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TIME WILL TELL: AMBIGUOUS NON-RESPONSES ON INTERNET RELAY CHAT

E. Sean Rintel
University at Albany, State University of New York

Jeffery Pittam
The University of Queensland

Joan Mulholland
The University of Queensland

Abstract. The design of Internet Relay Chat (IRC) affords for, and itself produces, non-response situations that are not possible in FTF or telephone interaction. These system-occasioned non-responses produce almost isomorphic stimuli to participant non-responses. Situations thus arise in which non-responses are interpersonally accountable despite agentive ambiguity. This study explores four intersections of participant-action and system-occasioned non-responses. An extension to Pomerantz's (1984b) 'pursuing a response' problems/solutions is proposed. The impact of IRC's design on its popularity is discussed in contrast to more recent chat systems. Suggestions are made for active and passive presence and non-response accounting features in future chat systems.

When speakers perform actions that solicit responses, non-responses are meaningful to both participants (Pomerantz, 1984b). Internet Relay Chat (IRC) is a computer-mediated communication (CMC) system with a sequential interaction environment similar to FTF or telephone interaction. However, IRC's design affords for, and itself produces, non-response situations that are not possible in FTF or telephone interaction. These system-occasioned non-responses produce almost isomorphic stimuli to participant non-responses. Situations thus arise in which non-responses are interpersonally accountable despite agentive ambiguity. This study explores four intersections of participant-action and system-occasioned non-responses: those arising from opening turn-coordination, presenting or determining user identity; transmission-reception; and IRC commands. After the findings, we briefly compare and contrast IRC to newer chat systems, arguing that differences in accounting for non-responses may be why newer systems are more popular than IRC. We conclude by suggesting that future chat systems include methods for displaying presence and accounting for non-responses.

Literature Review

Non-Responses as Interactionally and Interpersonally Meaningful

Scollon and Scollon (1981) contend that for "any form of communication it is important to understand what is a reasonable amount of time for people to take to respond" (quoted in Jaworski, 1993, p.10). Noticeable non-responses (Sacks, 2000, vol.1, p.101), often discussed using the super-ordinate category referent 'silences,' have intrigued many researchers (Basso, 1970; Bruneau, 1973; Jenson, 1975; Jaworski, 1993; Tannen & Saville-Troike, 1985). In this study, non-responses are considered in the manner of Conversation Analysis (CA): hesitations or delays in response to actions that solicit responses in a sequential interaction environment Pomerantz (1984b). Sacks was fascinated by the sequential effects of non-response, finding diverse instances such as "'being silent' while another talks or gets ready to talk" (2000, vol.1, p.672), using the 'Uh, pause, sentence' form as a way to "seize the floor" (2000, vol.2, p. 496), "the silence of the one who should speak now-given that somebody else has finished-but who hasn't started speaking" (2000, vol.1, p. 631), and that pauses in spelling and numbering were important because "you can do them wrong" (2000, vol.1, p. 784). This last point indicates that the sequential importance of non-responses carries with it a "moral

or sanctionable" nature (Lee, 1987 p. 33). In group therapy, Sacks found non-responses to be dangerous, monitored for, and rapidly filled (2000, vol.1, p.101). Discussing lying, Sacks contended that "apparently the notion is if they just say something right out, it's not expectably a lie; if there's a pause then it may be a lie" (2000, vol.1, p.772).

Non-responses are perceivable as anything from awkward (McLaughlin & Cody, 1982) to ostracizing (Williams, 1997). Laver (1975, 1981) has argued that both non-replies to greetings and leaving without saying goodbye (suddenly or otherwise) are highly face-threatening acts because of their possible indication of refusal to relate. Pomerantz has found that in the production of second assessments where agreement is preferred, immediate response often indicate agreement (of some kind). Delays such as non-responses, then, are often understood as indicating disagreement (1984a p.70-71). Elaborating on this point,' Pomerantz argues that "if a recipient does not give a coherent response, the speaker routinely sees the recipient's behavior as manifesting some problem and deals with it" (1984b, p.152). So when responses are not forthcoming they are pursued (Pomerantz, 1984b). It is critical, though, that participants can try to make sense of non-responses, and hence pursue responses, because non-responses have clear human agency - the recipients from whom the action was solicited. As we will discuss, this is not always the case in IRC interactions.

Scollon (1985) argues that non-responses should not always be equated with malfunction. Indeed, although CA has found non-responses as disrupting preferences for "contiguity" and "agreement" (Lee, 1987, p. 58, 59), CA does not equate silence with deviance (Lee, 1987 p. 46). Researchers in related discursive research traditions contend that non-responses may be polite ways of avoiding face-threat (Brown & Levinson, 1987; Sperber & Wilson, 1995). Depending on the context, non-responses can either violate or meet Grice's (1989) maxims of quantity and quality. For example, they may efficiently indicate a desire to end, or the actual end of, an interaction (Laver, 1981). Whether arguing for positive and negative representations of non-responses, there is general agreement that they are ambiguous stimuli that require significant work by participants to render understandable (Jaworski, 1993; Jenson, 1975; DeVito, 1989).

We note, finally, that different cultures attach different meanings to non-responses (Basso, 1970; Lebra, 1987; Tannen & Saville-Troike, 1985). As the data for this study come from English-speaking IRC channels (although we do not know the ethnicity of the participants), we will limit our argument to that perspective. On the other hand, since IRC's design allows for an intersection between both participant-action and system-occasioned non-responses, all culture-specific meaning-making will be affected. The various cultural ramifications are a matter of future empirical question.

Non-Responses, CMC, and IRC

There is little detailed research on non-responses in CMC systems in general or IRC in particular, but building on early research into social presence (Short, Williams & Christie, 1976) and media richness (Daft & Lengel, 1984), the effects of restricted vocal and visual connection cues have long formed parts of larger arguments about the difficulty of interpersonal interactions in CMC systems. The lack of cues has been argued to increase ambiguity and anonymity, both of which might lead to non-response (Baron, 1984; Baym, 2000; Rafaeli & Sudweeks, 1997; Rice & Love, 1987; Sproull & Kiesler, 1991; Walther, Anderson, & Park, 1994).

We will touch on the limited research on non-responses in IRC interactions here and cover the details when necessary in the findings. There are four important non-response situations on IRC. First, IRC's real-time quasi-synchronous transmission and reception of messages makes it feel similar to FTF or telephone interaction. Nevertheless, as Marvin (1995) explains, on IRC there is no time during which utterances are 'being communicated,' only a wait during a time of 'no utterance' followed by 'utterance.' The similarity of feel to FTF and telephone interaction leads to expectations of rapid responses, so long waits can lead receivers to question the meaning of the non-response. Second, as an unregulated, public environment in which all interaction appears as a more or less homogenous scroll of typography,

relevance and response requirements on IRC are both ambiguous and open to participant-action and system-occasioned disruption (Herring, 1999; Rintel, Mulholland & Pittam, 2001; Werry, 1996). Third, because IRC uses the Internet's packet switching transmission-reception system, there is the potential for unwanted system-created delay, called "lag" (Marvin, 1995; Rintel & Pittam 1997). Finally, fourth, IRC affords users commands that for controlling the interaction environment more than FTF or telephone interaction, resulting in ways of deliberately producing, and accounting for, non-responses (Reid, 1991; Rintel & Pittam, 1997). The stimuli for all of these non-responses are isomorphic, so while non-responses may be system-occasioned or result from participant-action, they ambiguously intersect.

To summarize, research on non-responses in FTF and telephone interaction has shown them to be sequentially and morally meaningful phenomena. Previous CMC research has indicated that mediation impacts upon meaning production, and previous IRC research has indicated that IRC has specific non-response effects. Given that so much is sequentially and interpersonally riding on non-responses in IRC interactions, this study explores intersections of participant-action and system-occasioned non-responses.

Data and Methodology

The primary data for this study consisted of ten logs of IRC interactions in the public IRC channels #australia and #penpals, collected over a two week period. Both channels represented fruitful sources of interpersonal interactions, selected for their stability and high popularity but lack of agenda for talk. Both channels were primarily English speaking. #Australia was logged from 7:00 to 8:30am while #penpals was logged from 7:00 to 8:30pm (Australian Eastern Standard Time). The times were chosen to ensure large amounts of interaction. User nicks in examples have been changed while preserving most of the capitalization, punctuation, and connotations of the original. All other identifying concepts have been anonymized. Two IRC clients (ircII and mIRC) were used with no discernible difference in the quality of data recorded. Claims about IRC's design are based on participant observation (researcher observations derived from use of the medium), IRC's protocol statement RFC1459 (Oikarinen & Reed, 1993), an IRC history (Oikarinen, 1993), two IRC operator guides (Brinton, 1997; Nybo, 1998), and an IRC user primer (Pioch, Rasmussen, Hoyle & Lo, 1996).

The methodology used in this study is a form of ethnomethodological sense-making (Garfinkel, 1967) through qualitative micro-level description of interaction in context. Our analysis is informed particularly by the ethnomethodological tradition of CA (Pomerantz & Fehr, 1997; Psathas, 1995; Have, 2000) and ethnography (Geertz, 1973; Lofland & Lofland, 1995). CA and ethnography have been important to IRC research, providing some of the most consistent demonstrations that IRC (and CMC in general) can be interpersonal (;Danet, Ruedenberg-Wright, & Rosenbaum-Tamari, 1998; Werry, 1996; Reid, 1991; Rodino, 1998). Further, since non-responses are typified by their ambiguity and are socially meaningful only in sequence and in context, they resist mutually-exclusive coding, making quantitative study inappropriate until more information is gained about potential categorizations.

From conversation analysis we take an interest in people's interpersonal relationships as being accomplished through interaction, with a particular interest in the sequencing problem of who talks when and what they could/should say (Heritage & Atkinson, 1984; Sacks, 2000). More time will be spent discussing how participant-action and system-occasioned non-responses intersect than demonstrating how IRC users pursue responses or otherwise methodically produce order in IRC interaction, although we will propose an extension to Pomerantz's (1984b) response pursuit problems/solutions. However, the analysis of IRC interaction alone is not sufficient to make sense of the behaviors that occur in IRC channels, and so we make use of the ethnographic methods of participant observation and secondary sources to interpret what is going on (Geertz, 1973; Lofland & Lofland, 1995). Although the analysis relies heavily on discussions of the effects of IRC's design, we argue that our account is not simple technological determinism (McLuhan, 1967; Walther, 1996). We are not arguing that knowledge of the technology predicts users' actions, but that the results of mediation are resources in users' interactional and interpersonal sense-making.

The status of the claims made in this study are exploratory and often based on conspicuous cases. Philipsen (1990, p.12 (referencing Naroll)) cautions against selecting only conspicuous data, but as he argues, such data is useful for discovering patterns. In our study, conspicuous cases of users problematizing non-responses often presented the only ways of knowing that non-responses were having an impact in interactions. Further, some of our claims are inferential rather than empirical, but we argue that the lack of detailed description of where non-responses can become meaningful to all users warrants exploration, even if the results require later amendment. In our experience the claims are reasonably representative of interactions in the type of agenda-less crowded public IRC channels logged. They may not be representative of all IRC channels, private IRC interactions, or other typographic chat systems, although given that these use the same (or similar) designs, at least some claims may overlap. So it is with these caveats that we proceed.

Findings

Four intersections of participant-action and system-occasioned non-responses stood out in the data. We have labeled these situations by describing the way the non-responses come about rather than, as Pomerantz (1984b) did for pursuing responses, the ways in which the non-responses were dealt with. The four situations are:

- Non-responses in opening turn-coordination;
- Non-responses in presenting or determining user identity;
    - Nick instability;
    - Anonymity;
- Non-responses arising from transmission-reception;

- Missing interaction events;
- Lag;
- Ignoring interaction events;

· Non-responses and accounts for non-responses afforded by IRC commands;

- Commands creating non-response conditions;
- Commands and user methods for accounting for non-responses.

Non-Responses in Opening Turn-Coordination

It can be difficult to initiate interaction in IRC. An Automated Joining Event (AJE), appears before every user's entry into IRC which has similarities (as a mechanized explicit introductory device) to the summons of a telephone ring. However, Rintel, Mulholland, and Pittam (2001) have found that the AJE provides few conditional relevance factors for determining who can initiate interaction and what they might produce. In other words, users already on the channel who see a newly-joined user's AJE have not been 'called,' so there is no reason to 'answer,' and, similarly, newly-joined users have no reason to interact with anyone in particular because mere introduction to the channel is not a directed or chosen initiation with another user.

Example 1 is the extracted entirety of one user's session from one log. While the user, TP, does receive greeting responses to some initiations, out of 20 potential openings TP manages to start only one somewhat ongoing interaction, 12 lines with YoGi (interaction 3, starting from 42). The next exchange closest to ongoing interaction is only four lines long (with Monkey, interaction 11, starting from 437). So while Example 1 is not an example of complete non-response, we would argue that the lack of so many ongoing responses beyond greetings is form of interpersonally problematic non-response.

Example 1

Events	Interaction
	30. [SERVER] TP!xx@xx.xx.xx.xx has joined this channel
1	36. [TP] hi all
2	37. [strawb] hello Tp
3	42. [Yogi] re tp
2	49. [TP] strawb hi!
3	56. [TP] yogi: nice nick!
	77. [SERVER] pete! xx@xx.xx.xx.xx has joined this channel
3	81. [Yogi] Tp_: thank you
4	88. [TP] hey Pete!
4	93. [Pete] hello
3	114. [TP] yogi: where are ya?
3	120. [Yogi] Tp: [PlaceName1]
3	143. [Yogi] Tp: ooppss, so r u...im in [PlaceName2]
3	152. [TP] yogi: me too!
3	165. [Yogi] Tp: where in this fine land r u?
3	179. [TP] yogi: I'm in [PlaceName2] to !
3	186. [Yogi] Tp: where!!!!!
3	191. [TP] yogi: [PlaceName2], where r u?
3	193. [Yogi] Tp: [PlaceName3] ([PlaceName4])
5	277. [FORCE] TP HEllO1
5	283. [TP] force: hiya! how r U?
6	285. [Lisbeth] TP hi
6	292. [TP] hi lisbeth!
5	301. [FORCE] The force is with me!
	308. [SERVER] FORCE has left this channel
	313. [SERVER] Finn! xx@xx.xx.xx.xx has joined this channel
7	315. [TP] hey finn!
8	357. [TP] hey jonny!
	359. [SERVER] styx! xx@xx.xx.xx.xx has joined this channel
	384. [SERVER] rtm! xx@xx.xx.xx.xx has joined this channel
9	390. [TP] hey rtm!
9	407. [rtm] hey TP
9	410. [TP] rtm hiya! where are ya?
10	412. [Styx] tp...!!!!

10	425. [TP] hey Styx
11	437. [TP] will somebody talk to me.....please??
12	439. [MonKey] Tp
	441. [SERVER] Finn has quit IRC xx.xx.xx.xx.xx
13	443. [TP] hi Finn
11	456. [TP] monkey: yeh?
11	458. [Monkey] Tp: I do be talking to thee
11	464. [TP] monk ey: I thou thank!
11	483. [Monkey] Thine thanks do weigh heavy upon mine unworthy shoulders....
	488. [SERVER] TP has left this channel
	1039. [SERVER] TP! xx@xx.xx.xx.xx has joined this channel
	1049. [SERVER] TP has left this channel
	1063. [SERVER] TP! xx@xx.xx.xx.xx has joined this channel
14	1065. [TP] hi!
15	1069. [lusty] yo' TP
16	1071. [Pluto] Hi TP!
17	1074. [sqrl] TP?
16	1082. [TP] hey pluto
17	1084. [TP] sqrl: you talking to me??
	1097. [SERVER] tattoo! xx@xx.xx.xx.xx has joined this channel
18	1111. [TP] hey tattoo
18	1114. [tattoo] hi tp
	1128. [SERVER] Nicko! xx@xx.xx.xx.xx has joined this channel
19	1133. [TP] yo nicko!
19	1135. [Nicko] yo there allz
	1151. [SERVER] TP has left this channel
	1423. [SERVER] TP! xx@xx.xx.xx.xx has joined this channel
20	1430. [TP] hey bill you here????
	1559. [SERVER] TP has quit IRC Ping timeout

Not all users in the data were this persistent in their opening attempts, but many users did attempt far more openings than they had interactions. TP has four strategies to overcome this problem. First, TP joins the channel four times during this session (30, 1039, 1063, 1423), which may be a strategy to achieve a better connection and thus reduce transmission-reception problems. Regardless of the actual reasons, TP stands a good chance of being greeted on each reentry by virtue of being repeatedly brought to the attention of all channel members. This strategy also legitimizes a second strategy, the use of collectively-addressed (36, 1065) as well as individually-addressed (315, 357, 425, 1430) greetings. The more greetings that one produces, the more responses one may receive, and hence the more chances there are for ongoing interaction. TP's third strategy is to take advantage of other user's AJE's as initiation opportunities (Pete (88), Finn (325), rtm (390), tattoo (1111), and Nicko (1133)), reversing her own position by greeting them. After many failures to parlay greeting exchanges into ongoing interactions, TP changes to a fourth strategy of using metalingual initiation. However, neither collectively addressed ("will somebody talk to me.....please??" (437)) nor individually addressed ("hey bill you here????"(1430) and "sqrl: you talking to me??" (1084)) metalingual initiation attempts resulted in ongoing interaction.

Example 1 is our first evidence of an ambiguous intersection of participant-action and system-occasioned non-responses that may have interpersonal ramifications. Given these persistent and varied attempts at initiation strategies, we argue that TP does not fail to initiate ongoing interaction through either lack of effort or skill. Rather, the ambiguous nature of the AJE provides few structural or social requirements for newly-joined users or existing channel members to either produce or respond to initiation attempts (Rintel, Mulholland, & Pittam, 2001). There is, however, more going on than simple ambiguity. Recognition of user presence, particularly the ability to individuate, is critical. In public channels, IRC's very nature is of a fast and dense collective interaction environment composed of quite homogenous scrolling typography. Presence is created primarily through AJE's, utterances, and each user's nick in a channel user list. However, as this is scrolling by very quickly, and looks homogenous, IRC's design could be said to have a deindividuating effect (Postmes, Spears, & Lea, 1998). Indeed, TP's 'shotgun' approach to initiation may be either a recognition of TP's own deindividuation, or, paradoxically, a deindividuation of potential interlocutors, as TP does not seem particularly intent on talking to any one individual. Greeting as many users as possible may lead to the hope that one at least may turn out to be interesting and willing to interact. TP's desperation to have ongoing interactions may be a personal psychological trait, but in the face of this much non-response both TP's use of numerous strategies and apparent distress could be seen as reasonable reactions to ambiguous behavior that is perceivable as antisocial.

Non-Responses in Presenting or Determining User Identity

Nick Instability

Problems opening IRC interactions are not limited to turn-coordination. Non-responses can ensue if users are not

Problems opening IRC interactions are not limited to turn-coordination. Non-responses can ensue if users are not respondable-to because they are not presenting a 'clear' identity through a stable nick (name). Preceding every utterance a user makes, nicks are the only constant 'embodiment' of users in a world otherwise composed of constantly scrolling text. Users are sensitive to nicks as presence-defining and impression-making devices (Reid, 1991; Bechar-Israeli, 1995; Danet, Ruedenberg-Wright, & Rosenbaum-Tamari, 1997; Rintel, Mulholland, & Pittam, 2001; Rodino, 1998).

Having a stable identity is fundamental to having an interpersonal relationship. During IRC's history, programs such as Nickserv have ensured a 'one user per nick' rule, but these proved unwieldy (Reid,1991; Oikarinen, 1993) and at the time of logging no such program operated. So, by accident or by design, for good or for ill, a user's preferred nick can be used by someone else. If users miss out on preferred nicks, the potential for non-responses through non-recognition ensue, as in the case of 'F/Figg' in Example 2.

Example 2

34. [SERVER] F!xx@xx.xx.xx.xx has joined this channel
35. [F] Hi there!
38. [harpo] The Queen philosopher herself
46. [F] how goes it?
60. [harpo] F: someone has your nick.
64. [F] tempo: yeah, I know....
68. [SERVER] F's nickname is now Figg
72. [Figg] Hi there!
74. [princess] FIG!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
77. [harpo] Figg!!!!!!!!!!
79. [gdp] hey Fig
82. [Figg] Princess!!!!!!!!!!!!!!!!!!!!!!!!
84. [Figg] Harpo!!!!!!!!!!!!!!!!!!!!!!!!!!!!
87. [Figg] GDP!!!!!!!!!!!!!!!!!!!!!!
93. [Figg] ANYONE ELSE!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

As 'F', this newly-joined user receives acknowledgment only from harpo (38, 60), but as 'Figg' (68) the user is greeted by princess (74) and gdp (79), and re-greeted by harpo (77). So, for a regular user to join without a regular nick results in an almost total denial of identity. The most interesting facet of this situation are the parallel identity confusions. harpo is able to recognize F, but princess and gdp are not or do not. Why, though, do they not infer F's identity from harpo's responses? Even more baffling is harpo's re-greeting of Figg, despite having conversed with 'Figg' as 'F' right up until the nick change. Perhaps once Figg's 'correct' nick is available and the 'Figg' greets the channel, harpo feels compelled to align with this correction. Some users enjoy changing nicks (Bechar-Israeli, 1995; Danet, Ruedenberg-Wright, & Rosenbaum-Tamari, 1997), but in our experience users quickly revert to their 'original' nick. That users value nick stability does not, however, mean that they may not value some of the freedom of anonymity that a nick provides, nor that they might not want several stable nicks. The effect and value of this ambiguity, then, is ambivalent. While many things of CA interest are going on in example 2, we are limiting our point to the fact that the IRC's nick allocation design can problematize respondable-to identities, another intersection of participant-action and system-occasioned non-responses.

Anonymity

Apart from the identity information provided by nicks, users can also delete information provided by the their /whois responses (or, in mIRC, User Central). This is a form of non-response not capturable in logs. A /whois that returns anonymized information could lead to a positive interpersonal outcome, in that it may act as a spur to a user to try interaction rather than just commands to determine identity. By the same token, it might have a negative interpersonal outcome in the forms of a hesitation to interact at all because of the worry about what the other user is trying to hide by anonymizing their /whois response.

The use of the /whois command to find information is a 'silent' act, in that only the user who performs this information-seeking knows that the action is being performed. It should provide an automated response, but no interactional response from the other user. However, other information-seeking commands like /finger notify users when they are performed. Such information-seeking can be perceived as intrusive in an otherwise anonymous environment. Not captured in these logs, although seen in other IRC channels, are angry remarks directed at users who run the /finger command.

Non-Responses Arising from Transmission-Reception

Missing Interaction Events

Missing interaction events can occur because to get over the 'no utterance' followed by 'utterance' nature of IRC (Marvin, 1995) users hold "multi-layered and multi-dimensional" interactions (Herring, 1999; Werry, 1996). Doing so, however, increases the potential for those users (and their interlocutors) to experience ambiguous non-responses, if only because it takes longer to read, understand, and reply.

IRC users can also miss interaction events through no fault of their own, and then find themselves accountable for non-responses. Novice users are particularly susceptible to becoming silent through trying to follow interaction, and, conversely, worrying about long waits between utterances. In Example 3, sammi (a user of four days) calls on Ran (a complete novice) a number of times before receiving an answer (427, 440, 503). Note again the strategy of pursuing a response through repetition and connection checking. When Ran answers, it becomes clear that the problem was with the difficulty of following fast-moving interactions (505).

Example 3

427. [sammi] ran you there
448. [sammi] RAN you there
503. [sammi] Ran: HELLO!
505. [Ran] Sammi: ya, I'm here, I was just backtracking to see what I missed, I can't keep up with this

Novices are not alone in having this problem. The logs showed three users, tungsten, Player, and Flippy, to be reasonably experienced. In Example 4, both Player and Flippy miss the fact that tungsten grants them 'chanop' status (giving them power, see the final section on Non-Responses and Accounts for Non-Responses Afforded by IRC Commands). On the logged channels there was a convention thanking those who grants chanop status, and thus to miss this event was sanctionable.

Example 4

1008. [tungsten-MODE] Has changed Player's mode to +o
1049. [tungsten] PLAYER: I DIDN'T HEAR THANK U!
1067. [Flippy] tungsten: i got deoped again...ops please:)
1082. [Tungsten] +o flippy
1106. [Tungsten] PLAYER: did u say thanks?
1113. [Player] tungsten: for what? are u the one that oped me? if so, thanks :)
1120. [Flippy] ops
1121. [Flippy] thanks tungsten

tungsten's initial sanction of Player for not thanking the granter (1049) is completely capitalized, which indicates heightened negative emotion but may also be a strategy to ensure that this event is noticed since the previous event was not. The second sanction (1106) capitalizes Player's nick, perhaps another ploy to gain attention. Beyond the sanction for the lack of thanking, tungsten's angry responses might also indicate that the non-response of Player was being perceived negatively. Flippy, who also misses the grant, repairs as if tungsten had sanctioned Flippy ("are u the one that oped me?" 1113). Flippy's two repairs (1113, 1121) demonstrate knowledge of the substantive reason for the sanction, but the "for what" and "if so" indicate Flippy's confusion over whether interaction events pertaining to Flippy had occurred.

Lag

In Example 4, Player and Flippy probably missed interaction events because of the scroll of the channel. However, users may miss interaction events due to a far greater problem: lag. Lag is an extreme slow-down of message exchange times caused by latencies in the Internet's packet-switched transmission-reception system. It last from a few seconds (which makes coherence difficult but not impossible) to a stretch of several minutes (preventing users from continuing interactions or beginning new ones). In her data, Marvin (1995) found that any lag over five seconds resulted in conversations losing coherence. Lag is highly variable over the course of each user's session, and it affects each participant differently.

Lag can have many causes (e.g. slow modems, broken client-server connections, high traffic), but whatever the cause, lag is a system-occasioned non-response that looks the same as participant-action non-response. Typically, lag becomes a discussible source of adversity. When all users are experiencing some lag, public announcements of the fact ("lag lag lag lag lag lag" and "I'm lagging again") and severity ("geez...i must be WAY lagged") of lag are common. There is no way to predict lag, and unless users are experienced, there is no clear method for detecting lag. Experienced users can use a /ping command to determine how long messages are taking to travel to another user and back, but no users have

use a /ping command to determine how long messages are taking to travel to another user and back, but no users have definitive methods of either fixing the lag (reconnection works occasionally) or accounting for sudden non-responses resulting from lag.

Example 5 tracks a single user, toni, over the course of one session in a log. Lag consistently frustrates toni's attempts

to interact. Given the individual nature of lag, it is very rare to be able to prove that user is actually experiencing lag rather than something else (such as private interactions). Example 5 is a rare instance of a very persistent user who both mentions lag consistently in the public channel and also has a semi-public conversation with a user answering in private (CopTer). Toni voices direct greeting expectations and the negativity engendered by the forced non-response of lag.

Example 5

48. [toni] hi all!
50. [IbM] hi toni
52. [tracey] Hi toni!!!!!!!!!!!!!!!!!!!!!!
184. [SERVER] toni pinged everyone in #penpals
252. [toni] i'm lagging again... hi :)
253. [SERVER] toni has left channel #penpals
299. [SERVER] toni (xx@xx.xx.xx.xx) has joined channel #penpals
301. [toni] ok...
306. [tracey] toni hello
310. [toni] hello?
314. [CopTer] re toni !!!!!!!!!!!!!!
315. [SERVER] Signoff: CopTer (Killed (xx.xx (CopTer[*.xx.xx] !=*.xx[@xx.xx.xx.xx.xx])))
334. [toni] someone please tell me how bad the lag is?
335. [SERVER] CopTer (xx@xx.xx.xx.xx) has joined channel #penpals
337. [toni] hey cop!
343. [SERVER] Signoff: CopTer (Killed (xx.xx (CopTer[*.xx.xx] !=*Xx[@xx.xx.xx.xx.xx])))
351. [timmy] toni: I can't see yoiu, your lag is terrible
352. [toni] cop:that's it? then the others must just be ignoring me! :)
355. [toni] cop:i know :((
360. [Evil] toni!!!!
363. [ACTION] Timmy would never ignore toni, my friend
364. [toni] dp:enough
366. [ACTION] Evil hugs toni!!!!
368. [toni] cop... i got pings from everyonen else at around 300 secs
373. [SERVER] CopTer (xx@xx.xx.xx.xx) has joined channel #penpals
375. [toni] cop:yeah... and notice how no one said hi to us....
378. [toni] HELLO
379. [SERVER] Signoff: CopTer (Killed (xx.xx (CopTer[*.xx.xx] !=*Xx[@xx.xx.xx.xx.xx])))
384. [toni] cop:i am thinking the same thing *grin*
385. [DUMB] hello toni!!!!!!!!!!
388. [Cdtaguy] TonI!@@@@@@@@@@@@@@
391. [Cdtaguy] toni!@@@@@@@@@@@@@@
394. [toni] if you can see this, respond in some way
395. [toni] cop:OK!
397. [toni] cop?
400. [tracey] hello toni i said hi :(
401. [Cdtaguy] toni!!!!
402. [Hider] i saw it
404. [toni] DP?
422. [DP] TONI...you are so lagged that you will not see this for 10 minutes okay?
432. [tracey] TONI WE CAN SEE IT
434. [toni] help
450. [toni] evil! Big time lag
455. [toni] geez... i must be WAY lagged
457. [toni] hem
469. [toni] hello?
472. [SERVER] toni pinged everyone in #penpals
484. [toni] heh
492. [SERVER] Signoff: toni (Error 0 occurred.)
660. [SERVER] toni (xx@xx.xx.xx.xx) has joined channel #penpals
663. [toni] *gulp*
672. [CopTer] re toni !!!!!!!!!!!!!!!!!!
673. [toni] can anyone see me now?
681. [toni] cop!!!
682. [Cdtaguy] TonIE!!!!!!!!!!!!!!!
685. [DUMB] toni: I can
687. [toni] Cdta!!!
689. [toni] thank you all

689. [toni] thank you all
691. [CopTer] toni: i can C u.... but u may be lagged–]
692. [Cdtaguy] toni!!!!!!!!!!!!!!!!!!!!!!!!!!
696. [toni] cop:i prolly am..
697. [SERVER] Mode change “+o toni” on channel #penpals by june
700. [ACTION] toni needs a normal acct. from somewhere
703. [toni] juner!!!!!
705. [CopTer] toni; not too bad though.....
714. [toni] cop:well, b4 i think it was 10 min. or something
720. [CopTer] toni: oooooh yuk :P
729. [toni] geez might still me
735. [SERVER] toni has left channel #penpals

toni starts positively (48), but becomes more perturbed as greetings are not met with responses. Like TP in Example 1, toni uses numerous connection-checks, such as "hello?" (310, 378, 469), "cop?" (397), "someone please tell me how bad the lag is?" (334), "if you can see this, respond in some way" (394), and "can anyone see me now?" (673). However, as the log demonstrates, toni was actually being greeted constantly (50, 52, 256, 306, 314, 351, 360, 366, 385, 388, 391, 400, 401, 402, 422, 432, 672, 682, 692). Lag, then, is equally problematic for channel members attempting to interact with toni. This example also demonstrates how lag can be different across interactions. Given that toni and CopTer do have an interaction, their lag must have been relatively small (as toni implies in "that's it?" 352). However, as toni suspects (352), both were experiencing longer lag in their public channel connections. To try and alleviate the lag situation, toni rejoins the channel twice (299, 660). Each time, toni's AJE reconfirms that a connection exists, but this is not enough to prove the connection reliable. After both rejoins toni produces a self-directed utterance ("OK" (301) and "*gulp*" (663)), but that one's own utterances are getting to the channel is still not a completely reliable guide to lag, as it can appear that one's own actions are being displayed quite normally while those of others are lagged. The only reliable proof that a connection is useable is interaction from another user, so toni solicits this though connection-checks (310, 344, and 673).

Evidence that toni, at least , considers non-response interpersonally negative is evident in "cop:that's it? then the others must just be ignoring me! :)" (352). Following this statement with by an emoticon, toni indicates that the proposition is not to be taken seriously but implies that 'really' being ignored would be problematic. A related indication is "cop:i am thinking the same thing *grin*" (384), which might be taken as evidence of relief that lag, rather than being ignored, is the cause of non-responses. As occurred in Example 5, users know that a lagged user is likely to be in some distress, and often send consolatory messages despite the fact that the lagged user may not see them. Examples such as DP's " TONI...you are so lagged that you will not see this for 10 minutes okay?" (422) were common when a known user was lagged. Such messages will eventually get through to their intended recipient, assuming the user stays on IRC long enough, but are probably more a balm for the responding user to diffuse their own feelings about the potential hostility of their apparent unresponsiveness.

Ignoring Interaction Events

It is too simple to argue that the system-occasioned lag or typographic scroll are solely responsible for ambiguity, and that the ambiguity is always perceived as negative. Users can deliberately ignore one another, making use of the lack of visual cues, or blaming the medium to avoid sanction. This can be done to positive, or at least not completely negative, effect. Example 6 is an unusual example of users co-constructing a virtual reality, but doing so while not responding to one another. Like example 1, this is not technically an example of complete non-response, but an example of the interpersonally critical lack of ongoing responses.

Example 6

768. [SERVER] Nectar!xx@xx.xx.xx.xx has joined this channel
772. [ACTION] Evil cries rivers.
775. [ACTION] Evil cries lakes.
778. [ACTION] Evil cries oceans.
782. [Evil] :~~~~~~~~~~~~~~~~~~~~~~~~(
793. [ACTION] Evil can’t even sing now. He can barely play his guitar.
802. [ACTION] Evil throws his guitar into the oceam of tears.
806. [ACTION] Evil just sits and cries.
807. [ACTION] Nectar retrieves Evil’s guitar
815. [ACTION] Nectar doesn’t want to see Evil cry
817. [ACTION] tech-grrl tells Nectar to give evil back his guitar before she kicks your ass
823. [ACTION] Wookie beats his head in with the guitar
825. [ACTION] Nectar didn’t take Evil’s guitar, she’s giving it back to him....
826. [ACTION] CopTer offers to buy the guitar from Nectar
856. [SERVER] tech-grrl has quit IRC brb

857. [SERVER] Nectar has left this channel

Nectar joins the channel to find Evil 'crying' (772, 775, 778, 782, 806). Evil 'discards a guitar' (802) and Nectar subsequently 'retrieves it' (807). This action and response creates a particular 'virtual reality.' Once the action of throwing "the guitar into the ocean of tears" (802) is 'entered into public record', Nectar is able to take it up and use it. Nectar only refers to Evil, not greeting or even directly addressing the passivated Evil (807, 815, 825). None of the single exchanges that made up this example lead to ongoing interactions. This is interesting considering that the virtual reality is contested. tech-grrl simply leaves after producing the single action of line 856, CopTer makes an offer (826) but never follows through, and Evil responds to no-one. In line 823, Wookie creates a parallel version of the situation that more provocative than Nectar's, beating "his head in with the guitar" (823). Despite its provocative nature and its use of a variation on the common topic, Wookie's action receives no responses. While neither Nectar's or Wookie's actions are more 'real' than the other, Nectar's does occur first. Not responding to Wookie has the added and potentially positive side effect of not ratifying Wookie's more provocative virtual reality. So, here the intersection of participant-action and system-occasioned non-response both allows for face-threatening action and, conversely, the ability for users to withdraw from face-threat.

Non-Responses and Accounts for Non-Responses Afforded by IRC Commands

Commands Creating Non-Response Conditions

Certain IRC commands have active and specific non-response effects. Commands are the ultimate intersection of participant-action and system-occasioned non-responses (they can be thought of as system-afforded non-responses). The /ignore command blocks all messages from a designated user or group of users. When /ignore is activated, the ignored user can write messages to the ignoring user, but these simply will not appear on the ignoring user's screen. There is no method of rectification except being taken off the list. Thus it is possible to filter all incoming interaction, and with little or no social sanction. Related to /ignore is the use of the /notify command to create a list of people to whose presence the user will be alerted when these people are within the same IRC network. This can be used either to avoid or find participants. Certain IRC scripts will also inform users of 'netsplits' which cause large scale breaks in transmission, and thus who is likely to be contactable.

Chanops (who control IRC channels) and the even more powerful opers (who control entire IRC servers) have access to further overt system-afforded non-response commands, such as /kick, /ban, and /kill (opers only). /kick forcibly removes a user from the channel, and /ban prevents that user's reentry /kill terminates a user's connection to an IRC server, effectively ending that user's IRC session. Chanops and opers, therefore, how the power to determine not only who they will interact with, but who everyone on the channel can interact with in the public channel area, and even all of IRC itself.

Users may be kicked for any reason chanops or opers desire. Opers tend to desire and maintain some order on the network, but chanops can work towards order or chaos, for either channels or individuals. In Example 7, Flyer /kicks fred for swearing:

Example 7

390. [Fred] Pretender... isn't he something....Pretender (song to my DAD)!!!!!!!!!!!!!!!!!!!!!!!!fucker!!!!
394. [SERVER] Flyer has kicked Fred from #Australia Bzzzt Wrong word, try again!!

Unless co-interactants are around and watching when a user is /kicked or /killed, they may not immediately be aware of the fact of the /kick or /kill. When a message is sent to a /kicked or /killed user, suddenly the co-interactant will receive a response from the system that that user is no longer on the system. Naturally, if one is not aware of why the other user left, the possibility exists that the other user is deliberately not responding. Until the /kicked or /killed user later accounts for the non-response, this is a potentially very tricky interpersonal situation.

Commands and User Methods for Accounting for Non-Responses

We end the findings section with some positive news. Some non-responses can be accounted for on IRC. The /away command produces an announcement modified to read anything after the phrase '[nick] is away', such as "Mouse is away - Brb...phone - messages will be saved." This goes one step further than simply sending acronyms such as "brb" (be right back) or "afk" (away from keyboard) to the channel which can scroll up the screen and can be lost like other utterances, as it ensures that an accounting response is directly sent to all those who try to contact the /away user. The active management of non-responses through commands on IRC, and indeed, CMC is a fascinating area for future

research. No previous interaction media have allowed such direct control of who interacts with whom, and what they can say, at the point of production. System-afforded non-responses, and their rectification, offer a rich topic for future analysis.

Discussion and Conclusions

Like non-responses in other interactional situations, IRC non-responses can be differentiated by, and are meaningful to, participants in context. This study explored four intersections of participant-action and system-occasioned non-responses: those arising from opening turn-coordination, presenting or determining user identity; transmission-reception; and IRC commands. Users must decide whether to treat non-responses as interpersonally meaningful (or not) and then take appropriate action. Users must also decide on the interpersonal effects of accounting (or not) for their own non-responses.

We propose that in many cases when users experienced ambiguous non-responses they produced actions similar to Pomerantz's "dealing with no response by clarifying an understanding problem" (1984b, p.153-156), when not understanding comes about as a result of a recipient not hearing an action. Indeed, they often tried (as TP and toni did) easier solutions first (Pomerantz, 1984b, p.156), re-connecting and re-greeting, before moving to the more interpersonally demanding meta-lingual connection checking. However, for Pomerantz clarification refers to strategies such as referent-checking. On IRC, 'clarification', such as it is, takes the form of reconnecting, re-greeting, and connection-checking, almost 'repair' strategies similar to Schegloff's "recycled turn beginnings" (1987, p.70). So, it may be argued that, in IRC (and perhaps other CMC systems), 'pursuing a response' is extended to clarifying that non-response is in fact a matter of participant-action and not system-occasioned.

This study also found some evidence for the differences between responses to non-responses of experienced and inexperienced users, although all users certainly expected responses. Future research could systematically examine the effects of experience in managing non-responses. We would expect experienced users to have a high level of understanding the unpredictability of IRC, to allow for interpretations of non-responses as a function of the medium rather than their relationships, to actively monitor for non-response problems, and to preemptively account for their own non-responses. Conversely, we would expect inexperienced users to have a low level of understanding the unpredictability of IRC, to interpret non-responses as a function their relationships rather than the medium, to not actively monitor non-response problems, and to not preemptively account for their own non-responses.

To argue that IRC introduces ambiguities which problematize interpersonal interaction is to return to some of the earliest theories about CMC as potentially anti-social. against which many IRC researchers have argued (as mentioned in the literature review). This theory is also somewhat contrary to usage figures which show IRC to be quite popular. IRC user numbers have grown steadily since IRC's 1991 release, to a point where it probably has a quarter to half a million (non-concurrent) users in public networks, and more in private networks (Charalabidis, 2001). Despite the problems of ambiguous non-responses, perhaps users have an ambiguity threshold, or perhaps there are other features

that could be equally or more positively evaluated than those that are negatively evaluated. For example, it may be worth the inconvenience of unstable nicks to be able to play with them. It may be worth the ambiguity of not necessarily knowing who one can talk to or from whom to expect a response if there is greater freedom to talk to whomever one wishes. It may also be worth dealing with a system that leads to occasional lapses in the understanding of non-response if the system affords the ability to ignoring uninteresting participants, or the ability to edit responses. Or perhaps, as an over-riding concern, ambiguity is the flip-side of exclusivity. Some users may be willing to deal with ambiguity on the basis that it may limit entry to those willing to learn how to play by the rules. Such in-grouping may be at least as fundamental a premise of human interaction as is the desire for clarity.

On the other hand, if we consider the bigger picture of Internet chat systems, comparing IRC to newer systems such as ICQ, Microsoft NetMeeting, and various instant messaging services, IRC looks decidedly less popular. The Internet began to grow enormously just as IRC was released. Perhaps IRC grew along with it because it was, for a long time, unique. However, it has never had the usage levels of the proprietary AOL chat rooms (numbered in the millions) which preceded it and which have a more stable nick system (Swisher, 1998). Similarly, ICQ (acquired by AOL in 1998) has grown much faster than IRC, claiming to have garnered 100 million users in five years (DeCoursy, 2001). ICQ has stable nicks, is premised on dyadic interaction with clear beginnings (or invited groups), and includes the ability to tell if a potential interlocutor is online (always a gamble on IRC). Microsoft Instant Messenger and Trillian (which allows connection with Microsoft IM, Yahoo IM, AOL, ICQ, and IRC) include not only the ability to tell whether interlocutors are still online, but also a feature that tells users when each is writing a message. This feature partially redresses the temporal problem of the 'no-utterance'-'utterance' gap that leads to so many 'are they still there?' issues. Given these considerations, IRC has not increased popularity at fast as it might have done.

CMC research is in the special position of evolving at the same time as the media under investigation. With

increasingly detailed user-focused knowledge of interactions in CMC systems, researchers can help CMC designers shape future systems. The design message from this study is that users crave proof of connection to one another, and ways of being alerted to, and accounting for, non-responses. Future chat system designs should include more passive and active presence demonstration and non-response accounting systems. Passive non-response accounting systems would include automatic backchannel indicators such as the 'X is typing a message' notification, or more understandable implementations of constant notifications such as the '/autoping' feature available in some IRC scripts (which shows how long each message is taking to get to and from one's interlocutor). Active non-response accounting systems would include command-driven connection accounting systems along the lines of the /away command in IRC, or the built in 'user status' settings in the various instant messaging systems. Of course, such presence demonstration and non-response accounting systems are replacements for those lost in the switch from FTF (and even telephone) interaction, and it could be argued that as video-audio-conferencing systems improve, they will replace what has been lost in the more primitive typographic systems. However, any mediation is likely to have sequential ramifications not envisaged by its designers, and only visible through the naturalistic study of those systems in use.

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