icy track? One of *White Rock*'s most idiosyncratic 'Scope methods involves the use of the widescreen frame to register—however momentarily—instances of athletes' peculiar and hyperdynamic orientation parallel to the ground over which they fly or glide. Part of what makes these shots so striking is that there seems to be very little precedent for their construction, especially the takes from ski-jumping (see Figs. 5.12-13) For all of the dynamic movement and physical contortions found in summer Olympic events, it is hard to deny that the winter games often feature alignments and actions of bodies that transcend one's normal relation to, and perception of, space. Competitions such as the ninety-meter ski jump and the luge entail, respectively, an athlete rapidly traversing space head- or feet-first, nearly parallel to the earth's surface. The bobsled and luge, to which can now be added certain snowboarding events, entail riders and their various apparatuses banking and speeding around slopes that generate movement through a bodily bearing which, although still "parallel" to the ground, alters the athletes' vertical course.



Figure 5.12 Disorienting and hyper-kinetic action spread across the 2.39:1 frame in *White Rock* (ski-jumping)



Figure 5.13 Disorienting and hyper-kinetic action spread across the 2.39:1 frame in *White Rock* (bobsled)

Pushing a technology to its limits, *testing* it, however experimentally, may result in a two-fold disorientation. It can introduce novel and often perplexing experiential situations. Additionally, it can potentially shake up one's sense of descriptive certitude in terms of theoretical explanation. Watching the repetitive shots of skiers and bobsledders traversing space, flattened against a background that rushes past them—or, in the case of an icy wall, glistens in a blur—I once again feel the presence of a camera operator simultaneously “locked in” to his or her tracking and momentarily recalibrating perspective in the light of the difficulties of just such a “tracing.” But this extreme-long lens work, whether or not it is presented in slow-motion, results in a curious phenomenon: it is sometimes difficult to be sure, *although we know it to be the case*, whether these shots are in fact the result of panning and not of horizontal tracking or dollying. Put differently, the distinction between a dolly shot and a pan is likely easier to isolate when a wide lens is employed; because of the way the environment appears to “warp” around a lens with a very short focal length, camera movement is often simpler to make sense of and describe faithfully. It would therefore follow, but still needs to be proven, that the longer a lens is, the harder it is to discern whether the camera is moving across an axis or panning along one. At the hypothetical limit of telephoto optics it would be no longer possible, perhaps, to differentiate between these two cinematic techniques. While a 2000mm lens, for example, is far from this limit, it is nonetheless

an extreme outlier in terms of standard telephoto work in filmmaking. For example, the *American Cinematographer Manual* rarely lists depth-of-field tables for lenses longer than 400mm, although specialty lenses of between 800-2000mm (which have dramatic shortcomings in terms of widest available aperture) are referenced. Plenty of questions remain if one wishes to fully parse out how much this thought experiment accomplishes with respect to the theoretical concerns about film optics. But what the aforementioned shots gesture toward is a strange spectatorial experience wherein one's own kinesthetic and proprioceptive awareness of camera movement particulars is destabilized. That these moments were generated through an experimental relation between ballistic athleticism, cinematic technology, and "sporting" operation is hardly surprising.⁷⁶⁷ It merits mention that Wooster, who is credited as the film's Director of Photography and operated one of its cameras, would go on to become well-known for his work as a second-unit participant on the *James Bond* series. Four years after *White Rock*, Wooster was tapped to act as second-unit director and cameraman on *For Your Eyes Only*, not coincidentally packed with hyper-kinetic action sequences, ski-chases, climbing sequences and underwater footage, all of which fell under Wooster's purview. He would lend his services to eight entries in the franchise, oft-cited as a critical element in rendering some of those films' most ballistic and adventurous sequences.⁷⁶⁸

⁷⁶⁷ See Bird, "Sporting Sensations," specifically her discussion of a fusion between cinematic technology, athletic "flux," and experimental camerawork that "could dynamize the action of sport by innovating ways of making the camera and operator move with the action," unlike standard newsreel camerawork (21).

⁷⁶⁸ See Arthur Wooster, "The Second Unit Has All the Fun," *American Cinematographer* 62, no. 8 (1981). Wooster was also a part of the strange 1953 experiment to film the Queen of England's coronation in 3-D. He and director Bob Angell had started a production company focusing on 3-D in the UK, filming shorts including a production about vintage motor cars, before being tapped by Pathé "to make a special cinematic record of the Queen's coronation and first weeks on the throne." They used Newman Sinclar cameras. By the time the film was ready (and through Royal family red-tape) the public as well as "Pathé had lost interest. Our film was never seen, and we didn't keep a spare reel," says Angell. Wooster's son, David, searched for and found the film in 2009, and it is available on YouTube with the aid of ColorCode 3-D glasses. Amanda Cable, "The Queen in 3D: The Extraordinary Film that Reveals a Completely New Dimension to the Young Elizabeth," *The Daily Mail*, November 13, 2009, <https://www.dailymail.co.uk/femail/article-1227192/The-Queen-3D-The-extraordinary-film-reveals-completely-new-dimension-young-Elizabeth.html>.

Returning to Richmond's treatment of proprioception, we might once again ask why a monograph about "flying" and "floating" has little if anything to say about the bodies that fly (literally or figuratively) and those that float (again, in a dual sense) in generating the moving image, opting rather to focus only on the screen as apparatus-technic with which "my" body resonates and is modified perceptually. And it is also worth pointing out that moving milieux and moving bodies (absent CGI), which leap, take flight, swim, and perform other acrobatics, are likewise available sources for Richmond's approach to cinema's proprioceptive aesthetics. I think, ultimately, it is in Richmond's steadfast adherence to a cinema which is above all and essentially *for me, mine—for an "I"*—that the problem resides. In his words: "To 'find myself in the cinema is to arrive at a sense of myself caught up in an ongoing perceptual resonance with the cinema and an ongoing adherence to a world onscreen [...] Proprioceptive cinema restages, in its aesthetic and technical process, the unaccountable and inevitable and mysterious fact that I am bound to and bound for a world, that I resonate with that world, that I am thrown open to that world."⁷⁶⁹ Not unlike a majority of phenomenological perspectives, including those wedded to Merleau-Ponty, there is a sort of critical solipsism here that must in the end point cinema's arrow toward (or back toward) an "I" that waits for purchase. Taking various forms of application—the notorious bracketing of the *epoché*; the not-quite-dualist but nonetheless conservative "gap" of the *écart*; or even the related *chiasm*, a reinstated subject-X-object schema that still functionally names a frozen reversibility of these relations—this spectatorial I/eye places itself at—or *as*—the pleasurable and fulfilling *telos* of the film experience, even if or because of its subject-shaking capacities.

But what Richmond names *the world* of course includes bodies in it as well as those bodies' relations with(in) milieux. Calling it "the world" and placing it against "I" doesn't depopulate it

⁷⁶⁹ Richmond, 141.

of bodies in process. An easier way to apply pressure to this sort of reading would be to examine cinematographic instances wherein an operator's body is overtly tethered to the generated images. Let us turn then to a final proprioceptive valence of *White Rock*'s camerawork that leads far afield from a rumination on long lens gymnastics but is no less critical in considering embodied image-making. Certain shots in the film were made possible via wearable camera-mount technology, including the GZAP ("gun") mount, which could attach to either side of a ski, and a "special mount" developed and operated by Herbert "Herbie" Raditschnig, this latter device used to render images of varying directions relative to a skier's body.⁷⁷⁰ Here the film mostly utilizes wide lensing, which offers a greater field-of-view and serves to smooth out some of the bumps along the way. The sequences in *White Rock* that oscillate between body-mount footage facing forward and backward on the slopes call to mind the profile-raising film *The Miracle of Todd-AO* (1955), a mid-century cinema of attractions short. In this promotional piece for the nascent technology (and spectacle) to rival Cinerama, nearly a third of the film is dedicated to distorted panoramic images (2.2:1, curved) of skiers fore and aft of a Todd-AO camera system mounted on a snowmobile (see Figs. 5.14-15). The standard Todd-AO lenses, which are measured in nearly all camera technology discourse by their angle of view, rather than focal length, ranged from 37° lenses to a 128° "bugeye," which was the standard attachment.⁷⁷¹ This is a strange forerunner of the widely-known "fisheye" lenses which found their primary home in extreme sports cinematography, which I will address in the coda. Todd-AO also upped its fps from 24 to 30, since

⁷⁷⁰ Maylam, 404.

⁷⁷¹ Belton, 168-69. See Arthur Rowan, "Todd-AO—Newest Wide-screen System," *American Cinematographer* 35, no. 10 (1954): 494-95. Thomas Hauerslev, in a lecture at the 2018 Todd-AO Festival, suggests that the following lens angles correspond to these focal lengths: 128-degree = 22mm; 64-degree = 44mm; 48-degree = 58mm; 37-degree=76mm. There were also 42-degree (55mm) and 37-degree (76mm) lenses "purchased off-the-shelf and adapted with standard lens mounts" in 1953. Thomas Hauerslev, "Todd-AO: How it Started," *In70mm.com*, May 13, 2021, originally presented as a lecture at the Todd-AO Festival, September 30, 2018, https://www.in70mm.com/todd_ao/library/early_days/uk/index.htm.

this “tends to smooth out action on the larger screen.”⁷⁷² In *The Miracle of Todd-AO*, which was produced “to accompany [*Oklahoma!* (1955) [...]] and to display the audience-participation aspects of the system, incorporating in it footage, such as the roller-coaster ride, which had been used in the initial demo,” viewers were treated to the carnivalesque phantom ride from that stalwart attraction as well as the alpine camera tests.⁷⁷³ Extant images from the set of *White Rock* showing Raditschnig’s rig—which he had used, in one individuation or another, across other productions—suggest that the counterweight system was tweaked to provide footage that avoids the sort of lifeless, and often disorienting, results achieved via wearable camera technology that does not pivot or respond to proprioceptive shifts.⁷⁷⁴ GoPro, in most cases, or something like the Todd-AO mobile mount, which remains steadfastly tethered to the snowmobile as it rumbles down the slope, often fall prey to such shortcomings, even if heightened frame speeds or steady-shot technology seek to smooth out the bumps. On the other hand, haphazard images obtained by a handheld camera may retain a direct sense of the stochastic at the expense of visual clarity, swinging too far in the other direction. The rig in *White Rock* generates images that fall somewhere in the middle of this camera-mount “problem,” operating not unlike the Steadicam. It straddles the line between a fixed point of view (attachment to the operator) and the flexibility of motion offered by counterweight systems. The weight device thus allows for images that flow with the rider’s movement but allow for recalibration. The film features shots that include Raditschnig’s legs in the frame as he skis as well as shots where his body is out of frame, but his movement, as it records and renders Olympic skiers’ experience, remains very much palpable (Figs. 5.16-17). It is an

⁷⁷² Rowan, 495.

⁷⁷³ Belton, 176. For more information on and images of the various Todd-AO “concept tests,” see Thomas Hauerslev, “65mm Todd-AO Concept Tests,” *In70mm.com*, March 6, 2005, https://www.in70mm.com/newsletter/1994/31/todd_ao/index.htm.

⁷⁷⁴ See Maylam, 404.

express example of proprioceptive cinema which reminds us that to feel “our” perceptual modulation in front of a screen is often at once to feel a record of another body’s processual engagement with technology.



Figure 5.14 *The Miracle of Todd-AO* (1955) experiments with camera mounts and wide lensing



Figure 5.15 Reverse shot tracking skiers in *The Miracle of Todd-AO*

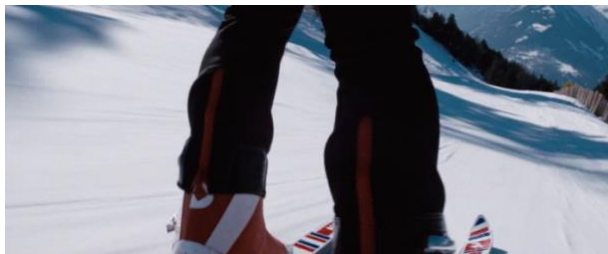


Figure 5.16 Rear view of Raditschnig's body-mount camera in *White Rock*



Figure 5.17 Front view of Raditschnig's body-mount camera in *White Rock*

It is frequently difficult to parse exactly what makes certain of these techniques effective and what is significantly lost when, as is often the case in contemporary sports coverage, cameras are either operated remotely, controlled via electrically programmed trackers, or maneuvered through body-mount stabilization systems that dramatically smooth out the wearer's minor movements or do not pivot at all from their attached position. In effect, there is a *sweet spot* for this type of image-making, one which relies on the correct physical feedback between operator and device as well as a delicate balance between shakiness and the "correction" of motion. Bird speaks explicitly about the shortcomings of GoPro and other supposedly "dynamic" camera systems in modern Olympic coverage, suggesting that they often generate shots that "feel sensually disembodied and consciousness even in cases when they are affixed to persons."⁷⁷⁵ Although I am less concerned with consciousness or "thought" in this project (prioritizing bodies, gestures, and process, with consciousness emerging from experience rather than dictating it), Bird is right to point out the paradox that certain camera systems supposed to offer the most *direct* embodied experience ultimately read as the least sensually embodied. Why is this the case? Somewhat unlike the sled-mounted camerawork from Coburn's tumble down the luge/bobsled course, which heightens his shaking body while keeping the sled somewhat steady, or even Todd-AO's alpine

⁷⁷⁵ Bird, "Sporting Sensations," 33-34.

phantom rides, which careen somewhat lifelessly, the downhill scenes from *White Rock* contain just enough room for feedback between operator and camera mount to leave space for athletic improvisation. In Simondonian terms, the technology stands as more of an “open machine,” displaying “a margin of indeterminacy” and greater “sensitivity to information.”⁷⁷⁶ Information here can be read as the relation between operating body and operated (camera) body, the fluctuating disparation of which is rendered aesthetically.⁷⁷⁷ *White Rock*’s “GZAP” experiments are an entirely different story. In the film’s ski-jump section, the GZAP mount is featured when twin cameras were attached to an Austrian athlete’s skis as he flies through the air, the footage ultimately rendered in somewhat disorienting split-screen, a decision made possible by the significant frame width. Per Maylam, this “young Austrian jumper was persuaded to make the jump with the cameras running and recorded some spectacular footage, but said he would not repeat the jump because ‘it’s too dangerous.’”⁷⁷⁸

However, like the aforementioned shots that read as “sensually disembodied,” the GZAP footage seems to offer little of experiential or aesthetic interest. It is as if the shots communicate how a *ski* flies through space rather than how the athlete—or the camera’s “operator”—experiences such flight. On the contrary, Raditschnig’s rides feature a camera that is attached but responsive to bodily shifts, conveying a skier’s “vision” while coming from their center of gravity, and holding part of their body in frame *while being guided by this very body*. And while these resulting shots appear quite distinctive, *White Rock* does build on cinematic traditions of skiing

⁷⁷⁶ Simondon, *Mode of Existence*, 17-18.

⁷⁷⁷ Recall that for Simondon *disparation* can be considered as a gap between distinct orders or “realities” that are—or can be—merged, resolved. An obvious and apt example would be the fusion of perceptual fields in stereoscopic imagery, the disparity of which results in an informational exchange between the different lenses (artificial or human). Simondon, *Individuation*, 248. Deleuze, in *Difference and Repetition*, puts things thusly in a brief discussion of Simondon: “Individuation emerges like the act of solving such a problem, or—what amounts to the same thing—like the actualisation of a potential and the establishing of communication between disparates” (246).

⁷⁷⁸ Maylam, 404.

photography developed by Fanck in his Bergfilm work, and which would inform alpine and Olympic films thereafter. Such shots, especially with their mixture of speed, friction, and the precarity of camera load-bearing, often rely on a “camera operator who must be equally alert, in their minds, hands, and feet, to the shot and to the immediate and precarious demands being made on their own full body.”⁷⁷⁹ Such a prismatic experience of the operator fuses, makes momentarily indiscernible, work and performance, agility and experimentation, especially when the skier’s own body is also in frame. It may be unique, but it speaks to a pursuit that has been at the heart of winter sport cinema of all sorts for almost a century, and which has featured myriad attempts at evoking such an experience, whether successful or consigned to the list of “failed”—but not quite lost—experiments. Here, closely related cycles overlap, and each informs the other. Before moving on to questions of contemporary remote-operation and its shifting standards of feedback and “lag,” I will first turn back to *The Olympics in Mexico* (1969) to consider a similar sort of stabilization and a different sort of flying.

5.4 I See, I Fly? *The Olympics in Mexico*

When Paul Virilio invoked Nam June Paik’s aphoristic “cinema isn’t I see, it’s I fly,” did he know about Juan de la Cierva y Hoces?⁷⁸⁰ In 1969, de la Cierva became the first Spaniard to win an Academy Award, when he and his company—Dynasciences Corporation—picked up

⁷⁷⁹ Bird, “Sporting Sensations,” 25. Tellingly, in describing these heightened moments of “precarity” and adjustments to camera position vis-à-vis center of gravity Bird is primarily discussing action sequences during shots that include “wipeouts.”

⁷⁸⁰ Virilio, 11.

Oscars in the Scientific and Technical category (Class II).⁷⁸¹ The invention so honored was named the Dynalens, a camera-stabilization system (or “optical image motion compensator”) which would inform subsequent development of aerial photographic instruments as well as home-video stabilization systems. The Dynalens story is a bit hard to parse, for reasons which will soon declare themselves. In the main, the question of the system’s genesis is fraught. Although de la Cierva was awarded the Oscar in 1969, select sources suggest that he developed the Dynalens just a few short years after moving to the United States in 1959.⁷⁸² The *American Cinematographer Manual* claims, in its entry on aerial cinematography, that “Dynalens stabilizers, built in 1962, are liquid-filled prisms that are the predecessor to the ‘stead-i-shot’ found on modern home-video cameras. Two glass discs are coupled together with a bellows; sandwiched between the discs is a layer of high-index refractive fluid. [...] Only six units remain [in 2007] but have been refurbished.”⁷⁸³ After patenting the device in Spain in 1963,⁷⁸⁴ De la Cierva applied for a US patent (3,910,693) in January 1974 having to do with an improved stabilizer system, and the application was granted in late 1975. In this patent’s language, “[t]he filming of motion pictures almost always requires total or near total immobility of the camera, *to thus isolate it from involuntary movements of the operator.* [...] This solution [tripod mounting or complex gimbal] is often impractical, particularly when the camera must be hand-operated, as occurs in most on-the-spot news filming.”⁷⁸⁵ In describing the “optic stabilizer,” which was “invented and developed [...] during the years 1962-

⁷⁸¹ See the entry for the 42nd Academy Awards (1969) on awardsdatabase.oscars.org.

⁷⁸² See e.g. “Juan de la Cierva,” Spain Is Culture, accessed May 11, 2022, http://www.spainisculture.com/en/artistas_creadores/juan_de_la_cierva.html.

⁷⁸³ Jon Kranhouse, “Aerial Cinematography,” in *American Cinematographer Manual Vol. I*, 350-51.

⁷⁸⁴ Raquel Pérez Polo, “Juan de la Cierva y Hoces, el inventor que se convirtió en el primer español en ganar un Óscar,” *Cope*, March 27, 2022, https://www.cope.es/actualidad/cultura/noticias/juan-cierva-hoces-inventor-que-convirtio-primer-espanol-ganar-oscar-20220327_1983060.

⁷⁸⁵ Juan J. de la Cierva, “Gyroscopic Image Motion Compensator for a Motion Picture Camera,” Patent, United States, 3,910,693, filed January 24, 1974, issued October 7, 1975: 1, emphasis mine.

1965,” de la Cierva offers an interesting call back to chapter three’s discussion of liquids, refraction, and steadiness, making clear that “[t]he deformation of the [liquid] prism produces shunting by refraction of the light beam passing through, so that vibrations are eliminated while the sweep and tracking movements are allowed to pass.”⁷⁸⁶

Left out of the patent is any discussion of the device’s original incentive. As de la Cierva admits elsewhere, he “came up with the idea so he could film his children waterskiing.”⁷⁸⁷ This sporting “sensibility,” baked into the technology, somewhat unsurprisingly overlapped with questions of warfare, returning us once again to the S/M relationship between sports-media and science-military. De la Cierva has “patented [at least] 48 inventions, as well as [coming] up with ‘around eight or 10 that the [United States] Defense Department wouldn’t let [him].”⁷⁸⁸ Other inventions of a more sporting bent include a device referred to as “Registrador de llegadas,” first installed at the Hipódromo de la Zarzuela in the late 1940s, to capture the “arrival” of horses at the finish line. In an interesting Olympic connection, de la Cierva would sell the patent of this “photo-finish” device to Omega, which has served as the games’ official timekeepers thirty times (Paris 2024 will mark the thirty-first such partnership).⁷⁸⁹ After Francisco Franco’s death, de la Cierva returned to Spain and formed Electroóptica, “[coming] up with a series of devices that won it markets around the world, among them a fraud-proof betting totalizer.”⁷⁹⁰

⁷⁸⁶ de la Cierva, 6.

⁷⁸⁷ Luis Gómez and Juan Carlos Blanco, “The Spanish Royal Palace even had Microphones in the Bathroom: Inventor Juan de la Cierva Designed the King’s Security System and Won Spain its first Oscar,” *El País (USA Edition)*, November 16, 2015, https://english.elpais.com/elpais/2015/11/11/inenglish/1447238958_764265.html.

⁷⁸⁸ Gómez and Blanco.

⁷⁸⁹ “Paris 2024 Partners,” Paris2024.org, accessed July 3, 2022, <https://www.paris2024.org/en/partners>. See Peter Chong, “Olympic Games: How Omega Does the High Precision Photo Finishes,” *Deployant*, July 30, 2021, <https://deployant.com/olympic-games-how-omega-does-the-high-precision-photo-finishes/>.

⁷⁹⁰ Gómez and Blanco.

Horse racing, gambling, waterskiing, and Olympic finish lines—I am reminded of the language from the “Sports and Amusements” newsreel identifier with which this dissertation’s preface opened.⁷⁹¹ Once again, though, the Dynalens was among such de la Cierva inventions that were applied to militaristic endeavors, not least because of its applicability to helicopter and aircraft image-making, hence its inclusion in the *AC Manual*’s aerial cinematography section. In 1969 *Time Magazine* ran a piece titled “Optics: Steadying Images by Bending Light,” which made abundantly clear the slipperiness of the invention’s multi-functionality. Cited as examples of the Dynalens’ use are US Army photographers “shoot[ing] sharp reconnaissance pictures” in Vietnam, a news crew maintaining steady camerawork on a close-up of then-President Nixon, and “a policeman with a television camera [taking] shots showing distinct facial features of individuals creating a civil disturbance hundreds of feet below his quivering helicopter.”⁷⁹² In a move that would have made all too much sense to Virilio and Kittler, the author also suggests that US armed forces were “experimenting with Dynalens-equipped gun sights that remain fixed on their target.”⁷⁹³ In another callback to chapter three, we learn that unlike previous stabilizing systems, which selected the “viewing instrument” as the variable in need of steadying, the Dynalens would “stabilize the image *by bending light beams from the target so that they would always hit the camera film or the retina of the viewer’s eye at the same point.*”⁷⁹⁴ There is thus a protective sort of liquid buffer that refracts light as it enters the lens system proper, a lightweight *problema* attached variously to cameras and weapons (Fig. 5.18).

⁷⁹¹ (“Here are found subjects covering a broad spectrum of amusements, pastimes, recreational and sports activities, although some may be considered to be business ventures, either legal or otherwise, e.g., GAMBLING.”)

⁷⁹² “Optics: Steadying Images by Bending Light,” *Time*, February 7, 1969, accessed May 20, 2022, <https://content.time.com/time/subscriber/article/0,33009,838939,00.html>.

⁷⁹³ “Optics: Steadying Images.” See e.g. Kittler, *Gramophone, Film, Typewriter*, 130; and Friedrich Kittler, *Operation Valhalla: Writings on War, Weapons, and Media*, ed. and trans. Ilinca Iurascu, Geoffrey Winthrop-Young and Michael Wutz (Durham and London: Duke University Press, 2021), spec. 62-68.

⁷⁹⁴ “Optics: Steadying Images,” emphasis mine.



Figure 5.18 Advertisement for the Dynalens, 1969, in an *American Cinematographer* special issue ("Filming Man In Space," 982)

Digitized scan courtesy of the Media History Digital Library

De la Cierva y Hoces did not simply burst onto the scene with sport, aeronautics and image-making in mind without considerable genealogical pedigree. His uncle,⁷⁹⁵ Juan de la Cierva y Codorníu, invented the “autogiro” in the early 1920s. The elder de la Cierva’s autogiro “was the first practical use of the direct-lift rotary wing, where a windmilling rotor replaces the wing of the airplane, [...] [which] allows a very slow flight and also behaves like an airplane in cruise.”⁷⁹⁶ This “unique aircraft” emerged from a desire to prioritize stability and stall-proof functionality, and while the latter was realized (“no autogiro ever stalled”), de la Cierva’s “death [in a plane crash, 1936] and the emergence of successful helicopters all but extinguished interest in the autogiro.”⁷⁹⁷ From the (Koine) Greek *gûros* (γûρος), “rounding, circle, stroll, around,” we get not

⁷⁹⁵ Or grandfather, depending on the source.

⁷⁹⁶ M. Fernández-Martínez and Juan L.G. Guirao, “On the Stability of la Cierva’s Autogiro,” *Mathematics* 8, no. 11 (2020): 1.

⁷⁹⁷ Dennis Karwatka, “Juan de la Cierva and the Autogiro,” *Tech Directions* 58, no. 10 (1999). According to Karwatka, “James Bond piloted an autogiro named Little Nellie in the 1967 motion picture *You Only Live Twice*,” and “Amelia

only the delectable food *gyro* but, also, a number of cinematic stabilizing devices that utilize gyro- or giro-systems to balance or dictate rotation. The Dynalens was one such device put to use in Hollywood as well as armed forces aircrafts; or, as it were, in armed forces aircrafts used in Hollywood's service. Nearly all accounts of the invention claim that *Tora! Tora! Tora!* (1970)—a joint American-Japanese cinematic retelling of the Pearl Harbor attacks—was the first film to deploy the Dynalens.⁷⁹⁸ De la Cierva y Hoces' refractory mechanism was rigged to cameras in, or mounted on, a set of planes which dodged and swirled around such crafts as the Boeing B-17 Flying Fortress and P-40 Fighters, the film's four cinematographers were jointly nominated by the Academy,⁷⁹⁹ and Dynasciences walked away with its Oscar.

But *Tora! Tora! Tora!* was not the first film to deploy the Dynalens. It was certainly not the first film *released* which had relied on the technology; and, if production records are any indication, the tests run with de la Cierva's invention amid the airplanes were performed after or contemporaneous with that of another film (*Tora! Tora! Tora!* began principal photography in December of 1968).⁸⁰⁰ The other film in question, directed by ex-Olympian and New Mexican Cinema artist Alberto Isaac, is *The Olympics in Mexico*, the official film of the 1968 Mexico City summer Olympics (held in October). Whereas *The Grand Olympics* employed twenty-three camera operators, *White Rock* twelve, and *Tokyo Olympiad* a whopping 146, *The Olympics in Mexico* lists seventy-seven camerapersons in its closing credits. But in its introductory sequence—fittingly, when the torch is being paraded up the final steps—the film lists as its “Consultor de

Earheart set a 1931 altitude record in a Pitcairn autogiro.” This Pitcairn model was overseen by “Harold Pitcairn Aviation in Willow Grove, PA.”

⁷⁹⁸ In a truly bizarre coincidence, Akira Kurosawa, who was originally set to direct the Japanese sequences of the film, was also the original director of *Tokyo Olympiad*. He eventually bowed out in both cases. See Quandt, *Kon Ichikawa*, 324-25.

⁷⁹⁹ Charles F. Wheeler, Osama Furuya, Shinsaku Himeda, and Masamichi Satoh.

⁸⁰⁰ Bruce W. Orriss, *When Hollywood Ruled the Skies* (Hawthorne, CA: Aero, 1984), 197.

Fotografía” one Michael Samuelson, BSC. Under this credit, we learn that “Secuencias de Remo y Ciclismo fotografiadas con el Sistema Dynalens [Rowing and Cycling sequences photographed with the Dynalens System.]”

According to the BSC, Samuelson was named Director of Photography for the film by the Mexican Government, after his work as D.P. “on the official film of the [1966] World Cup, *Goal!*”⁸⁰¹ Samuelson’s career path saw him parley a background in aviation (Air Force), photography, and sport event management into a role as a sports cameraman, and his work in the 1950s and 1960s resonates well with my earlier discussion of experimental visual approaches and telephoto engagement, since Samuelson

joined Movietone as a cameraman, where he developed a new manner in which great sporting occasions were captured on film. Many of the sporting events he was sent to film were being photographed in the conventional manner, [i.e.] from inevitable fixed positions. Samuelson recognized that with more flexible cameras and longer fixed focal length lenses available, football and other sporting events could be made much more exciting [...]. His associate Drummond Challis recalls: “Michael had his crews drill holes around the touchline of the turf and from ball height penetrate the otherwise hidden depths of our national game.”⁸⁰²

He and Challis also acted as co-producers on *White Rock*, and Samuelson is numbered among the camera operators in the film’s credits. Interestingly, although he is not explicitly credited in *Visions of Eight*, that film’s editor, Jim Clark, lists Samuelson as the person “in charge of the many camera units that would cover the games.”⁸⁰³ Nonetheless, it is clear that Samuelson, along with the director Isaac and his primary cinematographer, Antonio Reynoso, put the Dynalens to work in the Autumn of 1968.

⁸⁰¹ Tony Sloman, “Michael Samuelson BSC,” British Society of Cinematographers: Preserving the Vision, accessed June 30, 2022, <https://bscine.com/bsc-members/?id=381>. The site page (which is likely referring in full to Sloman’s 1998 obituary of Samuelson), incorrectly refers to the Mexico film as *Olympiad* (1960).

⁸⁰² Sloman.

⁸⁰³ Jim Clark and John H. Myers, *Dream Repairman: Adventures in Film Editing* (Jim Clark & John M. Hayes, 2011), 106.

The tests run with the Dynalens to cover the rowing and cycling events in Mexico City are thus fascinating records of how this technology, which emerged from a sporting sensibility and would branch outward into subsequent cinemato- and video-graphic experiments, was fine-tuned within the Olympic environs. Unfortunately, behind-the-scenes footage of the Dynalens in use in Mexico is hard to come by, nor do production histories turn up much in the way of description. Luckily the Castrol company, which filmed a commercial with the Dynalens in the early 1970s, also produced a detailed featurette which gives us a close look at the technology as applied to high-speed auto racing. After explaining that the commercial featured driver Colin Bond (winner of the 1969 Hardie-Ferodo 500) and his Holden Torana GTR XU1, the narrator proclaims that “We used a crew of fifteen, and over \$60,000 worth of equipment, including the remarkable Dynalens camera, for vibration free motion shots.”⁸⁰⁴ The viewer is then shown various “special rigs developed for this commercial,” suction-capped vehicle mounts affixed to the car’s rear-left, front-left, front-left wheel, and then mounted on a “high-speed special purpose vehicle” with a seated operator managing the mount’s ring support (Fig. 5.19).

⁸⁰⁴ The commercial was filmed by Amalgamated Pictures Australasia, a small production company the credits of which are almost all from the 1973-74 anthology horror series *The Evil Touch*.



Figure 5.19 Production personnel handle the Dynalens system and support rig while filming a commercial for Castrol (ca. 1970)

In the shots generated via car-mounts there is a curious balance struck between a sort of inertness to the vehicle and subtle reminders that the stabilizer is actively working to correct shake. Although the parts of the car in the shot remain almost stable (relative to the frame), the speed with which the vehicle travels and the road's inconsistencies still generate a "bob" of sorts that allows the camera to sway gently at times (we can also see the shadows of the various rigs playing across the car itself). This is exacerbated in the final take covered by the behind-the-scenes featurette, where the front-on images of Bond driving are taken by an operator stationed on the aforementioned special purpose vehicle. Banking around a turn, it is as if the handheld version of the Dynalens system is straining to perform its function. Increasing the amount of variables weighing on the prism's gathering and refracting of light—the operator's body, the shake of the special purpose vehicle, the extended handheld ring—means that the dynamic relation between camera and target is at once more apparent and less stable. In effect, a complex system of feedback is made legible in these images.

The Olympics in Mexico sequences that deployed the Dynalens likewise reflect a compelling record of the experimental system. It is sadly impossible to source which of the shots—

or whether all of the shots—were taken with the lens fixture, but close attention to these images suggests sustained use. Sections of the film that treat various rowing or cycling events include helicopter shots, and here we very likely see a collision of the “standard” Dynalens utilization (aerial) with a heightened version of its original impetus (watersport, kinetic movement). Before the rowing coverage, a wide-angle aerial shot presents a slightly different “sway” to that found in *The Grand Olympics*’ opening sequence, with a vertical bob that once again reads as though the system is struggling to account for the “involuntary movement of the operator” (here it is likely handheld, not mounted). Once the race begins, there is a zoom shot down-the-line from the river, then a telephoto shot of various eight-man teams as they row. If *White Rock*’s ski-jump and bobsled scenes found interesting ways to hold its sporting figures across the 2.39:1 frame, it must be said that a twenty-seven foot boat avails itself as a supreme widescreen element compositionally as well as a problem for the operator aiming to keep multiple of these crafts in frame at once. In the first of these shots, five boats are present in frame, staggered. In the deep background, cars travel at approximately the same speed as the rowers, and twin carriages (towed by a car, likely) house between fifteen and twenty people. Part of what makes these shots so visually arresting—and disorienting—is how much the dynamic motion in frame is relativized. The camera occasionally holds a boat (or boats) to specific points of the frame, and consequently the background elements shift to and fro relative to the speed of both athletes and camera, the latter certainly operated in or on a moving support. Side-to-side movement is generally rendered smoothly, with subtle “blooming” of the up-and-down camera tilt. Recall that the Dynalens, at least in its more contemporary individuation, “can correct rapid vibration excursions up to 6-degrees in either pitch (tilt) or yaw (pan); however, camera pan/tilt speeds must be reduced.”⁸⁰⁵ The race includes an

⁸⁰⁵ Kranhouse, 351.

insert shot taken from a rapidly speeding boat, the camera following an oar back and forth as it slices through the wake. The jitter of this image is wildly pronounced, but a certain image fidelity is maintained.

Women's kayak doubles is photographed in a similar fashion, and here the technology seems to shine. The rendered motion is fluid, at times oneiric. Amid lengthy tracking or (linear) panning shots, there is the occasional acceleration and deceleration of camera movement, which reads as a momentary test of the stabilizer's limits, buffered somewhat. Likewise, in the film's track cycling coverage there are a number of high-angle shots that isolate a rider or pair of riders in extreme telephoto, not unlike in *The Grand Olympics*. Once again there is a subtle "flow" to certain of the reframing movements in these shots, and they are paired with an insert taken from a low-flying aircraft above the track. Long distance, road race cycling follows a slightly different approach, maximizing wide-angle helicopter footage and accompanying these "establishing" shots with whip-fast telephoto pans or camerawork from within a moving vehicle.

Reviewing these sequences now, and weighing them against the film's moving camera in other, non-Dynalens events, I am moved to pay very careful attention to the frame's edge. How much of the dreamlike quality of some of these images, which *suggest* a certain indexicality of operator movement but also seem to smooth out such shifts, is due to the Dynalens? And how much am I reading into it? This brings me to a hitherto occluded element of widescreen composition. In earlier sections of this chapter, I sought to pay close attention to how *The Grand Olympics* and *White Rock* used the edges of their respective frames for dramatic reasons as well as to respond to the Olympics' own mise-en-scène. But those discussions brought up the relative *difficulty* of following a moving object—or following the difference in frame placement between successive shots—for particular aesthetic and sensory effect. This implies that widescreen aspect

ratios may make it more difficult to observe the corners of the frame when there is not a compelling reason, formally or narratively, to do so. One of the most surprising images of the film is, paradoxically, a record of one of the most well-known sporting moments in the twentieth century. Here there is only a subtle long lens tilt up, but the overwhelming negative space of the resulting frame (a blurred backdrop of grass) makes of an already powerful image a more distilled, isolated one. It is the raised right fist of Tommie Smith (Fig. 5.20), clad in a black glove to “[signify] power within Black America” and call attention to the United States’ hypocrisy in matters of race and imperialism.⁸⁰⁶

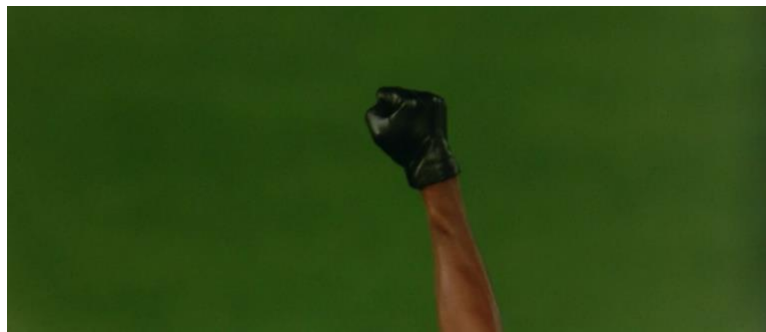


Figure 5.20 The raised, gloved fist of Tommie Smith in *The Olympics in Mexico* (1969)

While this more static shot uses width to radically isolate, in examining embodied camerawork, with or without mounted rigs or stabilizing systems, there is much to be learned from the corners of the frame. Absent (usually) the central focus of the image, and adjacent to the frame’s borders, these corners make for more direct expressions of camera movement, shake, and vibration. Thus, in aiming to parse not only what type of arrangement between operator and camera

⁸⁰⁶ Qtd. in Jason Peterson, “A ‘Race’ for Equality: Print Media Coverage of the 1968 Olympic Protest by Tommie Smith and John Carlos,” *American Journalism* 26, no. 2 (2009): 103.

system generated specific images but also what the image itself might tell us about embodied operation, we might once again consider how width alters the situation in sport cinematography. With respect to keeping an eye on image vibration in the corner, as it were, De la Cierva's US patent makes clear that "vibrations must be eliminated without preventing the operator from imparting necessary voluntary tracking and sweep movements to the camera. The fact that the stabilization system acts [...] as a low-pass mechanical filter inevitably produces 'lag' between the required linearity and that actually taken by the camera."⁸⁰⁷ He numbers as "limitations" of the Dynalens its cost, but also its low-pass filter time constant ("about 2 seconds") and its restricted correction angle (" $\pm 5^\circ$ ").⁸⁰⁸ However, de la Cierva claims that in practice the Dynalens operates with a time constant of 1 second, and "it is thereby possible to achieve sweep [pan] speeds of up to 10-degrees per second prior to reaching the limits of the liquid prism." As such, an eye toward the frame's edge during sweeps (pans) or tracking gives us a slightly different perspective on what sort of correction the prism might be generating and which velocities or accelerations on behalf of the operator frustrate such an adjustment. Critically, de la Cierva writes: "It must never be forgotten that in a motion picture camera stabilized with systems such as those shortly to be described (that is, manually oriented), the operator is an integral and fundamental part of the stabilization system."⁸⁰⁹ As such, if we look to the image's corners for information, what we find is, in a very real sense, information. For that is what any stabilization system, whether prismatic, counter-weighted, or gyro-based, *does*—it establishes a relay of information between operator's body, pro-filmic, lens elements, and stabilizer mechanism. Sometimes these systems decline the

⁸⁰⁷ de la Cierva, 4.

⁸⁰⁸ de la Cierva, 5-6.

⁸⁰⁹ de la Cierva, 4.

passage of information, at other times they produce aesthetic markers that render them explicitly felt.

5.4.1 “To Experience and Describe the Same Event”: Information, Measuring, Mechanisms

Official Olympic films have never wanted for hyperbole—or at least grandstanding. *The Olympics in Mexico*'s narration of the games' scope, the claim that “never before in human history had so many people come together to experience and describe the same event, nor had a greater number of people been informed with such precision,” is of a piece with the technical spirit (and conviction) of many entries from the cine-cycle. We may ask *how* hyperbolic these claims were, given the fact that television coverage and viewership exponentially increased in the post-War period of the Olympics. What stands out in the film, however, is the space dedicated to detailing for the viewer the processes of such capture and transmission. Although there is sadly no explicit discussion of stabilizer technology, the film does go to great lengths in highlighting the flow of information between bodies. About a third of the way through the film, a nearly five-minute sequence begins with a gentle leftward pan across the participant-nations' flags outside of the Olympic headquarters, over which we hear that “the Mexican Olympiad highlighted the dimensions of the modern world with its incredible numbers.” A montage then ensues, with the camera tailing envelopes, missives, and telegraph ticker-tape as the results of anonymous events are translated through different media and sent spiraling to “every corner of the earth,” a leveled diffusion of information. Although Isaac and his camera operators focus on (anonymous) hands for much of this sequence, pointing up the manual labor attending such an endeavor, periodic wide shots of the press rooms are wonderfully suggestive in their *mise-en-scène*. In one, the carefully arrayed set of telegraph machines is bracketed by a series of Olympic chronophotographs, aesthetic

reminders of athletic process and the lingering ideals—artistic and scientific—of Marey and Edgerton. The very next shot highlights a group of six journalists as they work on translating the day’s proceedings, with the edges of the widescreen frame holding on to other lingering figures on telephones. Frame center, a fedora-clad newsman turns from his typewriter to watch live coverage of an event on one of the room’s multiple television sets, which are likewise surrounded by stroboscopic renderings of hurdles, a basketball court, and a long jump (Fig. 5.21). After discussion of the “technical teams” that helped ensure this flow of information, Isaac integrates a shaky helicopter shot from above one of the stadiums (likely sans Dynalens), the camera zooming in from a tremendous distance as the film mentions the “artificial satellites” broadcasting the events.



Figure 5.21 Sporting mise-en-scène and informational relays in *The Olympics in Mexico*

From here we cut to a shot isolating the starter’s midsection, pistol by his side. Tilting up to follow the arc of the gun as it is drawn, the camera operator zooms in and shakes a bit before re-centering on the cocked pistol. We wait. It fires, and one perhaps expects a rehash of the 100-meter dash not unlike that of *Tokyo Olympiad*, photographed four years prior. Only a few seconds of this would-be cinematic repetition play out before the film cuts abruptly to a whirling Omega timekeeper mechanism; the narrator intones: “At the firing of a special starting pistol, all the

measuring devices connected to it spring into activity.” The rest of the race is intercut with shots featuring the Omega technicians operating the photo-finish camera (Fig. 5.22), removing and developing the negatives, and reviewing them along with international judges. An assistant gathers and transmits the positive copies of the photo finish results through a pneumatic tube system, after which “they are eventually compared with manual timings taken by the judges.” The sequence closes much like it began, with hands delivering telegraph slips and electric information to the stadium’s massive display board. Although this specific photo finish image is not integrated into the film, the concluding moments of both the men’s 100-meter hurdles and 200-meter dash do have Omega prints interspersed (Fig. 5.23)



Figure 5.22 Technicians operating the Omega photo-finish camera in *The Olympics in Mexico*



Figure 5.23 An Omega photo finish image embedded within the film

One wonders how much this focus on the Omega devices, their exact measurements, and their photographic yield has to do with de la Cierva y Hoces, who had sold his photo-finish patent to the company some years prior. His fingerprints are all over these games and their cinematic coverage, even if his name is nowhere to be seen or heard (true, he was living and working in the United States during this time). As far as fingerprints and tactility are concerned, Omega had also just introduced the “world’s first swimming Touchpads at the Pan-American games in 1967,” and these were of course deployed in Mexico City to improve on measurement in swimming events.⁸¹⁰ Nonetheless, the film seems often to slip into a sort of process genre presentation, at times allowing the Olympic events to run their course while at others highlighting reflexivity, craft labor, and the various measuring technologies (optical, tactile, durational) that are inextricable from the games’ privileging of *judgment*.⁸¹¹

I want to hold fast here to the film’s declaration that the 1968 games were the apex of a mass *experience and description* of events. This brings us back, perhaps, to Nietzsche’s differentiation between “explanation” and “description,” wherein every “process,” every act of “locomotion,” every *force* is described—but not explained.⁸¹² Are not all of the approaches to the games’ unfoldings—cinematic, photographic, telegraphic, journalistic, touch-operated—ultimately so many descriptions, so many measurements? It is of course not possible to retreat to any kind of faith in truly objective measurement. This does not mean that in October of 1968 Bob

⁸¹⁰ “The First Touchpads,” Omegawatches.com, accessed June 20, 2022, <https://www.omegawatches.com/chronicle/1967-the-first-touchpads>.

⁸¹¹ See Salomé Aguilera Skvirsky, *The Process Genre: Cinema and the Aesthetic of Labor* (Durham and London: Duke University Press, 2020). Among Skvirsky’s most insightful positions on this under-theorized genre is the careful approach to the problem of aestheticized labor, to wit: “While I think it is right to say that the process genre aestheticizes labor, I do not think that the process genre *as such* thereby implies a reactionary politics of labor. The politics of the genre vary as processual representation is mobilized for an array of genuinely progressive as well as reactionary political projects. Thus, what it means to aestheticize labor requires a more nuanced treatment” (120).

⁸¹² Nietzsche, *The Gay Science*, 172, §112.

Beamon did not set the long jump record that would stand for over twenty years, or that the photo finish results from Omega's 1000-fps cameras mistook the winning athletes. Nor does it mean that some measurements are not "more precise" than others. It simply reemphasizes the fact that there is no position outside of the process from which to effect such measurement. In fact, the film's portrayal of Beamon's famed leap crystallizes this very problem. The narrator sets the stage: "In just a moment, we will witness one of the greatest feats of the nineteenth Olympic Games." Beamon takes off, in long shot, the camera operator positioned down the line and tilting up hastily as the runner approaches. Beamon leaps, and the camera barely registers his compressed figure, foreshortened along its up-down thrust. Isaac repeats the shot, this time compressing the jump itself into 29 frames of sequencing, each held for around a half of a second. Accompanied by somewhat discordant strings, this rather bizarre motion study thus unfolds in a Muybridgean fashion, and one cannot help but notice the different time-spans that certain frames are held for. An Olympic judge moves in, clearly shocked, and places the provisional marker. As the operator pans left the other justiciars, as it were, are even more perplexed. Circling around their optical measuring device, they confer; we learn that "the scale of the telescopic measure does not anticipate such an extraordinary jump. Members of the International Athletics Federation are summoned in order to verify the measurement." Ultimately they agree on 8 meters, 90 centimeters, a contingency wildly outstripping the measurable space of the telescopic device.

How, ultimately, to define measurement? The very word's etymological splits are greatly suggestive. From the Greek *mêtis* (μητις), "skill, plan," and cognates *métron* (μέτρον), "measure, rule, (poetic) meter" and *métrios* (μέτριος), "average, mean," comes the Latin *mētiōr*, "I measure, I estimate, I mete out." Thus one gets the measure of someone or something; one delimits space and time via the effectuation of rules; one guesses, if need be—and one judges. Returning once

again to a disposition that strains toward middle-voice resonance, I ask again whether thinking *measuring* in its processual, milieu-based double-directionality does not encourage us to reconsider how we aim to address media technologies as they both mediate and are mediated by sport. One way to improve this type of analysis is by aiming toward a productive co-existence of close-reading, attention paid to technological specifics, and an acknowledgment of the often experimental and improvisational work done by production personnel in the sport setting. Considering the Olympic arena as a site wherein technology and techniques are deployed in unique ways, responding to but also reframing the sporting experience, sheds light on the vicissitudes of the cine-Olympic cycle while also providing context for changes in film style and practice more broadly. Looking more closely at these images, and at their measurements, does not necessarily mean looking away from the base of their technological support, the optical systems that render them, or the experience of the very bodies that play a role in crafting them. To cinematographers, camera operators, and editors, “minor” changes in film speed, the distinct affordances of aspect ratios, and millimeter differences in lens length are, in effect, major. Such topics need not remain mysterious or supposedly hermetic to scholars of visual media, and they open up historical avenues for research and productive inroads for reassessing film poetics. If this entails a certain type of spectatorial and critical ethics, it does so in the hope that the sports documentary, which is a particularly fecund ground for such inquiries, can also point toward novel studies of media objects that have little to do with Olympic cinema.

5.5 Postscript: Animals, Athletes, Absolute Zero

Widescreen experiments in Olympic filmmaking eventually subsided, but cinematic and televisual coverage of the games continued apace by producing an explosion of technologies aimed at measuring athletics.⁸¹³ Many of these devices have certain events, sporting movements, or modes of action baked into their very names. In fact, if a term has at least passing importance to Olympic events there is a chance it has—or soon will—turn up prefixed to a type of -cam, to wit: DiveCam, SwimCam, MobyCam, PoleCam, SprintCam, SkyCam, FlyCam, Twin(s)Cam, etc. It is worth examining certain of these developments and considering the fundamental shift with which they correlate in terms of embodied camerawork in sports cinematography as well as the nature documentary.

Although Garrett Brown's Steadicam rightly garners the most scholarly attention, the range of sports-centric camera-mounts he likewise developed or shepherded into existence is somewhat staggering.⁸¹⁴ The first of these, the SkyCam, has the broadest application. A remote-controlled, drone-like camera system, the SkyCam sits suspended between four rigging wires; originally, its "pilot [was] responsible for moving the camera through space" by the use of "force sensitive joysticks."⁸¹⁵ Initial tests were run in 1983 at a Philadelphia school and in 1984 at two NFL preseason games, none of which had much success.⁸¹⁶ While Lawrence Cone was primarily working on the software elements of the tech, Brown brought together Larry McConkey, ASC (the Steadicam operator highlighted in this dissertation's first chapter) and John Russell, ASC,

⁸¹³ One of the films made for the 1998 Nagano Winter Olympics, *Olympic Glory* (Keith Merrill, 1999), was photographed in 70-mm IMAX. As such, its aspect ratio was the *least* wide in many years (1.44:1), but its image fidelity and projection parameters were the selling point.

⁸¹⁴ For a brief discussion of some of Brown's other inventions vis-à-vis the Steadicam, see Bird, "Quiet on Set!," 320.

⁸¹⁵ Lawrence L. Cone, "Skycam: An Aerial Robotic Camera System," *BYTE* (1985): 123.

⁸¹⁶ Cone, 122.

“engineer and machinist” whose Air Force photography experience led to a career developing “custom cameras and camera mounts.”⁸¹⁷ The first of the preseason games (San Diego vs. San Francisco) resulted in a last-minute pull-out by Brown and his crew due to motor problems with the SkyCam, and the actual proof-of-concept test during a game between Los Angeles (Raiders) and New York (Jets) only fared slightly better; although “[the Skycam] provided some exciting new views of a sport with sagging TV ratings,” the NFL reported to Brown et al that they were “not ready ‘to jump in.’”⁸¹⁸ Although the SkyCam would make some significant headway at sport and concert events before being integrated into the XFL’s coverage in the early 2000s, it wouldn’t be until the following years that the device would be put to greater use in the NFL and other professional leagues.⁸¹⁹ And while rumor has it that Brown conceived of the idea for SkyCam while talking with former NFL player turned actor, Merlin Olsen, about the unsatisfactory and distorting nature of football’s telephoto coverage, the premier driver of the technology in its early phases were the twin 1984 Olympics (Summer in Los Angeles; Winter in Sarajevo).⁸²⁰ As it happens, the system was not game-ready for either event, and things would have to wait.

Thus began in earnest Brown’s cyclical engagement with the Olympics, with multiple Summer entries seeing the genesis of novel “-cams.” The 1992 games in Barcelona occasioned the MobyCam, an underwater rig propelled manually via pulleys to track swimmers from the bottom of Olympic pools; four years later, in Atlanta, the DiveCam was revealed, a vertically oriented

⁸¹⁷ Dan Kneece, SOC, “John Russell Mini Biography,” IMDb, accessed June 3, 2022,

<https://www.imdb.com/name/nm0751248/bio>.

⁸¹⁸ John Grossman, “‘Goalpost’ Brown’s Amazing Flying Camera,” *Inc*, January 1, 1985, *Inc.Com*,

<https://www.inc.com/magazine/19850101/4162.html>.

⁸¹⁹ The original WWF (World Wrestling Federation, now known as WWE) backed XFL (2001), short-lived though it was, introduced or made more prevalent a number of media technologies that would eventually find their way into NFL coverage, not least the SkyCam and on-field Steadicam. See Sean Keeley, “15 Years Later, the NFL Should Thank the XFL for All Those Innovations,” *The Comeback*, February 3, 2016,

<https://thecomeback.com/nfl/15-years-later-the-nfl-should-thank-the-xfl-for-all-those-innovations.html>.

⁸²⁰ Grossman.

camera-path rig which followed divers through the air as they rushed toward the water's surface; and the FlyCam—although first used, rather oddly, above Pope John Paul's visit to Mexico City in 1998 (decidedly not during an Olympiad)—emerged out of Atlanta 1996's experiments in sports coverage and was part of the action in Sydney 2000, especially for overhead gyro-stabilized shots of rowing, thus deployed not unlike the Dynalens.⁸²¹ Although there is insufficient space here to discuss each of these camera systems in detail, the MobyCam piques the most interest and offers an example of a technology which, in its early iteration, relied on a particularly embodied and ultimately legible relation between operator, camera, and athlete. A behind-the-scenes video of Brown at the 1992 Barcelona games discusses the "tiny, two-foot submarine camera" gliding back and forth at the bottom of the pool, "camouflaged" by the lane division. This gliding move, however, was the result of Brown himself manipulating a two-handed crank governing the movement of cabling that ran the length of the pool and up out of the water to the Moby system. Likening it to an "old-fashioned dentist's drill, where ropes run along pulleys and finally do something," Brown then demonstrates the manual engagement with the twin handles, and video footage of the races makes clear that both the cranking itself (done by Brown as the "driver") as well as the panning of the camera at the ends of the pool (performed by another operator) are hardly perfect, yet wonderfully dynamic. In an interesting callback to the discussion of hand-cranking at the Corbett Fitzsimmons bout, Brown, not unlike Rector, did without electricity for

⁸²¹ For brief blurbs on the various devices, see Brown's website, <https://www.garrettcam.com>. Also see Kendall Whitehouse, "Olympics Coverage Rediscovered Garrett Brown's Innovations," *On Technology and Media*, August 16, 2008, <https://ontechnologyandmedia.com/2008/08/16/olympics-coverage-rediscovered/>, and "The Olympic Specialists," *Definition*, April 23, 2010, <https://definitionmagazine.com/features/the-olympic-specialists/>.

the rig's "motor" in 1992 due to concerns of "the Spanish electrical inspectors."⁸²² He estimates that he "cranked it 19 miles!" over the course of the Barcelona Olympics.⁸²³

The TwinCam, as it is often called, is actually the Twinscam, invented by NHK of Japan during the run up to the 2012 Olympics in London. In an interesting return to our discussion of refraction and the various problemata developed to deal with the refractive indices of different milieux, the Twinscam was invented in part to provide rapid and accurate feedback to watersport athletes, most specifically synchronized swimmers. The "cam" is actually two cameras—hence the "twin" prefix—which are arrayed above and below the water's surface and moving laterally along the edge of a pool. Software within the Twinscam rig—which effectively acts as combination dolly, camera system, and output machine—translates the twin shots to a stitched single image that does not frustrate the viewer's eye with the difference in apparent location between the two different mediums (air and water) (Fig. 5.24).

⁸²² Garrett Brown, qtd. in "The Olympic Specialists."

⁸²³ Qtd. in "The Olympic Specialists."

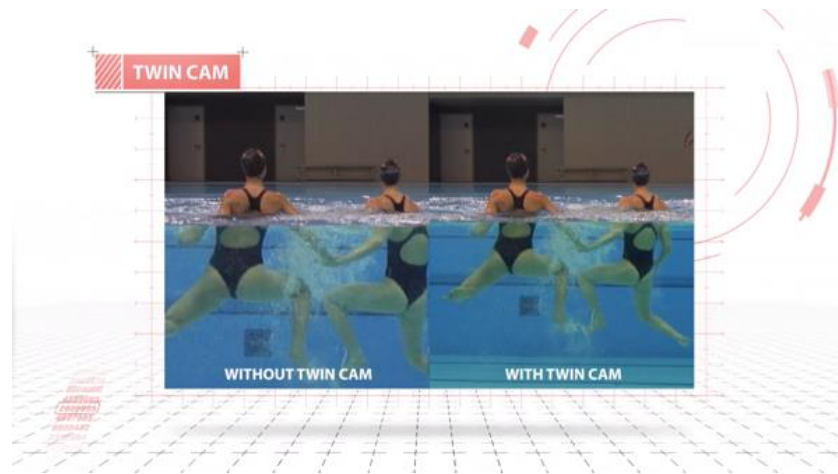


Figure 5.24 Comparison of images with and without the "Twin Cam" stitching

Frame grab from Olympics.com⁸²⁴

Although the principal “viewer” here is the athlete, who benefits from a “clearer” record of their motion and a better sense of how to correct gesture and posture amid the performance, the technology has been put to use for Olympic broadcasts since 2012, and is a prime example of the process whereby “Innovations in how to capture action from the Olympics typically results in numerous sport-specific camera developments each time the event is held.”⁸²⁵

As intimated previously, sports coverage and nature documentaries are overlapping media ecologies which generate and annex increasingly complex means of tracking movement, stabilizing camera systems, and putting *waiting* to use. As Marianne Moore once self-reflected, “Why an inordinate interest in animals and athletes? They are subjects for art and exemplars of it, are they not? Minding their own business. Pangolins, hornbills, pitchers, catchers [...]. I don’t

⁸²⁴ “The Camera Technology Bringing Synchronised Swimming to Another Level,” Olympics.com Tech Race, accessed April 19, 2022, <https://olympics.com/en/original-series/episode/the-camera-technology-bringing-synchronised-swimming-to-another-level>.

⁸²⁵ Rebecca Oliver, “Tokyo Olympics: Protecting the IP of Sports Tech Firms,” *Broadcast*, June 30, 2021, <https://www.broadcastnow.co.uk/tech-innovation/tokyo-olympics-protecting-the-ip-of-sports-tech-firms/5161018.article>.

know how to account for a person who could be indifferent to miracles of dexterity.”⁸²⁶ Miracles of dexterity were the prime focus of Muybridge and Marey’s motion studies, but have contemporary moving images of sporting and animal bodies fundamentally changed in this respect? One way that the nature documentary has changed, hand-in-hand with sports media, is in its broad effacement of miracles of dexterity on the part of those behind the lens. Despite my insistence on the import of behind-the-scenes featurettes from shows such as *Planet Earth* and *Blue Planet*, visualized operator embodiment is continuously detached from the finished product with aims having to do with stability and spectatorial immersion. In an extremely telling turn of phrase, BBC “natural history unit” creative director Mike Gunton claims that he was seeking “immersion” despite finding that term overused, clarifying thusly: “In the old days you became the camera, because the camera’s in your position. Now the camera becomes you. You’re in that world, you’re sensing and seeing.”⁸²⁷ As such, to generate viewer immersion one must be free to move about and have the camera respond to such exploration.

But this type of “becoming” often, if not always, runs hand-in-hand with technologies that radically separate human body and camera body in terms of the rendered image. The most express of these cases involve, unsurprisingly, drone technologies, one of visual media’s most fetishized “I fly” mechanisms and, perhaps, the fullest expression of the impulse behind the SkyCam and its ilk. The latter is fundamentally arranged and governed along Cartesian coordinates, whereas the drone is unencumbered by such dictates. Belinda Smail’s wonderful discussion of drones encroaching on animal worlds and being forcibly disrupted is of the essence here, not least because it revolves around these flying cameras being in some cases sent down to earth. But Smail is

⁸²⁶ Marianne Moore, *A Marianne Moore Reader: Poems and Essays* (New York: Viking Press, 1961), xvi.

⁸²⁷ Qtd. in David Pierce, “The Crazy New Camera Tech that Made *Planet Earth 2* Possible,” *Wired*, March 26, 2017, <https://www.wired.com/2017/03/crazy-new-camera-tech-made-planet-earth-2-possible/>.

interested not just in how such footage, whether from YouTube or the BBC, might stage the “battle with drones” on the part of animals—she is also attuned to how we might replace this framing of “opposition” to examine “what the encounter produces in aesthetic terms.”⁸²⁸ In other words, while the material interplay between animal and technology is ethically charged, the shifting terms of “perspective”—remote operated drone vs. a drone that has been “pushed” or disrupted by an animal—raise questions about “the camera’s efficacy as a prosthetic for human sight.”⁸²⁹

Experiments with GoPro, when not filtered through the “animal vs. X” frame, likewise offer little more in the way of dynamic, experiential footage than does the aforementioned GoPro sport footage. They are also of course more ethically dubious. Doubly so in the case of *Planet Earth II*, which not only attached a GoPro to a trained captive bird to obtain shots from its flight “perspective” but ultimately sutured the footage into its episode as if the images were taken “by” a wild eagle.⁸³⁰ I find, though, that most—if not all—GoPro footage, whether driven by animal or sporting bodies, ultimately falls prey to the “lifelessness” that Bird evokes and which I first brought up in this chapter with reference to *White Rock*’s GZAP ski-mount. A final word on GoPro is thus in order here. Although there are exceptions to this rule, the GoPro aesthetic seems stuck in the paradox in which attaching the device to a moving body removes the very body from its milieu. I believe this occurs for two primary reasons. The first has to do with optics and proprioception: if the camera is mounted on an operator’s helmet (in football or winter sport, for example), the suggestion is that we are seeing the operator’s *vision*. However, this fails on two accounts. By

⁸²⁸ Belinda Smaill, *Regarding Life: Animals and the Documentary Moving Image* (Albany: State University of New York Press, 2016), 136.

⁸²⁹ Smaill, 137.

⁸³⁰ See Sophie Roberts, “F-Lying? Planet Earth II’s Stunning Golden Eagle Segment Slammed for being ‘Fake’ after BBC Admits Using Trained Bird,” *The Sun*, November 16, 2016, <https://www.thesun.co.uk/living/2191006/planet-earth-iis-stunning-golden-eagle-segment-slammed-for-being-fake-after-bbc-admits-using-trained-bird/>.

steadfastly linking camera with (human or animal) optical system, GoPro prioritizes unilateral and single-point perspective at the expense of peripheral vision, proprioceptive experience, and *lag*. It can say—or evoke—nothing of the athlete’s center of gravity, their fully embodied perceptual system, or momentary gaps in focus (felt, for example, in moments of camera-stabilization lag or rapid panning/tilting with a handheld or tripod-mounted camera). The second reason, intimately linked to the first, has to do with the camera’s relation to the operator’s milieu. Since part of the athlete or animal’s body often remains in frame during GoPro footage, this casts the body as a sort of independent variable around which the world swirls. In other words, it is no longer a felt relation between body and world, or a body *in* an environment or milieu, but rather a world “out there” that the body is extracted from even as it moves *through* it. As Manning would say, movement is always “body-worlding,” not body/world: to move in a(n associated) milieu is to create space even as it creates you, not to simply be an object that can traverse it.⁸³¹

This gets us thinking once again about stabilizer technologies and how their aesthetic effects likewise signal a felt relation between operator, camera system and milieu. In terms of stabilization, “blue-chip” nature documentary productions have increasingly relied on systems such as the Cineflex Heligimbal gyro-stabilizer and, more recently, drone cameras for aerial shots, as well as the DJI Ronin or similar handheld stabilizers for shots taken near animals. “The issue is stabilization,” announces a *Vox* featurette discussing camera technology with *Planet Earth I* and *II* executives and personnel, showing us the “problems” inherent in shaky handheld footage from 1990’s *The Trials of Life* and aerial shots from the pre-*Planet Earth* years that registered operator embodiment.⁸³² After detailing the “few” sequences that used the Steadicam for *Planet Earth II*,

⁸³¹ Manning, 13+.

⁸³² Joss Fong and Dion Lee, “How the BBC Makes Wildlife Films that Look Like Hollywood Movies,” Article and Video, *Vox*, February 20, 2017, <https://www.vox.com/videos/2017/2/20/14650348/making-of-planet-earth-2>.

the narrator describes the “cumbersome, expensive, or inflexible” nature of the device for the series’ production before explaining that the handheld stabilizer rigs became *de rigueur* on the more recent work. What emerges when viewing certain of these series’ behind-the-scenes featurettes—and when reviewing the episodes themselves—is an image of the operator who is free to move—and to move the camera—in an impressive range of kinetic ways, and a camera which is effectively protected from such movements through the advanced stabilizer system. In a way, there is little if anything “wrong” with this situation: it purportedly saves money, it creates smooth images that often capture animal life up close, and it seems to be well accepted by many of the camera-team members. What I think is at best minimized—and at worst lost—here, however, is an aesthetic and sensory marker of the relationship between operator and camera. In aiming to make the camera “become” the operator, often as not it feels as though the camera becomes anything but.

Lest this remain a question solely of embodied camerawork and (in)visible labor, I think it pertinent to once again consider the ethical stakes of operator effacement in the nature documentary. It is peculiar to note that the rhetoric surrounding the drift toward more flexible and corrective stabilizer systems posits that a) cinematic immersion, in the “classic” sense, relies on a camera-operator interface that can get as close to the action as possible, and b) the relation between operator and camera—and by extension between operator and animal—must be visually minimized. In effect, it is thought that viewer immersion is a direct result of a sort of disembodied camera-eye, unsurprisingly privileging the drive toward objectivity. But we know that no matter how “removed” the camera’s operator is from the technology itself—with remote image-making the prime example—there is nonetheless encroachment upon the animals and their milieux. It is fair to ask, then, why footage that makes felt a certain interplay between the operating bodies and

their technical ensembles is not quite obviously the more *immersive*. In reminding us that these images result from a curious, laboring, and accident-prone body handling a cinematic device, it immerses us more fully by keeping us tethered to the processual unfolding of a human-technology-animal relationality. We are attuned to the operator's efforts, to be sure—but more importantly we are kept from the belief that such images could emerge absent the “brute fact” of the operator's physical presence, or that they could generate an objective, body-less perspective which we can enter and inhabit immersively.

The question of *who waits* also takes on new meaning with the drive to capture animal bodies and nature's events. Thermal cameras that can record tremendous detail in the dark are triggered by animal movement, harkening perhaps to Muybridge's earliest trip-wire experiments. Unsurprisingly, this technology has been co-opted militarily.⁸³³ Select digital cameras now feature modes wherein the sensor is effectively recording *all the time* but only “captures” images when triggered or so directed. The fact that such modes may, in effect, “back-form” capture gets us thinking once again about the long take and cinematic contingency, here best described as the urge to never miss anything within a range of prescribed capture space. And these overlap with contemporary Olympics coverage, not least the recent Robotic photography deployed for the past few Games,⁸³⁴ or the increasingly sophisticated mechanisms for tracking movement on the field, down the slopes, or in the pool, in which the camera is activated on its path remotely or triggered by virtue of the movement itself. What this all amounts to, in the overlapping spheres of nature documentaries and sports coverage, is not a situation in which operators do not still experiment,

⁸³³ See Cat Ellis, “Thermal Imaging Used in Planet Earth II Could Soon Be Integrated into Battle Tanks,” TechRadar, September 6, 2018, <https://www.techradar.com/news/thermal-imaging-used-in-planet-earth-ii-could-soon-be-integrated-into-battle-tanks>.

⁸³⁴ Mallika Sen, “Robots and Olympics—a Potent Photo Combination,” *AP News*, February 17, 2022, <https://apnews.com/article/winter-olympics-robot-cameras-photography-3cb66e4ab3e460857be97c466934fd6c>.

tweak, labor, and relate to both moving bodies and the body of their camera system. However, these shifts do index a certain cinematic dream, one in which no movement is too fast—or too contingent—to be tracked, perhaps automatically, and as “perfectly” as possible; a dream in which one needn’t attend to *waiting* in the same sense, since the technology will do both the waiting and the capture on its own. Thus, the images increasingly extract much of the operator’s processual relationality from their product. Such a dream (if not nightmare), taken to its extreme, would have felt sensations of waiting, feedback, proprioception, straining, and bodily imperfections approach absolute zero. In effect, although this type of capture would still posit an informational relationship between moving bodies and image-sensor, it has no interest in the bodies in the middle of this relationship, as they are in-formed within and by their milieux and as their own embodied experience may likewise appear as information on the screen.

6.0 Coda: Wipeout

We live, as it were, upon the front edge of an advancing wave-crest, and our sense of a determinate direction in falling forward is all we cover of the future of our path. *It is as if a differential quotient should be conscious and treat itself as an adequate substitute for a traced-out curve.*

-William James⁸³⁵

It has always been about waves. When I began this project, I was certain that the final chapter would be the longest, the fullest, and the one most dedicated to waves. Not just water waves, though: in addition to surfing films, I would explore the history of skateboarding and snowboarding media, in effect collapsing these different wave-functions of the so-called “extreme” sports into one massive section. Not only would this afford me the opportunity to throw the previous chapters into new relief by greatly expanding the sporting terrain, but it would also link much of what went before more explicitly to contemporary moving image production.

The thing about waves, though, is that they are unpredictable, stochastic, contingent. Sometimes you catch a good one and the wind is at your back—sometimes you wipe out, majorly. My inability to bring a planned archive trip to the west coast to fruition (wiped out by COVID-19’s lockdown measures) changed things significantly, but not necessarily for the worse. Reconfiguring the other chapters and renewing my research meant that those chapters changed in exciting and unforeseen ways, once again becoming—as Zielinski would say—“generators of surprise.” And waves certainly found their way into each of the previous sections, whether

⁸³⁵ James, *Essays in Radical Empiricism*, 44, emphasis in the original.

explicitly (underwater cinematography, light-wave refraction, Olympic swim and snow) or implicitly (the Latham Loop's folding; the fluctuations and shifting "standards" of what athletics and sport signified and suggested in the nineteenth century).

There is also a broader question at play with respect to waves. There is no firmly grounded foundation subtending thought. There are only waves, cycles...some threatening, some sustaining. Waves do not cause you to drift, they remind you that you are always already drifting. As Steinweg says, "Only in drift does thought meet itself. Not in order to speculatively perfect itself, but rather to affirm itself as drift. As a voyage that leads into uncertainty."⁸³⁶ Whitehead would agree: "Descartes in his own philosophy conceives the thinker as creating the occasional thought. The philosophy of organism inverts the order, and conceives the thought as a constituent operation in the creation of the occasional thinker."⁸³⁷ In other words, perhaps, thinking is all about flow, and frequently you cannot force it. In this regard it is not unlike sport.

In 1985 Deleuze had sport on the brain. In a conversation with Claire Parnet, the focus of which was "mediators," Deleuze spoke variously about "the proletariat in tennis," so-called extreme sports, and—most importantly—how "the kinds of movements you find in sports and habits are changing." In his words,

We got by for a long time with an energetic conception of motion, where there's a point of contact, or we are the source of movement. Running, putting the shot, and so on: effort, resistance, with a starting point, a lever. But nowadays we see movement defined less and less in relation to a point of leverage. *All the new sports—surfing, windsurfing, hang-gliding—take the form of entering into an existing wave. [...]* The key thing is how to get taken up into the motion of a big wave, a column of rising air, to "get into something" instead of being the origin of an effort.⁸³⁸

⁸³⁶ Steinweg, *Inconsistencies*, 22. The previous sentence reads: "A bit of *gaucherie* in thought also means a little contingency and indeterminacy, a little freedom, a little future, a little scatteredness."

⁸³⁷ Whitehead, *Process and Reality*, 151.

⁸³⁸ Deleuze, *Negotiations*, 121, emphasis mine.

It may seem at first blush that Deleuze's focus on "entering into an existing wave" would foreclose a consideration of street skateboarding. Unlike hang-gliding or surfing—in which waves (whether wind- or water-) must pre-exist entry, even if the sporting body will play on, against, and through the wave—or "vert" (vertical) skateboarding—wherein the wood or concrete *stuff* making up the skater's terrain is already bent and folded into transitions, already "waved"—skating on the streets is about friction and brute force; steps of stairs, handrails, benches, and rough, uneven ground hardly avail themselves as wave-forms. While skateboarding certainly links up with these other modes of sporting experience that readily suggest flow and floating (and we could very well include snowboarding here as well as other more "classical" winter sports such as skiing and the luge), street skating is about collision and resistance...depending on whom you ask.

It is tempting to say that street skateboarding involves the creative interpretation of rigid, seemingly stable architecture, that it is a response to urban gridwork and codification, or that it works to reconfigure what we think about public space.⁸³⁹ While these are not misguided approaches, I want to ask whether street skating doesn't also constitute "entering into an existing wave," whether skating *makes a wave* out of solid material or, more likely, that it also recognizes the waves already present, already churning. Hylomorphism, as we know, looks at the sidewalk sees that matter (concrete) is formed, made into form (static sidewalk). But if Simondon's insistence on "going into the mold" means holding fast to the processes of molding and modulation, it also means that the matter being "modulated in its becoming" must "have a

⁸³⁹ The foundational study of street skateboarding is Iain Borden's *Skateboarding, Space, and the City*, a clarion call to take skate culture seriously (without letting go of play). Borden's approach, at least in the original edition of the book (2001), is primarily a Lefebvorean one, and his Heideggerean take on certain skate "tools" is illuminating. See Iain Borden, *Skateboarding, Space, and the City: Architecture and the Body* (Oxford and New York: Berg, 2001). For a recent exploration of skating's links with "religion," which includes analysis of certain skate cities and spots in terms of their accrued sanctity, as it were, see Paul O'Connor, *Skateboarding and Religion*, E-book (Palgrave Macmillan, 2019).

deformable reality, i.e. a reality that does not have a definite form but all forms indefinitely and dynamically, since this reality, while it possesses inertia and consistency, is a depository of force (at least for an instant).”⁸⁴⁰ And so the traces of individuation linger somewhere in what we consider the individuated, individual blocks of stone.

In this brief coda I will limit my discussion to a particular piece of technology that not only gave street skateboarding an aesthetic that generated wave-like images to match this experience of “entering into a wave,” but also offers a perfect example of how the moving camera can be considered as a wave-function rather than as a point or subject traversing space. In 1995 Sony released a “prosumer” DV camera and forever altered the visual landscape of street skateboarding. It certainly was not their intent to do so. Although the DCR-VX1000 boasted a three-CCD (charge-coupled-device) color processing chip and improved image fidelity over Betamax camcorders, it did not have a great shelf life for narrative film productions (Fig. 6.1). It fared far better in the spheres of broadcast television and the “observational documentary,” though, and so not long after the introduction of the “1000” skateboarders took notice.⁸⁴¹ As skate videographer Josh Stewart makes clear, skate filming in the early 1990s was a veritable camcorder “Wild West,” with a variety of cameras and wide-angle lens fixtures used to film street skating.⁸⁴² “Ride-along” or “follow” filming was the primary concern, since skateboard-mounted filmers tracking a skater as they traversed the streets meant that camera and lens systems needed to minimize shake and offer a wide field-of-view. The VX1000’s aesthetic yield already seemed a perfect match for skate

⁸⁴⁰ Simondon, *Individuation*, 25.

⁸⁴¹ See “The Sony DCR-VX1000 Changed Broadcast Documentary Production Forever,” *Red Shark*, June 18, 2018, <https://www.redsharknews.com/production/item/5562-the-sony-dcr-vx1000-changed-broadcast-documentary-production-forever>.

⁸⁴² Qtd. in Nic Dobija-Nootens, “Tracing the History of Skateboarding’s Most Famous Camera,” *Jenkem*, July 13, 2018, <https://www.jenkemmag.com/home/2018/07/13/tracing-history-skateboardings-most-famous-camera/>.

videography, since its crisp images, warm color palette, “punchy” sound recording and light weight were a boon to filmmakers confronted with myriad options. But not until the camera became part of a technical ensemble did it fully “click” with the skating subculture.

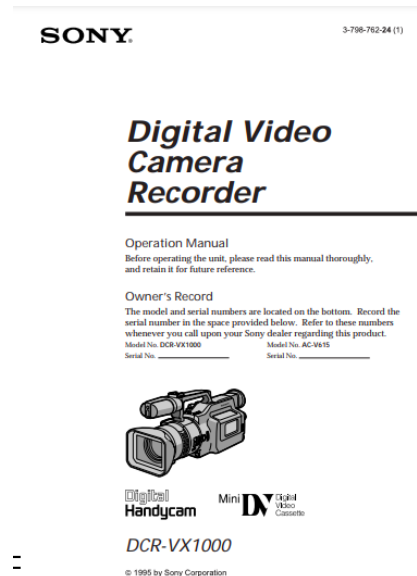


Figure 6.1 The Sony DCR-VX1000, Sony Operation Manual (1995)

The Century Optics .3X Mk-1 fisheye lens, alias “Death Lens,” was introduced in 1998. A bayonet-mount lens “adapter,” the Mk-1 is affixed to the VX1000 by rotation, but it does not “replace” the camera’s built-in lens. As such, this generates a layered compound-lensing the results of which rely on the particular optical effect of the lens pairing. Technical specifications released by Century Optics and select online camera houses generally agree that mounting the Death Lens on a VX1000 gives a horizontal viewing angle of 125°, with a diagonal viewing angle of 180°. In terms of focal length equivalent, the Death Lens has a 35mm equivalence of 13mm (although this may be the case, the massive distortion of the fisheye lens likely places it closer to an even shorter lens). If there is a solid film-historical comparison to be made here, it is with two of the main Todd-

AO lenses. One of the Todd-AO prime lenses, known as the “Bug-Eye,” was a 12.7mm lens capable of yielding 120° imagery (for 65/70mm negatives). The company would also produce an even wider lens, a 150° version, which partially gave the name to its “Dimension-150” capture and printing process. In printing, specific lenses were used to “correct” some of the capture-lenses’ distortion, but the massive Todd-AO projection screens nonetheless capitalized on the significant angle-of-view (Fig. 6.2).

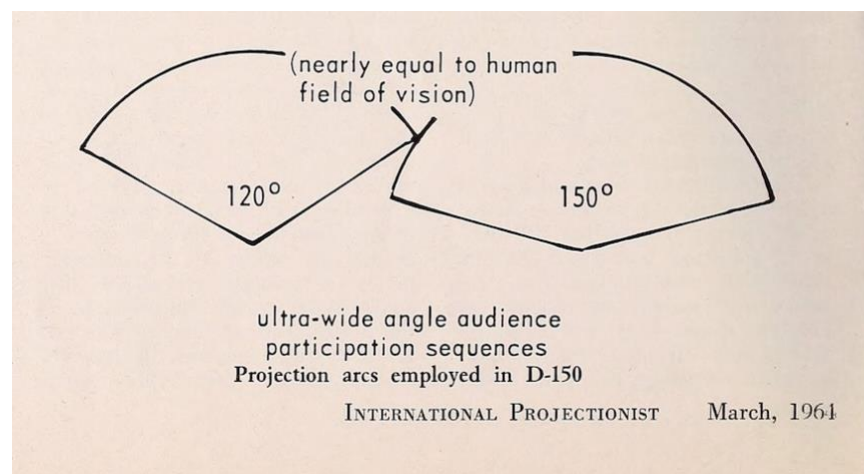


Figure 6.2 Projection diagrams for Todd-AO's "Ultra-Wide Angle" images, *International Projectionist* (1961)

Digitized scan courtesy of Media History Digital Library

Different instantiations of so-called “fisheye” lenses had long been in use for purposes meteorological and astronomical by virtue of their ability to “capture” the skies. As such, for much of the twentieth century the fisheye always looked up.⁸⁴³ As Dunja Djudjic makes clear, in the

⁸⁴³ There were certainly extreme wide-angle experiments in the first half-century or so of cinema, but I am most taken with a very playful and sporting example from the 1920s that relied not on a fisheye lens itself but, rather, on reflection. In the early-to-mid 1920s, Fox News cameraman Al Brick performed some optical experiments of the city-symphony variety, most notably *Pas de deux* (1924), *Split Skyscrapers / Tenth Avenue NYC* (1924), and *Anamorphic People* (1927). Although not all of Brick’s avant-garde techniques—such as rotating split-screen, extremely distorted image-making, and negative color palettes—were accomplished with attached lens systems, his *Pas de deux* reads like a direct precursor to skateboard video “asides” in which the dramatic range of the fisheye lens is emphasized. Brick’s

1960s this type of lens began to change its bearing, being used primarily to generate images for album covers and, subsequently, music videos.⁸⁴⁴ But they would eventually be put to use most frequently—and most kinesthetically—in the realm of skate videography, wherein the happenstance fusion of a lightweight prosumer camera and a radically distorting wide-angle lens became the *sine qua non* of a large percentage of videos around the turn-of-the-century (Figs. 6.3-4). Thus the fisheye began to focus on the ground.



Figure 6.3 Eric Koston's backside noseblunt slide in *Menikmati* (2000)

bona fides pique interest: in the 1930s, as a member of IATSE Local 659, he lent his newsreel chops to Movietone, which *International Photographer* celebrated as “a service that places 200-foot special releases on theatre screens throughout the country with astonishing speed and photographic clarity.” Brick is also celebrated for a particular shot “accepted as the only accurate record of the long pass heaved by Kenny Washington to Hal Hirshon in the UCLA Trojans game [...]. Sports writers were unable to agree on the exact yardage [...]. Brick’s film, showing the sideline markers, clearly settled the question at 62 yards.” *International Photographer* 11, no. 6 (1939): 19.

⁸⁴⁴ Dunja Djudjic, “The History of the Fisheye Lens and Why It’s Used For Album Covers,” *DIY Photography*, December 18, 2019, <https://www.diyphotography.net/the-history-of-the-fish-eye-lens-and-why-its-used-for-album-covers/>.



Figure 6.4 Koston, right, performs the trick; "French Fred," center, wields the VX1000 with Death Lens; Atiba Jefferson, left, shoots still photography

Since the late 1990s the VX1000 has remained the go-to camera for filming street skateboarding. There have been many alternatives put forth that may have cut into the 1000's dominance, including two subsequent Sony issues, the VX2000 (introduced in 2000) and VX2100 (2003). The VX2000 (or "2000") saw its fair share of use in the years immediately after its release, mostly because of the improvements it made over its predecessor's low-light filming capability and image fidelity. The VX2000 model also boasted a flip-screen LCD viewing-assist monitor, whereas the VX1000 had no such device. These two primary "improvements" certainly increased the VX2000's chops with respect to low-budget narrative filmmaking, and the LCD screen suggested easier operation in extreme sports videography while following a rider—whether on a skateboard, snowboard, or other mode of transportation. One of the major drawbacks to the VX2000, however, was that its own paired Century Optics fisheye lens (DS-FEWA-SB .3x Ultra Fisheye Adapter) simply could not match up in any way with the Death Lens. Because both lenses are bayonet-mount, this likely resulted from a combination of factors having to do with compound lensing and focal length adjustments. Although the DS's technical specifications report the same field-of-view and viewing angle, it certainly does not pass the eye-test with respect to width or the

beloved distortion of the Death Lens. Whatever the case may be, the images generated by the 2000's fisheye were not as wide (and not as aesthetically pleasing), subtle shakes generated during filming looked, to most skaters and skate filmers, a bit *off*, and the warping, wave-like images formed with the camera in motion were not as dynamic as that of the VX1000.

A 2004 roundtable discussion featuring a number of the period's prevalent skate filmers details the pros and cons between the two Sony camcorders and their respective fisheye lenses. The videographers discuss their allegiance to one of the systems and make a case for its supremacy, if not its standardization. The introduction to the interviews sets the stage: "Sony's VX1000 and VX2000 have hands-down become the reigning champs when it comes to capturing skateboarding. [...] Fans of the VX1000 tend to be die-hard purists who'll tell you it's the only camera worth using, while the VX2000 users will go on and on about the advantages. Then there're [*sic*] the prof[essional]s who probably at one time or another have used 'em both."⁸⁴⁵ Unsurprisingly, while participants frequently cite the VX2000's improved nighttime and low-light image fidelity and flip-screen, nearly everyone agrees that the earlier model's fisheye, its warm color rendering, and its more "punchy" sound are its greatest advantages.⁸⁴⁶ In terms of color palette, the rich and sharply defined images from the VX1000 are not lauded solely for their aesthetics—in fact, a big part of the camera's allure is that its white-balance chip can produce such warm and colorful images even when using one of the factory presets. On the other hand, the VX2000's color rendering has less "pop"; it tends toward the blue end of the spectrum; and—of special importance—refining the 2000's "look" may take much greater manual color-balance skill. As

⁸⁴⁵ "Versus, VX1000 vs VX2000," *Transworld Skateboarding*, February 24, 2004, <https://skateboarding.transworld.net/photos/versus-vx1000-vs-vx2000/>. The participants were Dan Wolfe, Ty Evans, Mike Stanfield, Ewan Bowman, Grant Schubert, Lee Dupont, Jason Hernandez, Colin Kennedy and Jon Holland.

⁸⁴⁶ The difference in built-in sound recording equipment is likewise a major factor in selecting a camera to film skating, yet it is often hard to pinpoint exactly *why* certain of these systems sound better or more faithful to the skate experience.

Mike Stanfield suggests, “even amateur filmmakers can turn on the VX1000 and achieve a true and accurate look, while you have to adjust the 2000 because of its tendency to go to a bluish washed-out tone.”⁸⁴⁷ Although opinions were split, the interviewees claimed that the VX2000 was “the winner.” The 2000 may have been the more heavily used of the two cameras for a few short years, but the VX1000 would certainly emerge victorious in the long run while its supposed “improvement” would fall out of favor.

One of the reasons for the VX2000’s eventual “disappearance” had to do with the introduction of prosumer High-Definition (HD) cameras. One would think that in an era in which HD cameras hit the scene, became more prevalent, and then consistently were made available at lower prices, street skating would shift wholesale to HD capture for its image-making, leaving *both* the VX1000 and 2000 behind. After all, despite variations having to do with “actual” sensor size, the aforementioned models were restricted to a resolution approximating 640x480, whereas HD cameras offer 1280x720 on the lower end and 1920x1080 at the upper-limit (1080p). Various HD cameras have increasingly been put to use by skate companies and amateur filmmakers, to be sure, but the VX1000 remains for some the only option. Contemporary videos, whether full-length or short, will sometimes bake “VX1000” into their title or description, in effect signaling its particular aesthetic and capitalizing on the camera’s nostalgic charge. The San Francisco skate crew and company, GX1000, is a case in-point: the crew’s notoriously dangerous SF hill-bombs and devil-may-care attitude are inseparable, in a sense, from the VX1000’s aesthetics and nostalgic value (“GX1000” is actually a nickname of the crew’s filmer, Ryan Garshell).

A recent full-length skate video which put the VX1000 (or, to be more accurate, *eight* VX1000s and *three* Death Lenses) to delightfully experimental use is Colin Read’s *Spirit Quest*

⁸⁴⁷ Qtd. in “Versus, VX1000 vs VX2000.”

(2017).⁸⁴⁸ The film opens with a rather unfamiliar “natural” eye (a chameleon), which becomes an equally unfamiliar—to non-skaters—technological one (the Death Lens). Then these two “twin” eyes become four. As Read rides on his skateboard following two other skaters, he deploys a second camera setup, and the dual lenses are analogized to the chameleon’s eyes, this time through a frontal close-up emphasizing the animal’s ability to rotate these orbs independently and, ultimately, achieve full 360° vision. The rest of the “Chameleon Cam” sequence features an exploration of what this type of vision might look and feel like, complete with rhythmic back-and-forths between true “split-screen” and images that play with transmission between the screen’s overlap point. (Figs. 6.5-7)



Figure 6.5 *Spirit Quest's* (2017) chameleon vision section: from an animal eye...

⁸⁴⁸ On the amount of VX1000 cameras and Century Optics fisheye lenses in rotation for *Spirit Quest*, which Read estimates because he “stopped keeping track,” see Will Harmon and Arthur Derrien, “Colin Read: *Spirit Quest* Interview,” *Free Skateboard Magazine*, December 8, 2016, <https://www.freeskatemag.com/2016/12/08/colin-read-spirit-quest-interview/>.



Figure 6.6 ...to a technological one



Figure 6.7 Images resulting from two separate fisheye shots taken simultaneously, with stitching visible, in *Spirit Quest*

Animals and athletes, once again. What piques the most interest in this opening sequence—and in the rest of the film, which foregoes the twin camera setup—is that the bodies of skaters, skate filmers, and camera systems all blend or metamorphose into animal bodies or body parts. Furthermore, the skaters' various milieux, with components both natural (flora) and artificial (architecture, murals), avail themselves as frequent elements in such a processual flux.

I have written at length elsewhere about Read's mesmerizing film, and that publication has the benefit of embedded clips, which give a sense of these blendings in action as well as the various

dynamic movements of the skate crew writ large.⁸⁴⁹ Here, though, I want to use *Spirit Quest* as a jumping-off point to address more of the VX1000's particulars and its status as street skating's most famed *problema*. The first of these issues has to do with stabilization, returning us to one of chapter four's subjects. One of the most intriguing unwritten rules of filming with the VX1000 is that while filming with the fisheye an operator must *never* utilize the camera's built-in SteadyShot option.⁸⁵⁰ Recall that de la Cierva's Dynalens system, which utilized liquid prisms to stabilize the camera's image rather than the camera itself, was the predecessor of modern video stabilization. In the case of the VX1000, it is unclear whether the function adjusts the optical system, the sensor, or both. In any case, the reasons for the injunction against SteadyShot are as follows: in the main, when operating the VX1000 with Death Lens, there is vignetting in the corners of the 4x3 image (see e.g. Fig. 6.7). One can see the curvature of the lens barrel because of the massive field-of-view and the equally considerable size of the lens itself. However, putting SteadyShot on means that when there is significant camera-shake the center of the image within the vignetting "stabilizes" whereas the vignette itself can shake and rumble, creating a truly disorienting effect. The second issue with SteadyShot is that it effectively removes one of the other major charms of the VX1000 when operated with a fisheye. Even with the immensely wide lens, camera shake is not entirely smoothed out during ride-along filming or filming while stationed near an obstacle. But this occasional "choppiness" not only indexes the operator's relationship to both their own board and the surface on which they ride (for example, brickwork or sidewalk cracks), it also

⁸⁴⁹ See Adam Hebert, "Concrete Jungles: Street Skateboard Cinema, Animal Worlds and Contingent Ecologies," *The Cine-Files* 14 (Spring 2019), <https://www.thecine-files.com/hebert/>. Excerpts from the film are also available on YouTube, e.g. "Chameleon Cam," <https://www.youtube.com/watch?v=PuBMyg037rM>; "The Aquatic Journey," <https://www.youtube.com/watch?v=PuBMyg037rM>; and other individual sections.

⁸⁵⁰ SteadyShot® is Sony's proprietary in-camera stabilization system, which dates at least as far back as 1995's introduction of the VX1000.

makes felt the link between filmer and skater as they each traverse a similar path. Thus certain bumps, cracks, or other “imperfections” of the concrete or wood are registered both for the rider we see on the screen and the ride-along filmer, even if the latter uses larger wheels to minimize the jolts. Therefore, if SteadyShot is used during these more dynamic sequences the stabilization plays havoc with the image’s vignetting while removing some elements of the very stochastic interplay between filmer and milieu.

Other attributes of street-skating videography’s VX1000 and Death Lens pairing have to do with a certain type of faith one needs to have during filming. Whenever the camera is operated on a skateboard—or, it merits mention, in many instances of stationary filming—the operator must wield the camera “blind,” in a sense, due to the lack of a flip-screen. This process is made somewhat simpler by virtue of the camera’s top-side handle grip. Having owned and used both the VX1000 and 2000 models, I can attest that there is a significant trial and error period of experimentation with the 1000 to get a sense of how the camera renders images when you orient it in certain ways—and when you orient your body relative to the camera in certain ways. In effect this period is all about experimentation, analysis, and gestural reorientation based on such information. There is, however, a tried and true method for follow filming, which involves holding the camera out a foot or so from one’s own board with arm extended down and toward the ground and the camera tilted up (sometimes with greater tilt than one might think is necessary).⁸⁵¹ Since

⁸⁵¹ Read effectively retired from skate filming at the end of *Spirit Quest*’s three-year production, years in which he maintained a full-time job as a video editor and motion graphics artist. Physical problems developed during filming—namely lower back and hip issues, which affect many skate videographers (myself included) due to postural problems in what is already a demanding mode of filming—resulted in a “back procedure” and future skate work being placed on hold. Nic Dobija-Nootens, “Colin Read AKA Mandible Claw Discusses His Last Skate Video,” *Jenkem*, August 4, 2016, <https://www.jenkemmag.com/home/2016/08/04/colin-read-aka-mandible-claw-discusses-his-last-skate-video/>. In the meantime, though, Read has embarked on a successful career directing music videos and commercials, for which see <https://colinread.tv>.

the field-of-view is so large, pointing the barrel of the lens directly at the skateboard gives too much negative space at the bottom of the frame and compresses all of the skater's body into the top half of the frame. Keeping the camera low and aiming it up generates images that seem to come from about ground-level while allowing the skater's board, body, and expressivity to be captured somewhat faithfully, also allowing the surroundings to warp past in the classic fisheye effect.

As the preceding figures suggest, street skateboarding is supremely self-reflexive and prismatic, not unlike the underwater cinematography discussed in chapter three. Often a trick is performed in front of a still photographer (who may be shooting a single photo or a sequence),⁸⁵² a videographer handling a fisheye, and a long-lens filmer using the same model of camera. The rest of the skate crew or team may likewise be present, in addition to curious onlookers or passers-by. As such, while many skate videos display a vibrant and energetic rendering of the captured tricks, they also foreground the processes of image-making in their *mise-en-scène*.⁸⁵³ At the turn of the twentieth century, *Transworld Skateboarding* dramatized this most expressly in a string of full-length videos that featured a significant amount of night footage. In *Transworld's* retrospective video, *Anthology* (2000, dir. Jon Holland and Greg Hunt), a section on "The Generators" outlines the nocturnal situation for the viewer. Ty Evans, *Transworld's* primary filmer at the time, explains,

the generators: okay, you could use that kind of stuff, like "hey I got generators and lights, let's go light something up tonight," you know? And dudes would get psyched, you

⁸⁵² Skateboarding is among the few pursuits that still regularly utilize sequence photography, as image arrays of between nine and twelve frames-per-second continue to be a mainstay in its print publications. These sequences appear in forms resonant with both Muybridge's approach (individual images arranged sequentially) and that of Marey (images of a skater in motion sequenced against a "stable" background, tracking motion through an ostensibly homogeneous space).

⁸⁵³ For a wonderful study of the skate video's history, see Duncan McDuié-Ra, *Skateboard Video: Archiving the City from Below*, E-Book (Palgrave Macmillan, 2021).

got Atiba [Jefferson] there shooting photos and just, like, the whole chemistry *works*. The majority of those last three videos—*Feedback*, *The Reason*, and *Modus [Operandi]*—so much of the footage is at night.

Crucially, these various tools and machines—generators, film lights, flash devices, and extension cords—are not always “hidden” from view, as one would expect (Figs. 6.8-9). While plenty of these nighttime clips contain the recognizable *whir* of a running generator on their soundtrack along with music, often as not the other accoutrements of the filming process are either visible on screen or indexed via the stark shadows cast by hard-light sources. It is tempting to consider this solely as another instance of self-reflexivity, or to claim that a certain strain of skate image-making felt the need to lay bare its devices. But these filming sessions and the footage they generate are not solely concerned with reflecting on their own construction—they are also instances of guerilla filmmaking. Such run-and-gun filming sessions of the 1990s and early 2000s, wherein filming crews armed (mostly) with VX1000s would descend upon a spot, rifle up a generator, plug in lights, and film for upcoming video parts, only to immediately break down this provisional film set once the desired outcome was achieved—or at the rapid approach of police vehicles—thus register a mobile, nomadic sort of subcultural filmmaking. The aim was therefore not just to enter into an “existing wave” of urban environs or to “get into something,” per Deleuze, but also to function as a roving and surreptitious cinematic middle (*milieu*).⁸⁵⁴

⁸⁵⁴ Often these sessions would be preceded by clandestine visits to the spot to either remove various “skate-stop” elements or otherwise prepare the terrain, for example by filling in large cracks in the concrete. Much of the “skate-stop” devices increasingly found in urban locales are of course examples of defensive architecture and deterrents toward those cities’ homeless populations. For a sterling examination of these issues of public space and architecture, see Robert Rosenberger, *Callous Objects: Designs against the Homeless* (Minneapolis: University of Minnesota Press, 2018).



Figure 6.8 A generator and cording in *Transworld's Anthology* video (2000)



Figure 6.9 Skating on the nomadic film set, with lights, rigging, and photographer visible in frame (*Sight Unseen*, 2001)

We are nonetheless currently in another “Wild West” period with respect to skateboarding’s videographic ensembles, wherein a plethora of new HD cameras and fisheye lenses are experimented with, tweaked, and interchanged in terms of lensing. This can certainly be chalked up to the attempt to arrive at the “best” possible mechanism for producing images that evoke the creative and dynamic sporting feel of skateboarding. But it is also the case that many of these novel camera-and-lens arrays register an attempt to mimic what simply felt so *right* about the VX1000 and its Death Lens. And it is here that I want to think one last time about this project’s

treatment of *problemata*. The VX1000/Death Lens ensemble is an instructive example of what I have heretofore referred to as a cinematic *problema*: as a system, it may be said to “resolve” certain problems inherent in skate filming (the need for a wide field-of-view; reduced shake during follow-filming), but in a very real sense it is worth analyzing the technology for the aesthetic and material “problem” it creates and for how it functions as a “shield” or “screen” projected forward. Again, thinking about a problem “out there” in the world that cinema or image-making must fix can tell us only half of the story; we must pair this approach with a consideration of the technology as it is generated through a mixture of invention, improvisation, and accidents, and as it ultimately stands as a sort of self-imposed (visual) problem. In the case of the VX1000, we may very well add another valence to this concern. The ultimate yield of the camera’s images—their volume, familiarity, and nostalgia—as well as the material and embodied situatedness of the camera itself—its status as a street-skating “token,” both on-screen and in the collective conscious of the subculture—may have for a long time foreclosed certain alternate pathways for image-making. For all that the VX1000 did and continues to do (and, to reiterate, it is a fantastic device), how much of its widespread use and subcultural citation created a different sort of problem,⁸⁵⁵ a problem wherein skating’s images took on a look that aided in positioning the pastime for encroachment by more “mainstream” factors, and ensuring that all subsequent setups for filming the sport would necessarily be placed in a relation to the VX1000, whether to emphasize how much they differ or to point out how far short of the VX1000’s mark they fall?

⁸⁵⁵ It is interesting to note that Read, when speaking about retiring from skate filming, has this to say: “I can’t do the fisheye thing anymore. There’s other ways to film and I have a ton of other conceptual things [...] that I’d love to film. *I would have loved to retire my VX[1000] years ago, but I put myself into this...*” Lucky for us he didn’t retire it sooner, and yet... Harmon and Derrien, emphasis mine.

This hyper-stability is not hyperbole. Total footage produced with VX1000 camcorders may very well outstrip any video camera in history, and perhaps most cinema cameras as well. Especially in the major cities of the US—and, to be sure, numerous other countries—there have been hundreds of thousands of hours of footage captured with VX1000 cameras.⁸⁵⁶ While these skate-specific tapes (that is, separate from broadcast television or other documentaries) are predominately focused on the skating itself, they include coverage of down time or b-roll footage, since skate sessions are often filmed with the camera continuing to roll, with footage dumped wholesale into editing software to be broken up later. (In yet another link to the importance of hands in film history, the conventional mode of signaling to oneself that a clip should be logged is by placing an opened hand in front of the fisheye lens, so that when reviewing the footage there is an outsized manual marker) (Fig. 6.10). Some of the footage—a small percentage, if we are being honest—ended up in skate videos, either on VHS, DVD, or iTunes. Increasingly, footage is either uploaded directly to the internet or now circulates on the web by virtue of VHS or DVD rips. There are also “raw footage” edits, often displaying the lengthy process required to perform—and film—a specific trick. This is the tip of the iceberg. The *rest* of the footage (that which hasn’t been lost or erased) is in storage facilities, bins, shoeboxes, personal collections, hard drives, or elsewhere. To speak of the street skateboarding archive, then, is at once to speak about its anarchiv.⁸⁵⁷ It is a situation both somewhat sad and, to be honest, very befitting of the subculture. Because street skating, despite its increasing commercialization and commodification—and its recent addition to

⁸⁵⁶ In addition to skating, broadcast work, and documentaries, the VX1000 also apparently was a favored technology of “a new army of pornographers” around the turn of the twentieth century. Tim Epstein, “Video’s Gutenberg Moment: How the VX1000 Camera Revolutionized News, Documentaries, and Porn,” *Reason* 46, no. 6 (2012): 44+.

⁸⁵⁷ See McDuie-Ra, specifically 21-48 (“Archiving Without Archives”), on the complexities of the skate archive.

the Olympics—has always been about evasion and an evolving DIY ethos, it makes sense that it would resist (however actively) the archival impulse, much as it resists being considered a sport.



Figure 6.10 Manual markers: "French" Fred Mortagne's hand signals a clip to be saved, in footage from *Menikmati*

But when I review the footage we do have access to, and not just the images recorded with the VX1000—whether from my own filming experience (which often feels strangely unfamiliar or dreamlike), my friends’ skate filming, certain known videographers, or anonymous skate filmers—I am reminded of a very important thing about movement, which has of course influenced my approach to relationality in all of the preceding chapters. Consider a privileged instance from skate media which may here act as *exempli gratia*. A board-mounted filmer follows a rider through the streets, armed with a fisheye lens. There is a provisional, agreed upon path and angle of attack, but each of the riders must respond not only to the environment but to one another. It is a dance, of course, and we know what Yeats said about separating the dancer from the dance. As in previous chapters, the world often “warps” past or around the riders, creating a sense of dynamism and the kinetic even if the target of focus remains “static” within the wide lens frame. It is once again

tempting (and not without merit) to fall into the various traps which promise an “understanding” of the effects of camera movement. Do we identify with the camera and imagine, or feel, ourselves moving through space, tracking the skater? Is it rather that, holding fast to the inextricability of labor and craft from the equation, we read for the indexed movement of a filming body, trying to sense it? Or does the skater—or other selected elements from the pro-filmic as milieu-based vectors of form, perhaps—command the movement, and are we thus thinking more about how the cinematic target tracks the camera, becoming in effect the motor of the rendered movement?

Once again, the dissolution of subject-object and mover-moved frameworks opens up a space in which we sense and think the middle of *movement*, *moving*—in suspending the urge to frontload the subject or object’s path through space we endeavor to think superjection in its “giving” of the subject in the processual thickness of experience. Call this William James’ film theory, with an assist from Whitehead. But Deleuze and Claire Parnet had another way of describing the Empiricist-Pragmatist treatment of relations that works much more simply and effectively for our purposes here: “Thinking *with* AND, instead of thinking IS, instead of thinking *for* IS: empiricism has never had another secret. [...] [T]hat is all there is to it.”⁸⁵⁸ These are various ways of thinking *is*. But the moving camera can only ever give us *and*. Thankfully. For it only ever generates images of relations, percepts of *moving* that rely on terms of movement but always outstrip reduction to such particulars. When filmer and rider perform their “dance,” time and again, we see and sense *and*, which includes the camera technology in its relation. So it is that these bodies enter not solely into a frozen wave of concrete but continue with a dynamic wave of which they themselves are the elements, wherein everything drifts.

⁸⁵⁸ Gilles Deleuze and Claire Parnet, *Dialogues*, trans. Hugh Tomlinson and Barbara Habberjam (New York: Columbia University Press, 1987), 57.

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V. Filmography

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The Corbett-Fitzsimmons Fight. Directed by Enoch Rector, 1897.

Creed. Directed by Ryan Coogler, 2015.

Eadweard Muybridge, Zoopraxographer. Directed by Thom Andersen, 1975.

Goodfellas. Directed by Martin Scorsese, 1990.

The Grand Olympics. Directed by Romolo Marcellini, 1961.

How I Play Golf. Directed by George Marshall, 1931.

It Started with Muybridge. US Naval Ordnance Laboratory, 1964.

The Leonard-Cushing Fight. Directed by W.K.L. Dickson, 1894.

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Olympia. Directed by Leni Riefenstahl, 1938.

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Pirsch unter Wasser [Stalking Under Water]. Directed by Hans Hass, 1942.

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Raging Bull. Directed by Martin Scorsese, 1980.

Rocky. Directed by John G. Avildsen, 1976.

Sight Unseen. Transworld Skateboarding. Directed by Jon Holland and Greg Hunt, 2001.

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Soy Cuba [I Am Cuba]. Directed by Mikial Kalatozov, 1964.

Spirit Quest. Directed by Colin Read, 2016.

Tokyo Olympiad. Directed by Kon Ichikawa, 1965.

Unternehmen Xarifa [Under the Caribbean]. Directed by Hans Hass, 1954.

Visions of Light. Directed by Arnold Glassman, Todd McCarthy and Stuart Samuels, 1992.

White Rock. Directed by Tony Maylam, 1977.

You Can Make Good Movies! Directed by Kenneth F. Space, 1939.

Young Griffio v. Battling Charles Barnett. Directed by Otway Latham, 1895.