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1. Introduction

Elizabeth Closs Traugott [1] tasked linguists with observing semantic change in varied contexts and domains, noting the importance of observing variation in present-day usage in addition to retrieving usage data from historical texts. One domain which has seen a recent influx of linguistic observation is the Internet, particularly online communities of practice. A particularly intriguing feature of online language use is the rapid evolution of written language practices for discourse-relevant uses. In this study, I focus on one such change which is observable in the usage of two iconic deictic items in an online community.

The two items that I am observing are the discourse deictics<-- (known as "arrow"), used to point to something in the written discourse to the left, and ^ ("carat"), used to point to something above or previously stated. These two forms at first glance seem to have very apparent pointing meanings, but upon further investigation, exist in polysemous states. The use of these lexical items varies from an iconic deictic (mentioned above) to a self-identifier form of copula (<--) and an epistemic item indicating affirmation (^).

<-- and ^ are not used in spoken language (except to call them by symbol names "arrow" or "carat"), and thus embody a unique aspect of the linguistic medium that created an avenue for semantic development. The textual nature of online language use is what defines the original discourse deictic meaning of these words (they could not point at anything if there were not something to point at), and from this original meaning they evolved to gain additional linguistic meaning in a manner consistent with previous work on semantic change (e.g. Traugott 1989). The multimodal nature of these words themselves adds a dimension to their meaning, specifically that they rely on the visual context around their use, and yet the forms still follow the path of semantic change. The study of the forms ^ and <-- also supports Traugott's assertions that evaluative meanings arise later in the semantic shift of lexical items, and that words shift towards textual or metalinguistic meanings. Furthermore, this study shows how an analysis of semantic shift may be approached in digital mediums. Written language in

mediums such as chat tends to be ephemeral, appearing on the screen and then disappearing moments later – this study captures the language in use over time in a way that allows for a study of meaning and usage change.

In this work, I will first outline the nature of the data which make up my corpus for this study. Then I will show the polysemous usage of <-- and ^ with examples extracted from the data. Finally, I will attempt to delineate the progression of meaning variation in the community – how the meanings evolved, and whether the progress of change is observable in the three years of data.

2. The Community and the Data

Language used online has been the subject of linguistic inquiry since the early 1990s. Researchers have documented the varieties of forms [2, 3], compared them to spoken and written language [4], observed the use of language within online communities [5, 6, 7], and theorized about the ways that the Internet has changed our language use and even our views on language [8]. This research has shown overwhelmingly that language online is an intriguing point of linguistic study, a chance to observe language being adapted to fit a whole new medium, providing linguists with a rich area ripe for analysis.

The data and observations for the present study come from an ongoing three-year (2007-2010) ethnography of a community of *World of Warcraft* players. *World of Warcraft* is a Massively Multiplayer Online Roleplaying Game (MMORG), created by Blizzard Entertainment, and played by approximately eleven million people worldwide [9]. The game takes place in a fantasy-style virtual world and has many different options for ways for players to engage with the game, such as completing quests, battling against other players, collecting rare items, roleplaying and creating stories for characters, and teaming up with other players in a 'raid' to defeat difficult computer-controlled enemies. The game features both avatar-environment interaction and player-to-player interaction via textual chat. I observed primarily members of one guild, which is a large player-organized game-sanctioned social structure. A guild is a unit of players who generally prefer a similar playstyle; the guild I studied

changed over time from an interest in roleplaying to an interest in very advanced raid activities. Players chose to be members of this particular guild for many different reasons, including having a friend already in the guild wanting to be part of the guild's raid activities, and simply liking the colors of the tabard that guild members wear.

World of Warcraft is an interesting arena for analysis of semantic change for many reasons. First and foremost is the very social nature of the game environment – players are encouraged to group up with others by the very mechanics of the game that they are playing. There is a large and thriving social community inside and around the game, and this kind of active community is where we may observe innovative language features being used and deployed. Second, *World of Warcraft* is a multimodal environment with textual chat in many different chat channels used for communication, as well as a visual world and avatar movement to add to interaction. The forms being studied in this work rely on the visual nature of chat to derive their meanings, as I will explain in the next section. Finally, *World of Warcraft* allows for easy recording of data using a chatlog function built into the game interface itself.

Textual chat was recorded using the /chatlog function present in the game which saved all chat to a text file on my hard drive. In-guild research participants were made aware of my research via notices in the in-game guild information, posts on the guild's forum website, and in-game discussion. Any player who did not want to participate had the option to decline, and only one player ever expressed such a desire. Non-guild members were observed only in publicly accessible chat channels, and whenever possible I attempted to obtain their consent to use their chat in my research. To protect the identities of participants, all usernames (which are already pseudonyms) were changed, creating a double layer of identity protection. Since the object of study is a particular linguistic item that has no identifying information attached to it, and all identifying information in the chat was removed, no harm was done to any participant.

The data in the text file contain a date and time stamp, the chat channel in which the utterance occurred, the name of the player making the utterance, and the utterance itself. The data are organized sequentially as the messages were sent to the chat box on my screen. Since I could only capture conversations in chat channels of which I was part, my data in no way constitute the whole of conversation in *World of Warcraft.* Furthermore, my sample of speakers included mostly members of one guild on one server, and thus is not representative of the whole of the *World of Warcraft* community. Nevertheless, these items are highly conventionalized, and I have observed players from other communities (within *World of Warcraft* and outside of it) productively using the forms in similar ways.

My knowledge of the meanings and uses of these forms came from my experience as a participant in the community. The ethnography is a participation-observation ethnography, meaning that I played the game alongside my participants; furthermore, I was assimilated into the community as a full and competent member. Since I am a competent player of the game and user of the language, the forms ^ and <-- are present in my own usage and I understand the meanings of the forms in context. Therefore, my own utterances appear in the data, and they make up approximately 2% of all utterances; however, the utterances that I made pattern similarly to those by other speakers in the surrounding data. I use data only from before I became interested in these particular forms in order to avoid contamination of the data by the researcher. All examples included in this paper are examples of the form being used by players other than myself. This is a point of methodological interest, since as a participant-observant and a native user of the medium I can be counted among the participants who use the forms.

3. The Forms and the Meanings

In this paper, I discuss two lexical items: <-- and ^, which I will call “arrow” and “carat”, respectively.[1] The symbols resemble arrows in both form and function – they are iconic because the symbols are arranged in a way to mimic arrows, and have deictic (pointing) meanings in discourse. Deictic forms are indexical [10, 11, 12], and

the forms <-- and ^ are unique because they are a synthesis of symbolism (they consist of symbols, which are related to its referent by convention), iconicity (the sequences of symbols visually resemble arrow), and indexicality (the arrows actually point in the direction of the referent).

Most classic work on deixis involves demonstratives like “this” or “that” used in spoken language, but written language has different discourse restrictions (see Jungbluth’s work for a discussion of the different ways deixis is used in spoken and written language [13]). The development of deixis in computer-mediated contexts is particularly intriguing because work on semantic change, especially deixis, relies on face-to-face spoken conversation. As Lyons [14] notes, “much in the structure of languages (…) can only be explained on the assumption that they have developed for communication in face-to-face interaction. This is clearly so as far as deixis is concerned.” In the *World of Warcraft* community that is the subject of this study, the language used is written so that specific words or utterances can actually be pointed to on the screen in addition to being anaphorically referenced; this linguistic environment allows for creative uses of linguistic deixis. The availability of a lexical item for pointing may be what gives rise to the proliferation of arrow-shaped figures in the community’s discourse. This visual iconicity of these forms is what makes them so interesting – they are products of their visual environment and yet subject to language change in the same way as spoken forms.

^ and <-- have a core deictic sense of pointing to a referent, but have meanings in current use which have shifted away from deixis. This shift of meaning in a deictic item is not unusual in linguistic change; Ullmann suggests that deictic forms are vague in their core meanings and this vagueness gives rise to shifts in application [15], and Kennedy’s work on *yen* in Mandarin Chinese gives an example of how a deictic item’s function may be more complicated than it appears because of this vagueness [16]. The reason that deictic items have this vagueness is because their meanings are affected by context, social processes, and speaker environment [17]. I chose to use conversational data because in natural conversation we can see language use in response to

context, and because in conversation we can see ongoing processes of change emerging in discourse due to fluid patterns of language use by speakers [18].

In the following sections, I will show excerpts from my data in which these two sequences carry the available meanings in order to illustrate the polysemy of these two lexical items. The data I present in the next sections are selected excerpts which most clearly show the multiple meanings available for speakers when using these forms. The excerpts presented are directly out of the chat log and include the following information: line number, date, time stamp (hh:mm:ss.ms), chat channel (in [brackets]), speaker, and utterance. A diagram of how to read a line of chat is in Figure 1.

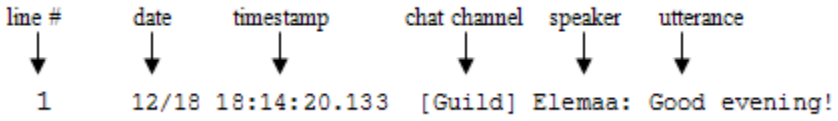

Figure 1: Sample line of chat with component parts indicated.

The available meanings for both forms indicate that each meaning may be related to the others and have derived from each other in a certain order. This is the order that I present the meanings, and is also the hypothesized path of semantic shift that the forms have undergone. In the final section of the paper, I will attempt to discern whether a chronological progression of meaning change consistent with my proposed track of semantic shift is observable in the data.

3.1 <--

<--, known as “arrow”, holds the core meaning of pointing at something to the left. Its form consists of a left angled bracket (<) plus one or more hyphens (-). The number of hyphens varies by user and does not seem to have a particular pattern, although there must be at least one hyphen to distinguish this lexical item from simply <, meaning “less than”, which is a completely different form used by the community. The most basic meaning

carried by the arrow is iconic reference, or a simple deictic pointing gesture. This meaning is apparent in example (1) below.

(1) 1 10/10 21:39:59.390 [2. Trade] Marria: [Zhar'doom, Greatstaff of the Devourer]<---- The warlock staff.
2 10/10 21:40:09.703 [2. Trade] Marria: [Bulwark of Azzinoth]<---- The warrior shield.

In example (1), we see the player Marria linking the names of particular items in the game – a staff called [Zhar'doom, Greatstaff of the Devourer] and a shield called [Bulwark of Azzinoth] – followed by a left-pointing arrow, and then a descriptor. The meaning of line 1, then, is "[Zhar'doom, Greatstaff of the Devourer] is the warlock staff", and for line 2, "[Bulwark of Azzinoth] is the warrior shield". The referent for "warlock staff" and "warrior shield" is indicated using the left-pointing arrow, which is pointing at an item name.

This referential deixis can also be used to point to a player name instead of pointing to an item that has been linked in the chat box. Since the speaker's character's name appears at the beginning of every line of chat, the character name is always available for reference. An example of this use is below in example (2).

(2) 1 11/28 00:14:30.031 [Guild] Avery: <--- FERAL druid

In this example, Avery uses the left-pointing arrow to point to her name, "Avery", and then a descriptor of what the character is – in this case, a feral druid. A druid is a class of playable characters in *World of Warcraft*, and "feral" refers to a particular specialization of druids for turning into animals like a cat and a bear. Avery uses a pseudo-prosodic cue by capitalizing FERAL, indicating that she is emphasizing that she is this particular type of druid, one designed for physical attacks rather than spell casting (which would be a "balance" or "restoration" type of druid). The intended meaning of this utterance is "The character Avery is a feral druid, not another type of druid".

The name-referential use of the arrow allows for reference of traits about the player behind the character as well. A similar process was described by Crystal [4], who suggests that the left-pointing arrow can be used like a locative copula, as in “dc <-- holyhead” meaning “DC lives in Holyhead”. This use is more explicitly copula-like than the attributive uses in examples (1) and (2). I did not see any examples of this particular location construction in my data, but other information was attributed to the player using the left-pointing arrow, as shown in example (3).

(3) 1 `6/7 22:06:59.973 [Raid] Roqua: <-- dude IRL [“in real life”]`

Roqua, a female avatar, uses the left-pointing arrow to indicate the player, and that the player of Roqua is a “dude in real life”. It is the use of the phrase “in real life” that indicates that Roqua is talking about the physical body and not the avatar.

The arrow can also be used to attribute action to a player. Bomersbach documents the many ways that users of the Internet denote some sort of action that they are narrating in an online context, most involving the use of various extra-alphabetical symbols [20]. This practice is also evident in *World of Warcraft*; players use the conventional asterisks to denote action (e.g. *is smiling*), as well as a trope on an in-game command using a slash mark such as `/smile`. This form of narrated action can also be indicated by the left-pointing arrow, as in example (4).

(4) 1 `8/2418:48:21.449 [Guild] Jahaerys: <--- fell off the edge of the world`

This use of the arrow to indicate action is almost exclusively used with a third person singular verb, and in all cases the arrow is pointing to the subject of the verb, as if attributing the verb (and associated action) to the character name that the arrow is pointing to. Thus, it functions similarly to the use of the arrow with a description as in example (3).

The arrow can also be used to establish reference, such as in an introduction or a reminder of who someone is. For example, when a well-known player creates a new character with a new name, the player will frequently re-introduce themselves using the familiar name and an arrow. A common example of this is below in example (5).

(5) 1 `3/15 18:35:50.508 [Guild] Erphynn: <- Paetrik :)`

In the above example, Paetrik is the name of the player's main character, who was a notorious personality in the guild. Paetrik's player had made a new character, Erphynn, and had just logged on. In other words, "Paetrik" was a name that many people would know, but "Erphynn" was an unfamiliar name and not associated with the player of "Paetrik". For a visual representation of this layering of reference, see Figure 2. Paetrik's first utterance after logging in on the new character was to remind everyone of who he was by using the left-pointing arrow. With this, he was establishing the connection between the character Erphynn and his main character, Paetrik, who was already connected to him. This use is a manifestation of the many levels of personal reference available in *World of Warcraft* and the naming conventions present in the game community.

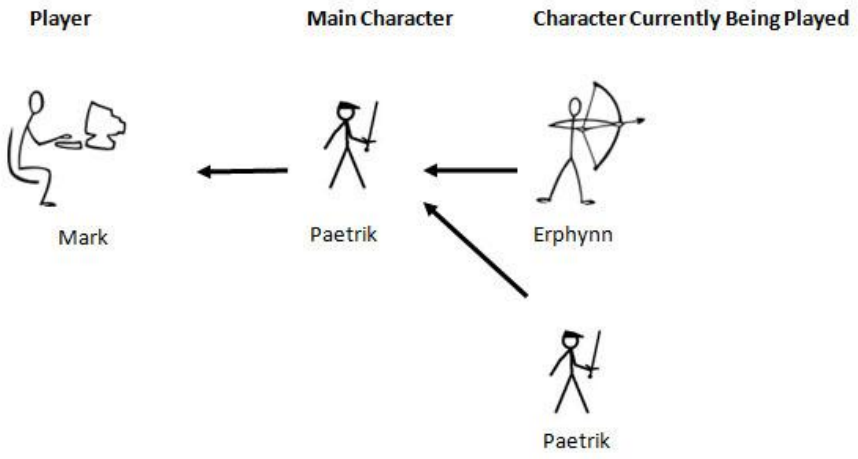

Figure 2: Layering of name reference for Paetrik and Erphynn, showing how two characters are connected to one main character who is the representative of the player in the game.

This introduction use of the arrow can be used in conjunction with a personal pronoun such as “I” or “me”, resulting in a type of redundancy. This construction is used only in the context of volunteering or indicating ownership of an item or knowledge of a topic. One example of this construction is in example (6), in which Gregor asks for someone who can perform a service for him, namely placing an enchant on his weapon, and Paetrik volunteers himself.

(6)
```
1   1/27 02:11:59.298  [Guild] Gregor: who here can enchant my new axe?
2   1/27 02:12:31.094  [Guild] Paetrik: <- me
```

In line 2, Paetrik uses “<- me” to say that he (Paetrik) can do the enchanting that Gregor needs. This utterance at first seems emphatic; however, to many users, Paetrik’s utterance in line 2 is synonymous with simply saying “me” or using a standalone arrow (see below). There are not many examples of this type of redundancy in the data. Most frequently, the redundancy of this construction is eliminated by removing one of the items. It is not the arrow that is removed, however; it is the original pronoun that is dropped, and the arrow stands in as a pronoun of volunteering all on its own. Example (7) is a prototypical example of the way that the free-standing arrow is used as a self-identifier in the community.

(7)
```
1   4/25 20:12:19.134  [Guild] Parnopaeus: who wants to come?!
2   4/25 20:12:32.061  [Guild] Theon: <-
```

Theon volunteers himself for Parnopaeus’s expedition to a dungeon, and does so using only the left-pointing arrow. This arrow is incomprehensible on its own – it needs to be the second pair part of an adjacency pair for it to carry meaning in this context. Furthermore, players assume that their interlocutors are creating utterances that have meaning, and therefore have ascribed meaning to this otherwise-incomprehensible utterance [21]. Most of the *World of Warcraft* players with whom I have discussed this phenomenon think of this free-standing arrow as a sort of hand-raising gesture, as though the arrow is functioning to draw attention to the speaker.

Others indicate that it is sort of a first-person pronoun, as a stand-in for announcing “Me!” To encompass both of these meanings, I use the term “self-identifier” to refer to this stand-alone use of the arrow.

The arrow as a self-identifier was adopted by many guild members in one particular speech situation: loot distribution. In order to fairly distribute the rare items gained when defeating an enemy in a raid, the guild adopted a distribution system known as “Suicide Kings”. As part of the distribution process, one particular player known as a “loot master” would ask players if anyone wanted a particular item, and then any player who was interested would send a private message (or “whisper”) to the loot master. I served as loot master several times, and had the chance to observe how players formulated their messages of interest. Some would re-type their character’s name in the message and others would say something to the effect of “me” or “I want that”, but by far the most common message that I received when I served as loot master was “<--“. An example of what this looked like on my screen is in example (8).

(8)
```
1      3/13 20:18:26.714  [Raid Warning] [Loot Master] Skakavaz:  [Sand-Worn Band]
WHISPER NOW
2      3/13 20:18:32.976  Nestor whispers: <---
3      3/13 20:48:37.289  [Raid Warning] [Loot Master] Skakavaz:  [Boots of Impetuous
Ideals] WHISPER NOW
4      3/13 20:48:45.774  Maradin whispers: <---
```

The interesting thing about the loot distribution situation is that only two people served as loot master in the time that this system was in place: Jahaerys primarily, and me on a few occasions when Jahaerys was not at the raid. None of the other raiders (like Nestor and Maradin in example 8) ever saw any other player’s loot interest whispers – the whispers were between the speaker and the loot master only. As far as I know, no one collaborated to decide just how it was appropriate to whisper the loot master, and neither Jahaerys nor myself ever said “Whisper me with an arrow” or anything similar. The important point is that many different people (approximately eight in my data, and Jahaerys confirmed that it was the most common message he received

from all different people) used this construction to indicate their interest – as if they were raising their hands to indicate their interest in the item – and they all used it independently of each other. Therefore, I can safely conclude that the meaning of the free-standing arrow as a self-identifier is a common meaning across the community.

The arrow can be used as a linguistic trope by particularly innovative language users. These tropes – resulting in ambiguous and often humorous statement – show the edges of the meanings that <-- can carry. One unusual trope on the arrow was frequently used by Jimli, a very innovative language user in the guild. (I will discuss his use of the carat in the following section as well.) In example (9), Jimli, who normally plays a night elf priest, was instead playing as his secondary character, a paladin named Arwynn (see Figure 3). Jimli used the layers of reference, complicated by the fact that he was playing a secondary character, as well as the ambiguity of the arrow's referential meaning in order to confuse chat participants in example (9).

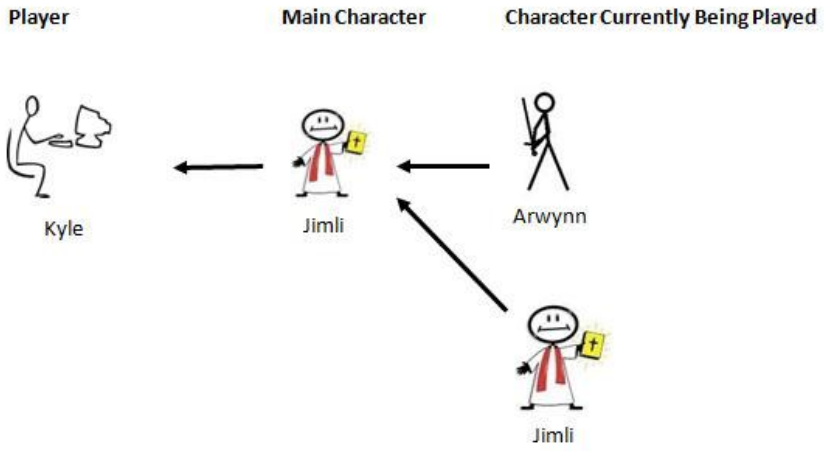

Figure 3: Visual representation of layers of reference for Jimli/Arwynn.

(9) 1 4/4 01:51:20.724 [Guild] Nidorina: A few guildies in my second guild were gay as well.

2 4/4 01:51:43.731 [Guild] Nidorina: I <3[=love] gay/bi people. THey are so much easier to talk to sometimes.

3 4/4 01:51:55.370 [Guild] Theon: Lol, except me, huh? ;D [=laughing emoticon]

4 4/4 01:51:55.802 [Guild] Arwynn: <------

5 4/4 01:52:44.597 [Guild] Skakavaz: wait, what's that arrow for?

6 4/4 01:52:52.474 [Guild] Theon: Yes, that's what I was going to ask. XD

7 4/4 01:52:58.168 [Guild] Nidorina: Likewise

8 4/4 01:53:16.231 [Guild] Arwynn: tehehe

9 4/4 01:53:48.770 [Guild] Nidorina: He said it was nothing on vent [Ventrilo, a voice chat program]

10 4/4 01:53:54.138 [Guild] Nidorina: But I wouldn't be surprised =P [=tongue sticking out emoticon]

11 4/4 01:54:47.417 [Guild] Arwynn: Jimli is not

12 4/4 01:54:57.125 [Guild] Arwynn: but

13 4/4 01:55:00.310 [Guild] Arwynn: <------

14 4/4 01:55:09.790 [Guild] Arwynn: is

The use of the arrow in lines 4 and 14 is very confusing. What happened here is this: During a discussion of gay and bisexual players of *World of Warcraft*, Jimli uses a free-standing left-facing arrow (line 4), which usually is used to volunteer oneself for some task or draw attention to oneself. Considering the topic at hand, I (personally) initially interpreted his arrow to be Jimli announcing that he was gay or bisexual, which would have been new information about the player. However, since the arrow was lacking in context, I asked for him to clarify what he meant (line 5). As shown by Theon's utterance in line 6 and Nidorina's in line 7, I was not the only one confused about this particular utterance. Finally, in lines 12 through 15, Jimli clarified that he was talking about his roleplayed characters – meaning that his character Jimli (a male night elf priest) was not gay or bisexual, but that the character he was currently playing, Arwynn (a female human paladin), was gay or bisexual. This layering of reference is somewhat unique to the *World of Warcraft* medium in which a single player can have multiple characters with different names, but these characters may all be associated with one player. This ambiguity of reference was often exploited by Jimli to confuse other members of the guild, a situation which he said he found amusing.

As shown in the above examples, the use of <-- in *World of Warcraft* is not as simple as it may seem to be based on its iconic nature. The earliest usage of <-- in my data occurs as an iconic deictic, used in discourse to point to something written to the left, and is present from the beginning of the ethnography in 2007. The attributive use, in which the arrow points to the name of the speaker, appears within the first year of my data collection and is used in polysemy with the iconic deictic form. Later in the data, the arrow came to be used in self-identification contexts, used as a resource for speakers to draw attention to themselves in appropriate contexts. The self-identification use appears to be most used in the last year of the data set. In the final section of this work, I will examine the patterns of usage to determine if these apparent changes of meaning are statistically significant across time.

This progression shows an increase in self-involvement in the meaning of <--. It progressed from being very discourse-oriented to being used by speakers to express ideas about themselves. This change in meaning aligns with Traugott's discussion of patterns of semantic change from external to internal evaluation – that is, from describing something in the external world or in the discourse itself (external) to describing something about the speaker or the speaker's state of mind (internal) [1]. An even clearer change of this type occurs with ^, which I will describe in the following section.

3.2 ^

Just as with <--, discussed above, the first meaning of ^ is that of referential deixis. It points to a preceding line of chat, which appears above the line containing the ^ utterance. The earliest forms of ^ used in my data were forms of repair, an allomorph of *-repair [22]. Crystal documents a similar phenomenon, namely the sequence ^H, a reference to programming language indicating the deletion of the previous character (so that "my mad^H^H^Hawesome computer" would read "my awesome computer") [4]. Although the two forms may operate similarly, there are no attested examples of ^H in my data and the link between the two is tenuous at

best. The form used in my data is simply ^, as in example (10) which shows Rufus repairing his typographical error “foes” with “does”.

(10)
```
1   10/4 00:10:57.948  [Guild] Rufus: why foes sunwell = vartes?
2   10/4 00:11:09.600  [Guild] Rufus: does^
```

In such repair situations, the carat points to the above line, as if saying “this thing that I have typed in this line should go in the line above”. The use of ^ is reminiscent of marks given by proofreaders correcting writing by hand, as though actually drawing an arrow to the incorrect form; however, the usage is not the same, since proofreader marks are used to indicate an insertion instead of a correction.

Some of the earliest forms of ^ in my data which were not repairs were used to point to items that had been mentioned in a previous line, as in example (11). This function is similar to the use of <-- as a deictic shown in example (1).

(11)
```
1   3/26 23:00:19.959  [2. Trade] Krystala:  [Skullflame Shield] [Bludstone Hammer]
    [Cenarion Belt]
2   3/26 23:00:25.661  [2. Trade] Krystala: ^lookin to sell em
```

In line 2, Krystala uses the ^ as an upward pointing arrow, pointing to the items that she had listed in her previous message, in order to direct readers to the reference point for her utterance “lookin to sell em”.

Similarly, ^ can be used in topic-comment situations. One way this occurs is in clarifying something mentioned in a previous line. One example is in example (12), in which Leena uses ^ to point to some previously typed information, with the clarifying remark “vent”, meaning that the information posted previously is the necessary access information for the voice chat program, Ventrilo.

(12)
```
1   7/4 21:08:47.500  [Raid] Leena: Server port: 3821
2   7/4 21:08:47.505  [Raid] Leena: Password: letmein
3   7/4 21:08:51.716  [Raid] Leena: ^vent
```

Players can also use ^ to make an evaluative comment of something previously posted, rather than clarifying what a previously posted line means. One example of this is from Rufus in example (13), where he posts the name of a film (*Final Fantasy: The Spirits Within*) and then evaluates the quality of the film in the following line.

(13)
```
1   3/3 22:10:10.201  [Raid] Rufus: Final Fantasy The Spirits Within
2   3/3 22:10:16.028  [Raid] Rufus: Fail^ [=adjectival usage][2]
```

The line containing the topic being referenced does not have to be the immediately preceding line, and can even be multiple lines, as long as they are visible on the chat screen. One example of this is in example (14), where Paants uses ^ in line 5 to point to two preceding lines (2 and 3), one said by him and another said by Szocske, although there is an intervening utterance in line 4.

(14)
```
1   2/19 18:12:06.180  [Guild] Zanna: How's everyone?
2   2/19 18:12:15.731  [Guild] Paants: Protesting equal guild rights
3   2/19 18:12:20.693  [Guild] Szocske: beating things up with a stick
4   2/19 18:12:24.713  [Guild] Zanna: Oh?
5   2/19 18:12:28.489  [Guild] Paants: ^ the two go together
```

Paants's utterance in line 5 works because he uses the noun phrase "the two", referring to the two activities proposed by himself and Szocske. By using "the two", Paants references two things that would be most likely to be paired, and the only available items in the discourse that have been recently mentioned are the two actions "protesting equal guild rights" and "beating things up with a stick". The carat is redundant in this utterance, but adds another layer of referential transparency because it reinforces that Paants is referring to two items previously mentioned in discourse, and not two other random items in the world.[3]

Another topic-comment use of ^ is used by players to affirm a previous line posted by someone else. In this case, players may use the demonstrative "this", as in example (15), to show their affirmation. In line 3, Leena uses "^this" to affirm Azhure's utterance in line 2 "olympics is overrated".

(15) 1 8/14 20:14:56.955 [Raid] Monkee: if i could use rocket boots i could be michael phelps for 3 seconds
2 8/14 20:15:03.067 [Raid] Azhure: olympics is overrated
3 8/14 20:15:10.242 [Raid] Leena: ^this.

The use of "this" in conjunction with ^ is redundant, since the demonstrative also has a deictic function, although the ^ gives added meaning of pointing to something within the discourse itself. This use of "^this" can be thought of as a typographical shortcut, meaning that the speaker would have typed the same thing and merely did not wish to expend the effort since it had already been typed.[4] The use of a deictic as affirmation in this way is not unique to this medium – for one example, see Armstrong's discussion of *isso* in Brazilian Portuguese [24].

Since "^this" is redundant, is it possible for ^ to stand on its own to eliminate the redundancy as we saw with "<-- me"? In fact, the same redundancy-elimination process happens in the case of ^, as in example (16).

(16) 1 2/7 00:37:03.489 [Raid] Nesad: afk bio and drink
2 2/7 00:37:07.045 [Raid] Natholis: ^
3 2/7 00:37:11.187 [Raid] Rufus: ^

Nesad announces that he will be "afk bio and drink", which translates into "away from keyboard to use the restroom and get something to drink". Natholis and Rufus both take turns consisting of ^, indicating that they, too, will be engaging in this behavior. ^, in this case, may be seen as a typographical shortcut to saying "^this". The meaning of "^" is synonymous with "^this", which indicates affirmation of a previous utterance.

Another example of this phenomenon with stronger affirmation is below in example (17), when Sammive, a hunter, expresses her positive affirmation of Jahaerys's evaluation of hunters in line 2.

(17) 1 12/7 23:18:02.999 [Guild] Rufus: why do huntards[=derogatory term for hunters]piss me off?

```
2      12/7 23:18:11.431  [Guild] Jahaerys: because we rock :P
3      12/7 23:18:18.061  [Guild] Sammive: ^
```

The use of ^ in example (17) is epistemically modal, because Sammive is indicating her stance on the idea expressed by Jahaerys. Epistemic modals are, according to Lyons:

> Any utterance in which the speaker explicitly qualifies his commitment to the truth of the proposition expressed by the sentence he utters, whether this qualification is made explicit in the verbal component […] or in the prosodic or paralinguistic component, is an epistemically modal utterance. [14] (p. 797)

While Lyons's definition indicates that epistemic modals add meaning to a statement uttered by the speaker, the deictic nature of ^ allows it to exist as a booster to an utterance made by a different speaker [25]. Thus, ^ used in this meaning environment can be seen as an affirmative, adding the speaker's approval of a previous statement made by another speaker. I will call this particular meaning of ^ "affirmative ^".

The affirmation in examples (16) and (17) is slightly different – in example (17), the affirmation is stronger, indicating a personal stance on a proposition. Traugott suggests that a strong epistemic meaning will arise later than a weak one, and that in semantic change, over time there is a strengthening of focus on a speaker's [1]attitude towards a proposition p. Examples (16) and (17) show two instances in which ^ is used with different levels of investment (weak in 16, strong in 17). These two levels of investment coexist in the community, often with humorous ends, as shown in example (18).

Additionally, ^ is a favorite humor resource of the players in the community I studied. Utterances such as Example 18, below, are quite common – players use ^ to express their affirmation, but they are affirming utterances which are about themselves. In most cases, it is the use of ^ which makes the utterance humorous, as is clear in the following two examples, and the humorous effect points to both a nuance in the meaning of ^ and evidence of its evolution.

(18)
```
1	4/29 20:08:50.690	[Guild] Gregor: If we lose WG [Wintergrasp, a player-versus-player battleground]i blame natholis
2	4/29 20:08:54.129	[Guild] Natholis: ^
3	4/29 20:08:56.547	[Guild] Natholis: Oh.. HEY
```

This example shows evidence of a speaker's investment in the proposition, or that there is a clash between strong and weak epistemic meanings. In example (18), Natholis uses this progression humorously – he pretends to be occupying a weak epistemic position, in which he simply verifies the truth of a statement; then, as if realizing that saying "^" means that he believes the proposition to be true and puts his approval behind it, he says "Oh.. HEY" to show that he did not actually intend to admit fault.

In contrast to the humorous use of ^, there are also infelicitous uses. One way to use ^ infelicitously is to use it in isolation to affirm an utterance that is not visually available, thus rendering the referent of ^ impossible to determine. Few examples of this particular use exist in my data, and they may only exist because of a lack of comprehensive data on my part (for example, I may have just logged in mid-conversation and was therefore not online to record the original referent). In most of my data, there are fewer than four lines of chat between ^ and its referent, and the exceptions are created by a single user, Jimli. I discussed Jimli's unusual behavior with <-- in the previous section, and his unusual behavior persists with ^. He frequently used ^ to point to visually unavailable referents, and the most extreme case is shown in example (19).

(19)
```
1	4/8 19:54:54.299	[Guild] Jimli: btw[=by the way] what time?
2	4/8 20:27:32.125	[Guild] Jimli: theon
3	4/8 20:27:43.810	[Guild] Theon: Yah?
4	4/8 20:27:46.254	[Guild] Theon: *yeah
5	4/8 20:27:50.057	[Guild] Jimli: ^
6	4/8 20:28:51.065	[Guild] Theon: I'm waiting for these two to get back from afk[=away from keyboard]
7	4/8 20:29:36.857	[Guild] Jimli: i guess igotta type it out...
```

While Jimli's referenced question ("btw what time?" in line 1) is within four lines of his ^ turn (line 5), by looking at the time stamps it seems that Jimli was referencing a turn that was made thirty-one minutes before. There were no intervening lines of chat between line 1 and line 2, a total of 31 minutes of silence in [Guild] chat; however, *World of Warcraft*'s chat interface does not save chat for that length of time, and it seems odd to assume that both Theon and Jimli were not having other conversations that would obscure the existence of the referenced line. In the surrounding chat in the log, it became apparent that Jimli was not actually referencing a line of chat, but something happening in an entirely different program, namely the voice chat program Ventrilo. Jimli seemed to be asking Theon to change channels in Ventrilo so that Jimli could talk to him. Jimli was using ^, which is usually anaphoric, to point to something outside of the chat box. This usage is extremely atypical for users other than Jimli, and although the meaning is (barely) discernible, it is extremely infelicitous.

This exophoric reference was part of Jimli's overall unusual style, and contributed to the general perception that he was "irritating". He was described this way by several participants in my ethnography because his conversational style was frequently ambiguous – that is, conversing with Jimli required managing non-local reference – and several players remark that they "never know what he is talking about" when describing Jimli. This is an example of Kurylowicz's assertion that any speaker using a deictic form has an egocentric view of the world, and the use of deixis is inherently related to the position the speaker occupies within the world [26]. This point is relevant due to the restrictions imposed upon the location and use of ^: the proposition that ^ refers to must occur before it, or above it in screen space, because the speakers are positioning themselves in digital chat box space. Furthermore, for ^ to hold any meaning, the proposition being referenced must have occurred within a reasonable distance above the ^ utterance. That is, other people viewing their chat boxes must be able to see the original proposition in order to interpret the meaning of ^. The spatial organization of the screen and the chat box is crucial to the semantics of ^ and is a feature that speakers must attend to both from their own point of view and the points of view of others. Jimli violates this restriction, using ^ only from his own position and not

using it in a way that is easily understood by others; thus, his utterances are too difficult to parse because it requires his interlocutors to expend more energy than they are accustomed to using on a linguistic task [27].

In this section, I have shown how ^ exists in a polysemous state in the community. It has an iconic deictic sense used discourse referentially, pointing a previous line. From this discourse reference, it is used as a facilitator of topic-comment utterances. Out of this topic-comment state, it developed into a form of affirmation through its combination with the demonstrative "this" and then the elimination of redundancy. As with <--, the non-iconic meanings seem to arise as time progresses, and the affirmative ^ is primarily used in the last year of the collected data. It is important to note that this is a developmental chain of the meanings of ^, but that all of these meanings continue to exist in the community and are available to all users.

3.3 Connections

I have set out in the above sections the usage of two arrow-shaped lexical items, <-- and ^, in *World of Warcraft* discourse. This description may not be comprehensive, but they make up the bulk of the usage that I am familiar with in my corpus and in my time as a player of the game. While the two forms are both arrow-shaped, I will set out a few other ways that the two forms behave similarly.

They are both iconic and deictic. They both take the form of arrows, which are actually pointing to things in the discourse. Following this, they both rely on local reference. The left-facing arrow <-- relies on the referent points to be close to the arrow in visual space to make sense. The referent for <-- can be typed out by the player or present in the chat system (e.g. the player's name at the front of the line). In the case of ^, the constraints are looser on reference locality, but generally the referenced line must be visible on the screen of the player – and, therefore, the turn containing ^ must be typed fairly quickly after the referent line. Furthermore, ^ can refer to a line typed by another player, not just the same speaker who used ^. Especially when thinking about reference, they can both be used creatively and ambiguously. Even Jimli's infelicitous use of <-- and ^ as an exploitation of

the inherent ambiguity of the terms can be parsed and the correct meaning can be acquired, but merely require more work than other players' use of these lexical items. This ambiguity may contribute to his "irritating" style.

In terms of the evolution of these forms, they have undergone semantic shift. <-- has shifted into a copular form, and then to a self-identifier, like a personal pronoun as though the speaker is volunteering or using hand-raising gesture. ^ evolved into a signal of agreement, although the personal investment involved with ^ is ambiguous. Both retain the sense of their original iconic meaning, but require a familiarity with the community norms to fully understand all of the intended meanings. In this community, they both are polysemous, retaining their original (iconic, in this case) sense while carrying additional meanings [16]. This polysemy is tolerable in these forms because there is a connection between the iconic sense (pointing at something) with the shifted meaning of affirmation (^) and self-identification (<--). The progressions toward polysemy for both <-- and ^ are similar. While the examples set out above are not a definite chronological progression, the path of shift makes sense based on the forms existing in the data. They both seem to follow a path first from iconic deixis to discourse reference to more personally-invested and context-reliant forms. Furthermore, they both have a sense of iconic spatial items -- they take the shape of arrows, which are routinely used to point in the real world. They have both been appropriated to discourse and used to point to referents, which is the level that is observable in the data presented above. They both have become conventionalized for some meaning – for <--, to refer to the self for reasons such as indicating interest, and for ^ to express affirmation with the use of the demonstrative "this". Finally, the redundancy evident in both forms ("<--me", combining self-identifier and personal pronoun, and "^this", combining a discourse deictic and a demonstrative) is eliminated, leaving only the arrow-shaped figure standing alone as an utterance. Since speakers are familiar with all of these forms (since they exist in polysemy), the meanings assigned to standalone <-- or ^ align with other more familiar forms. There is also the tendency of hearers to attempt to assign meaning to an utterance, even if the utterance is unfamiliar or seemingly nonsensical, which may be part of the process of semantic shift away from the basic iconic deixis sense. The proposed paths to polysemy based on the available meanings follow the diagram set out

in Figure 4, below. Recall that this is a progression derived from the analysis of the meanings present in the data, and is not intended to represent a chronological change. In the following section, I will test whether this meaning change is chronologically evident in the data.

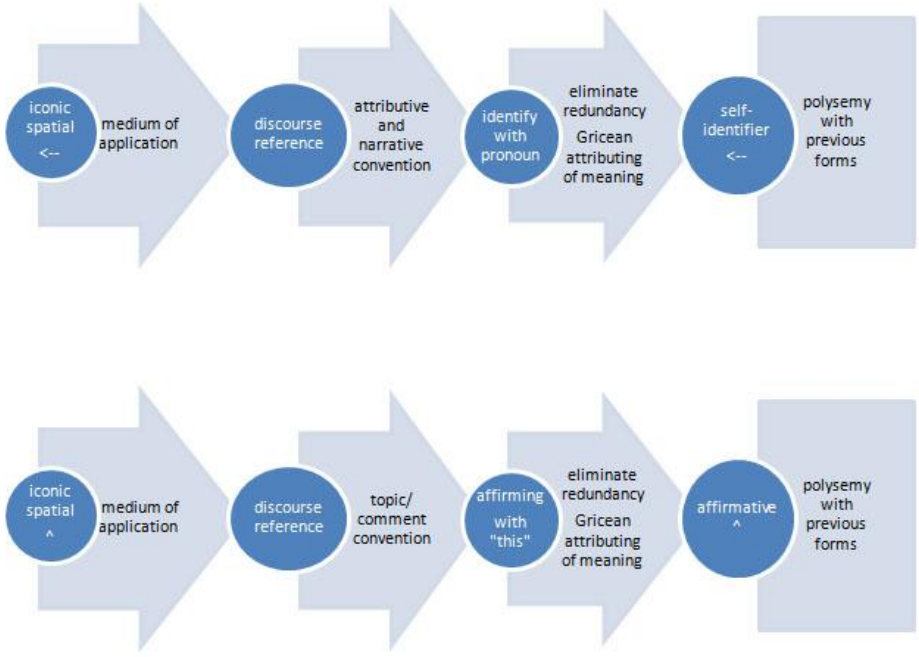

Figure 4: Proposed progression of meaning change for <-- and ^. The circles indicate the different meanings that can be taken by the forms, while the arrows indicate proposed change processes which gave rise to the meanings.

Furthermore, it is a semantic shift consistent with observations made in spoken language [1, 18] – namely, that a linguistic item undergoing semantic shift changes from externally described situations (pointing to something in the discourse) to internal or evaluative meanings. This is particularly clear in the case of ^, which has shifted to the point of becoming a marker of affirmation of a previous statement. Furthermore, we see stronger epistemic meanings arising later than weak ones [1], as evidence by the humor in example (18).

4. **The Change**

Having described the variation in the meaning of ^ and <--, the next step is attempting to discern the reason or impetus for the change. ^ and <-- are an interesting case because the meaning variants appear to be in stable free variation, with members of the population having access to all available meanings.

It is my initial hypothesis that the meaning variants of ^ and <-- evolved over time. The data from my ethnography span two years continuously, with extra data from a third year. Three years is a reasonable length of time for language change in an online community (see Baron's work on Facebook [8]). From 2007-2010, I learned the multiple meanings of the forms as a participant in the community, and thus it was my experience that these forms were introduced to me as they evolved in the community.

To test this hypothesis about meaning change and evolution, I extracted all forms of ^ and <-- from my three-year corpus of chat data. To do this, I used EGREP to isolate individual lines and extract them to a separate text file, including two lines before and after the line containing the form in question. The text files were separated into years, and each line contained a time and date stamp.

I coded each token of ^ or <-- in a Microsoft Excel spreadsheet for the following characteristics: year, speaker, whether the speaker was part of the network of players that I studied, speech situation, free or bound, function, and intended meaning. The "Function" column was coded according to broad categories based on the meanings described in the above sections. For ^, the functions were *deictic, affirmation, repair,* and *other*. I did not differentiate between "strong affirmation" and "weak affirmation" because in many instances the strength of investment was unclear. For <--, the functions were *deictic, self-identifier, emphasis, sequence,* and *other*. I coded "intended meaning" based on my interpretation of the utterance as a native user of the system.

To capture the progression of time in the data, the year and month were coded from 1-36, with 1 being the earliest month with attested forms and 36 being the latest month of data collection. To assist with analysis, some categories were coded together to provide statistical robustness: the speech situations were condensed into either social or task-oriented events, and the function, intended meaning, and free/bound categories were

collapsed so that the analysis could be done on the free-standing versions of the most semantically distant forms (that is, the free-standing self-identifier <-- and the free-standing affirmative ^) compared to all other uses. The reason for this was that the data were sparse; not enough tokens of all of the forms exist to allow for a reliable analysis of their use over time. Collapsing the forms into two categories (the free-standing non-iconic meanings versus the deictic iconic meanings) allowed for an informative analysis to be performed on the data. With more data on these forms, an analysis could be performed on each individual meaning to discern their evolution over time. For the purposes of this work, I limit my analysis to the rise of the free-standing non-iconic meanings.

The data were analyzed using a generalized linear mixed model, specifically the GLIMMIX procedure in the statistical analysis program SAS. GLIMMIX was used because it allows for random effects in logistic regression, which was particularly useful for the data for this project. The data were analyzed to determine patterns in the use of the different meanings to investigate whether a social- or linguistic-based pattern could be found in the different uses of ^ and <--. I will first describe my results for ^, then for <--, in the following sections.

4.1 ^

Table 1 shows the breakdown of the total use of the functions of ^ by year and month. Data exist continuously from June of 2007 (2007/6) until June of 2009 (2009/6), and then again in January of 2010 (2010/1). I have only included months during which a use of ^ was documented, which is why not all months appear in the table.

At first glance, the data in the table seem to confirm my initial hypothesis that the use of ^ as affirmation increased over time. The greatest number of tokens of affirmative ^ comes from the year 2009, in which there were only six months of data. However, this year also had the largest number of ^ tokens overall, which is interesting and may affect the significance of the rise in counts of agreement ^. For this reason, statistical analysis is beneficial.

Year, Month	Affirmation	Deictic	Repair	Other	Grand Total
2007	**1**	**1**	**3**	**1**	**6**
6		1			1
9	1		2		3
10				1	1
12			1		1
2008	**19**	**4**	**25**		**48**
5			1		1
6	3	2	2		7
7	1	1	7		9
8	1	1	3		5
9	3		11		14
10	4		1		5
12	7				7
2009	**169**	**91**	**36**	**1**	**297**
1	8	5	5		18
2	35	15	10	1	61
3	17	11	6		34
4	44	36	7		87
5	65	24	6		95
6			2		2
2010	**11**	**3**	**5**		**19**
1	11	3	5		19
Grand Total	**200**	**99**	**69**	**2**	**370**

Table 1: Breakdown of the use of ^ by year and month.

SAS was used to analyze the pattern of usage of ^. I looked at the function of ^ (whether it was free-standing affirmation or any other function) with Time, Speech Situation, and Part of Network as possible predictors. Speaker was included as a random variable. The results of the analysis show that Speech Situation and Part of Network are not significant predictors (p=0.3639, chi-square/df 0.84 and p=0.1263, chi-square/df 0.84 respectively); however, Time was significant (p=0.0037, chi-square/df 0.84) with the usage of ^ as a stand-alone

affirmation increasing over time. The chi-square/df value being close to 1 indicates that the model was a good fit for the data.

This result confirms my hypothesis that the use of affirmative ^ increased over time. Unfortunately, the data were too sparse to compare the other uses of ^; however, knowing that the use of affirmative ^ increases in the most recent data, one portion of my proposed track of semantic shift is confirmed. With this result in mind, I present my analysis of <--.

4.2 <--

The data for <-- parallel ^ in functions. Table 2 shows counts of the different functions of <--, broken down by year and month. Again, only months with tokens of <-- are represented. Many more months are represented in Table 2 than in Table 1, and there are many more tokens of <-- than ^; this shows evidence that <-- existed in the community before ^, as it was entrenched and used more often earlier than ^. The face that <-- has many more possible meanings than ^ may be related to its status as an "older" lexical item.

With these data, I am particularly interested in the use of <-- as a free-standing lexical item carrying the meaning of self-identification, or a "hand-raise" as was described by members of the community. An example of this meaning was shown in example (7), which I have reproduced below. This form was also used in loot distribution situations (example (8)), when players would indicate that they were interested in obtaining a particular in-game item.

(7)
```
1      4/25 20:12:19.134  [Guild] Parnopaeus: who wants to come?!
2      4/25 20:12:32.061  [Guild] Theon: <-
```

The self-identifier meaning remains close to the deictic sense of <-- while being part of a meaning shift. It is in these free-standing instances of the arrow that the meaning shift is most evident. I anticipated that this form

would become more prevalent over time; to test this, I ran the data using the same model as ^, with my variable being the *intended meaning* of a self-identifier versus all other intended meanings.

Year/Month	Deictic	Emphasis	Iconic	Repair	Self-reference	Sequence	Grand Total
2007	**9**			**1**	**91**	**4**	**105**
6	2						2
7					1	1	2
8					6		6
9	3				22	1	26
10	2				12	1	15
11	2				25		27
12				1	25	1	27
2008	**10**	**2**		**1**	**180**	**7**	**200**
1					6		6
5					2		2
6					23	1	24
7	2	1		1	21	2	27
8		1			35	1	37
9	6				51	2	59
10	1				7		8
11					12	1	13
12	1				23		24
2009	**14**	**11**	**1**		**789**	**11**	**826**
1	1				58		59
2	1	8			193	6	208
3	5	1			232	2	240
4	6	2	1		171	2	182
5	1				134	1	136
6					1		1
2010					**10**		**10**
1					10		10
Grand Total	**33**	**13**	**1**	**2**	**1070**	**22**	**1141**

Table 2: Breakdown of the use of <-- by year and month.

Similar to the results for ^, time was again significant (p=0.0028, chi-square/df 0.69) while Speech Situation and Part of Network were not significant (p=0.2361, chi-square/df 0.69 and p=0.1045, chi-square/df 0.70

respectively). The chi-square/df was not as close to 1 as that for affirmative ^ (0.84), indicating that the variation in the data for <-- was more complicated than that for ^, and that a change over time cannot account for all of the variability. However, this is what one would expect, given the situation that <-- has existed in the community for much longer and is much more widely used by players.

The use of the self-identifier arrow patterns similarly to the use of affirmative ^. In both cases, the usage of the free-standing version of the form increases over time, indicating that this form is being picked up by more speakers in the community and used more widely. As with the data for affirmative ^, the results for <-- support my path of semantic shift, that being that the form evolved over time into the standalone self-identifier.

5. Discussion

The proposed track of semantic shift for both ^ and <-- was from a deictic, or a pointing device, to a standalone word carrying meaning in discourse. The data collected support this hypothesis, showing that the most non-deictic meanings increase in usage as time progresses.

Another observation from the data collected is that as time progresses, the usage of all forms of both ^ and <-- increases. That is, in the final months of the collected data, all meanings of ^ and <-- are present and being productively used by members of the community. This leads to the assertion that these two forms exist in polysemy, allowing for creative and innovative uses of each (leading to either humorous utterances or infelicitous ones). This is a property of deictic forms in general, as discussed in previous sections; in fact, it is that creative component that brought about the semantically distant affirmative ^ and self-identifier <-- in the first place.

Users of online language are notoriously creative about linguistic forms, creating new lexical items and meanings for words depending on the medium of communication and the community of practice. In this

particular community, it is evident that the casual nature of online language use and the creativity of its speakers has brought forth semantic shift for deictics.

6. Conclusion

I have shown the polysemy associated with two iconic lexical items, ^ and <--, in an online community. The meanings have shifted from iconic deixis into a field of meaning variation incorporating creative, humorous, and innovative reanalysis of the original "pointing" sense of the iconicity. Furthermore, I have shown how the most distant meanings (that is, the most non-iconic) increase in usage over time, supporting the proposed path of semantic shift.

Although the exact history of the evolution of these forms is still uncertain, this study shows how semantic shift may happen in online communities, and that the patterns observed for meaning change in deictic items follows a similar process as deixis in spoken language [17]. Meaning variation is not a new phenomenon, nor is semantic shift. What is new is that both of these language change phenomena are happening in a written linguistic medium, the forms are symbols and not conventional orthographic words, and the shift of meaning is happening quickly. The arrow-shaped forms analyzed in this study are an example of how iconicity can function in conjunction with the medium, and how symbols can be subject to the same process as words. The fact that these lexical items – made of symbols and not of sounds – exist at all is a manifestation of the linguistic possibilities of the online medium which relies on the visual availability of information. The language used in textual chat in *World of Warcraft* is rapidly produced and not necessarily "standard", which is a usual feature of the chat mode of interaction [8]. Because of this, many researchers have equated the language used in chat to a typed version of spoken language; however, there are no spoken equivalents of ^ and <--, unless one counts finger-pointing gestures. Could ^ as an affirmation function similarly to a nod in spoken language? This is certainly an intriguing possibility. The point remains that ^ and <-- are embodiments of the ephemeral and

textual nature of chat – they point to their referents as iconic symbols – but they have undergone semantic shift processes similar to those observed by researchers of spoken languages.

Notes

[1] There is a right-facing arrow (-->) as well, but its uses are different from <-- and more limited. I will not address --> in this paper.

[2] "Fail", in *World of Warcraft* culture and in many other online communities, is frequently used as an adjective instead of a verb. For example, "This movie is fail" is roughly equivalent to "This movie is terrible". It may also be used as a noun, e.g. `5/15 23:29:10.606 [Raid] Andesa: Sorry for the fail...`

[3] A somewhat similar process is used for personal pronouns in Finnish and Saami [23].

[4] One similar process is the option in many command line programs to cycle back through previously typed lines using the up arrow key. Although both involve things that look like up arrows, this command-line cycling process seems unrelated to the use of ^ due to the spatial distance of the two keys and the fact that many players did not even know of the existence of this option.

References

[1] E. Traugott, On the rise of epistemic meanings in English: An example of subjectification in semantic change, Language 65(1) (1989) 31-55.

[2] K. Ferrara, H. Brunner, G. Whittemore, Interactive written discourse as an emergent register. *Written Communication 8*(1) (1991) 8-34.

[3] R.A. Al-Sa'Di, J.M. Hamdan, Synchronous online chat English: Computer-mediated communication. *World Englishes 24*(4) (2005) 409-424.

[4] D. Crystal, Language and the Internet, Cambridge University Press, Cambridge, 2006.

[5] R. Bury, Cyberspaces of their own: Female fandoms online, Morehouse Publishing, Harrisburg, 2005.

[6] L. Cherny, Conversation and community: Chat in a virtual world, Center for the Study of Language and Information, Stanford, 1999.

[7] T. L. Taylor, Play between worlds: Exploring online game culture. The MIT Press, Cambridge, 2006.

[8] N. Baron, Always on: Language in an online and mobile world. Oxford University Press, New York, 2009.

[9] Blizzard Entertainment, World of Warcraft, 2004.

[10] C. Peirce, *Collected writings,* Vol. 3, 1885.

[11] R. Jakobson, Selected writings. Vol. 2: Word and language, Mouton, The Hague, 1957.

[12] M. Silverstein, Cultural prerequisites to grammatical analysis, in: Saville-Troike (Ed.), Georgetown University Round Table on Languages and Linguistics, Georgetown University Press, Washington, D.C., 1976.

[13] K. Jungbluth, Two- and three-dimensional deictic systems between speech and writing – Evidence from the use of demonstratives in romance languages, in: E. Andre, M. Poesio, and H. Rieser (Eds.)Proceedings of the Workshop on Deixis, Demonstration, and Deictic Belief at ESSLLI XI, European Summer School for Language, Logic, and Information, Utrecht, 1999, pp. 13-19.

[14] J. Lyons, Semantics: Volumes I and II, Cambridge University Press, Cambridge, 1977.

[15] S. Ullmann, Semantics: An introduction to the science of meaning. Barnes and Noble, Inc, New York, 1962.

[16] G. A. Kennedy, A study of the particle yen, Journal of the American Oriental Society, 60 (1940) 1-42.

[17] R. Laury, Demonstratives in interaction: The emergence of a definite article, John Benjamins Publishing Company, Philadelphia, 1997.

[18] P. Hopper, E. Traugott, Grammaticalization, Cambridge University Press, Cambridge, 2003.

[20] M. Bomersbach, Actions that embody virtual space, Unpublished master's thesis, University of Pittsburgh: Pittsburgh, PA, 2009.

[21] P. Grice, Logic and conversation: Studies in the way of words, Harvard University Press, Cambridge, 1989.

[22] L. Collister, *-repair in online discourse, Journal of Pragmatics, 43(3) (2010).

[23] L. Laitinen, From logophoric pronoun to discourse particle: A case study of Finnish and Saami, in: Eischer and Diewald (Eds.)New Reflections on Grammaticalizations, John Benjamins Publishing Company, Philadelphia, 2002, pp. 341-358.

[24] M. E. Armstrong, Pragmatic restrictions on affirmative response choice in Brazilian Portuguese, in: J. Bruhn de Garavito, E. Valenzuela (Eds.), Selected Proceedings of the 10th Hispanic Linguistics Symposium, Cascadilla Proceedings Project, Somerville, MA, 2008, pp. 288-299.

[25] J. Holmes, Expressing doubt and certainty in English, RELC Journal, 13(2) (1982) 9-28.

[26] J. Kurylowicz, The role of deictic elements in linguistic evolution, Semiotica, 5(2) (1972) 174-183.

[27] T. Givón, Topic continuity in discourse: A quantitative cross-language study, John Benjamins Publishing Company, Philadelphia, 1983.