

Conversation analysis and online interaction

Introduction

At the same time as Harvey Sacks was developing conversation analysis (CA), at the same institution a young graduate student attempted to type the word “login” into a computer; this message would then be sent to another computer in a different lab. Unfortunately the system crashed after the letters ‘L’ and ‘O’ were sent, and so the first word to be sent via the internet (or at least the precursor to it) was ‘LO’ or perhaps, if we want to read it as such, ‘hello’. The fact that the first message sent via the ‘internet’ was, somewhat accidentally, a standard greeting is a foreshadowing of the fact that the internet has become a predominantly interactional medium. Online communication has grown exponentially since that first message. There are currently an estimated 269 billion e-mails, 55 billion Whatsapp messages, over 9.5 billion Instagram photos and videos, and around 500 million tweets sent per day. Online interaction is a worldwide phenomenon, with users of Chinese social media site, Weibo, sending over 100 million messages each day and about 38 billion messages sent every day on WeChat, the Chinese instant messaging service. As conversation analysts are interested in interaction as the primordial site of sociality, the internet is an enormous and ever-growing site of interaction, and as such should be a clear focus for exploring social life.

This review provides an overview of what we already know from studies of CA and online interaction. It will argue that going forward there should be more impetus to explore this area of interaction, not only in its own right but also for what it tells us about human interaction more generally. This paper will show how CA can offer real insight into the organization of online interaction, particularly in relation to the potential affordances and constraints of the interaction.

The history of CA and online interaction

CA and ethnomethodology (EM) have a long history of interest in the role of technology in interaction (e.g., Suchman, 1987; Frohlich, Drew & Monk, 1994). Indeed, both Schegloff and Sacks’ initial research in CA on telephone calls was an analysis of technologically-mediated interaction. The shift towards the analysis of online written communication occurred in the late 1990s and early 2000s. Online written interaction can be seen as the quintessential form of ‘naturally-occurring data’, as it is “considerably less mediated, more ‘natural’ than recorded and transcribed conversations” (Reed & Ashmore, 2000, para. 17). In other words, analysing online interaction allows for the analysis of interactions which have been captured with no intervention from the researcher (Meredith & Potter, 2014).

One of the earliest applications of CA to online interaction was Cherny's (1999) research on multi-user dimensions (MUDs). MUDs are the earliest form of online game or world and either had 'chat' as their primary aim, or they could be task-oriented, with participants able to make use of objects in the room during their interactions. Cherny focused on aspects such as sequence organisation and turn-taking, as well as taking a more ethnographic approach to the world in general. Subsequent research has focused on an ever-expanding number of online games and worlds, with four broad approaches taken: an interest in the offline setting where games are played; a focus on the sequentially of video-game play, both online and offline; a more ethnomethodological approach to the technical and analytic details of playing the game; and an analysis of the talk-in-interaction that occurs within the game (see Reeves, Greiffenhagen & Laurier, 2017 for a more detailed discussion).

Studies of online interaction have tended to broadly split into those of asynchronous or quasi-synchronous interaction. In an asynchronous interaction messages are sent to a server for recipients to access whenever they are next online, such as newsgroups (Reed, 2001), e-mail (Duranti, 1986) or online forums (Stommel & Koole, 2010; Gibson, 2009). In quasi-synchronous interaction, messages are constructed separately to being sent, but participants must be online at the same time to be able to view the interaction. Research with this kind of data has focused on multi-party chat rooms (Benwell & Stokoe, 2006; Schönfeldt & Golato, 2003) and one-to-one instant messaging (Berglund, 2009; Meredith, 2017). As well as the analysis of mundane forms of online interaction, research has also focused on more institutional interactions, such as counselling (Ekberg, Shaw, Kessler, Malpass & Barnes, 2016; Stommel & te Molder, 2015) and library help services (Stommel, Paulus & Atkins, 2017). There has also been some interest in how chat systems are used in second-language acquisition, and particularly how non-native speakers (or writers) manage interaction in such settings (Negretti, 1999; Tudini, 2010).

As the use of social media has grown, and new platforms for interaction have arisen, this distinction between asynchronous and quasi-synchronous interaction has blurred. Studies of these newer types of media have often presented more challenges as the interaction is so different to what we expect from talk. Housley, Webb, Edwards, Procter and Jirotko (2017) demonstrated how it is possible to address issues around membership categorisation and sequential organisation in Twitter interactions using CA and MCA. Other platforms, such as the live streaming service Periscope (Licoppe & Morel, 2018) and the music sharing service, Soundcloud (Reed, 2017), have also been explored using CA. There has been an interest in internet-mediated spoken interaction, such as in

games (Halloran, 2009), or via Skype or FaceTime (Licoppe & Morel, 2012; Rintel, 2013). These studies focus on how participants orient to the mediated nature of the interaction in and through their talk. The aim of this review is to explore the application of CA to online written communication and so for reasons of space there will not be a detailed explication of the findings from technologically-mediated spoken interaction, although relevant findings will be highlighted.

It is important to highlight the influential underpinning of much, although not all, of the research on CA and online interaction; that is, Ian Hutchby's work (2001) on affordances. The concept of affordances suggests that any object affords particular possibilities for interaction, but what properties are relevant and how they are used only emerges through interaction between actors and those objects. The physical properties of an object, in this case a particular technological platform, may impact upon how a user interacts with that technology, but the social norms and expectations also matter. Therefore, whether an affordance exists depends entirely upon the relationship between the actor and the property. Affordances are not static features of technology, but are features that can be seen by users as having a number of potential actions associated with them. Hutchby (2001) drew on the concept of affordances when analysing online interaction using CA, arguing that features of technology can both afford and constrain the interactional potential. The notion of affordances has underpinned much of the CA analysis of online interaction (e.g., Stommel & te Molder, 2015; Meredith, 2017; Arminen, Licoppe & Spagnolli, 2016). On a practical level using the concept of affordances means that analysts examine the interaction itself first, and explore how that interaction orients to the relevant technological features of the medium (Meredith, 2017; Arminen et al., 2016).

From a time when there was limited work using CA for any form of online interaction, we have now moved to the point where there are limitless platforms and data to which CA can be applied. Paulus and colleagues (2016) found that 89 articles which used CA to analyse online interaction, with over half of those articles appearing in the years 2011-2015, which suggests an increasing use of CA for online data. There has also been a development in the methods being used to collect such data. Publicly available data, such as newsgroups and chatrooms, tended to be collected as screenshots or copies, whereas there has been a move to collecting private data, and using screen capture software (Markman, 2005; Garcia & Jacobs, 1999; Meredith, 2014), which offers researchers an insight into what happens 'behind-the-scenes' in online interaction.

CA findings on online interaction

In this section, I will review what is currently known about the organization of online interaction. For ease of organization this section is divided into some of the core organizational features of interaction: a) turn-taking; b) sequence organization; c) repair; d) openings; e) embodied conduct. Although these terms are used, I am aware that there is debate about using CA terminology for some features of online interaction, but this will be discussed in the context of the findings.

a) Turn-taking

The ways in which turns are organised in a “speech-exchange system” (Sacks, Schegloff & Jefferson, 1974, p.696), or ‘turn-taking’ is one of the core interests of CA. It is also one of the areas which is frequently discussed in studies of online interaction as showing marked differences to spoken interaction. Notwithstanding the differences between platforms, studies of online interaction have shown broad differences between turn-taking in online and spoken interaction. Firstly, participants in online interaction are not able to monitor turns-in-progress for when they might possibly be complete, rather a writer of a message must complete it and then send it in its entirety (Danby, Butler & Emmison, 2009). Once a message has been sent, there is the possibility of ‘speaker’ transition to another participant in the interaction. However, this transition cannot be coordinated between participants, because once a message is posted, it is available for any other participant in the interaction to respond to. Writers may also choose to post multiple messages in succession, effectively self-selecting to take the next turn (Panyametheekul & Herring, 2003; Tudini, 2015).

Extract 1 [Panyametheekul & Herring, 2003]

Roy: POOH, do you have a special friend yet?

Roy: Prim and I will find one for you.

Here, despite the fact that Roy has seemingly selected the next speaker by using their name (POOH) in the first turn, they then continue to take another turn before POOH answers. If a number of recipients, or even the original writer and a recipient, choose to self-select to take the next turn, there is no way for them to coordinate who has the rights to the next turn, because they cannot see what the other person is writing (Garcia & Jacobs, 1999). Although in some online platforms, such as WhatsApp and Facebook messenger it is possible to see that a co-participant is writing, there is still no way to coordinate who will complete and send their message first.

When breaking up their turns participants may be sending individual TCUs to the chat, which would effectively form a single turn. Once any turn is sent, the recipient can start to respond to those

messages individually and may treat them as individual TCUs (Tudini, 2015). On the other hand, a single posted message might comprise of multiple TCUs, and any one of those might be responded to by a recipient. However, we can question whether the concept of a TCU is relevant, as once a message is posted there is the possibility for speaker transition and it is, in effect, a complete turn (Garcia & Jacobs, 1999). What we might say is that recipients may treat a message posted in a chat as being possibly complete and thus start a response to it, and so this is treated as, effectively, the end of the turn. Recipients may also, though, recognise the multiple TCUs in a longer message and respond to each of these individually. In other words, the concept of a TCU may be more relevant for recipients than it is for writers of a message.

Garcia and Jacobs (1999) argue that simultaneous talk and overlap are not possible in online interaction. However, this depends on how these two concepts are defined. It is possible for two messages to be posted at exactly the same time, which could potentially be understood as simultaneous 'talk'. Equally, there is often an overlap in the writing of messages. However, these are not accountable as overlaps might be in spoken interaction, as two people writing or posting messages at the same time does not stop the messages from being understood. In addition, the persistence of text on-screen means that all messages are available for all participants even if there were overlaps. Therefore, there may be something akin to simultaneous talk and overlap but these are treated very differently by participants online.

It is possible for turn-taking to fail in the sense that turns go unanswered, especially in multi-party environments (Schönfeldt & Golato, 2003). However, if a turn is not responded to, there may be a pursuit of a response (Licoppe & Morel, 2018; Schönfeldt & Golato, 2003).

Extract 2 [Schönfeldt & Golato, 2003, p.266]

- 1 Nikkee: calvi: wahrscheinlich, aber jetzt zieh ich etst mal
 calvi: probably, but now move I first one
 calvi: probably, but first I am going to
- 2 um, und freu mich über meine wohnung
 And happy+reflexive about my apartment
 move and I am happy about my apartment
- 3 Nikkee: calvi: was ist los?
 calvi: what is up?
 calvi: what's going on?
- 4 Calvino: nikkee: sorry, du ziehst um? In ne eigene wohnung? Echt?
 nikkee: sorry, you move? In a own apartment? Really?
 nikkee: sorry, you are moving? Into your own apartment? Really?

In line 1, Nikkee announces that she is going to move into her own apartment. However, this news announcement does not receive any uptake from Calvino for over 100 lines. At this point, Nikkee pursues a response from Calvino, and receives a response a number of lines later, which starts with an apology.

Another practice which impacts upon turn-taking is the existence of longer gaps between turns than in spoken interaction (Cherny, 1999), with these longer gaps rarely made accountable (Antaki, Ardevol, Nunez & Vayreda, 2005). As participants cannot monitor turns-in-progress, and cannot see the turn until it is complete, it is only after the message is sent that the recipient(s) can begin writing their response (Garcia & Jacobs, 1999). Therefore, due to the separation of message construction and sending, the gap between turns will necessarily be longer than in spoken interaction. It is important to note that the accountability of the length of the gap between turns is also dependent upon the context of the interaction. If the gaps between turns in an interaction have been relatively short, it may well be deemed an accountable matter if there is suddenly a longer gap (Kalman & Rafaeli, 2011; Schönfeldt & Golato, 2003).

Despite the apparent lack of TCUs and a clear mechanism for speaker-transition, turn-taking still happens in online interaction. Turns are produced, in a sequence, by different participants; it is very rare that an online interaction is a monologue, although some individual posts may be lengthy. On Periscope the streamer may seem to be delivering a monologue, yet turns can be taken by recipients who type their comments or questions (Licoppe & Morel, 2018). The streamer will then treat the question or comment as a turn and will often repeat the question and then respond to it within their 'monologue'. In Periscope the interaction is asymmetrical, and so TRPs are not relevant as the streamer will often continue to speak and the typed messages will appear in overlap with the streamer's talk.

In summary, the concepts of TCU and TRP have to be re-evaluated in light of affordances of online interaction. TCUs could be argued to be more relevant for the recipient of a message than for the writer. Transition places exist, but these are different to spoken interaction as the turn-in-progress cannot be monitored. Speaker selection may occur, but this may be impacted by the affordances of the medium, in that it is not always successful. Participants in online interaction have found ways of constructing a 'speech-exchange system' that works with the affordances of the medium.

b) Sequence organization

The examination of sequence organization in online interaction has commonly focused on issues of coherence and disrupted turn adjacency. Disrupted turn adjacency results when the first pair part (FPP) and second pair parts (SPP) of a sequence are not adjacent, but instead are interrupted by other threads of conversation. Disrupted turn adjacency violates the notion of adjacency in interaction, meaning that turns cannot necessarily be understood as related to the one immediately prior.

Extract 3 [Meredith, 2014, p.108]

1	Isla:	back to that profile pic haha
2		(41.0)
3	Gavin:	haha
4		(8.0)
5	Isla:	how's work going?
6		(3.0)
7	Gavin:	I change profile pics like
8		boxers

9 (3.0)
10 Gavin: not working yet

In line 1, Isla mentions Gavin's profile picture, and then in line 5, issues a FPP of a question-answer adjacency pair, asking about his work. Gavin's turn in lines 7-8 is not, though, a response to the question about his work, but rather relates to Isla's comment about his profile picture. The response to line 5 appears in line 10.

Disrupted turn adjacency can occur for a number of interactional reasons. Firstly, as noted in the previous section, writers may self-select to take a next turn, or effectively 'break up' a turn, in order to take a number of turns consecutively (Benwell & Stokoe, 2006; Tudini, 2015). This can have an impact in two ways. The first is that because participants cannot monitor each other's turn, unrelated turns may be sent between a FPP and SPP.

Extract 4 [Meredith, 2017, p.45]

1 00:05 Isla: i still need to eat and shower though
2 I*: ~~shall~~ ~~shall~~ i see what the
3 oth[er -s want to do?]
4 J*: [writing]
5 00:11 Isla: shall i see what the others want to do?
6 00:00 Joe: yea you do!

This data, from Facebook chat, has been collected using screen-capture software and transcribed using a system specifically developed for this type of data (Meredith, 2015). In line 1, Isla has posted an account for why she needs some time to get ready before going over to Joe's. After posting this message, she then immediately starts to construct another message (indicated by the writing icon). However, before she finishes her message construction, Joe also starts to write a message (line 4), which is indicated by the writing icon. Both parties finish writing at about the same time, but Isla sends her message slightly before Joe. The answer to her question in line 5, then, must come after Joe's response to her first comment. Similarly, Joe's response to Isla's comment at line 1 is not adjacent to it due to Isla self-selecting to take another turn.

A second practice which leads to disrupted turn adjacency is that recipients will often choose to respond to multiple turns in the order they were posted.

Extract 5 [JM/IS5/B: 360-374]

1 00:11 Callum: im just joking with you paaaal
2 00:03 Callum: chillax
3 00:22 Callum: do you have a formspRING?
4 00:36 Isla: i know you areeee
5 00:04 Isla: you're just a joker....
6 00:05 Isla: and a what?! :-S

Callum posts three turns in lines 1, 2 and 3, with the final turn (line 3) the FPP of a question-answer adjacency pair. When Isla responds to Callum's turns, she responds in the order in which they were posted, meaning that her response to the question about the 'Formspring' ('and a what?!') occurs in line 6 and so is dislocated from the FPP. As such, it is not only that turns are broken up in quasi-synchronous interaction, but also that they are responded to as a list that leads to this disruption (Nilsen & Mäkitalo, 2010)

Some research has found that disrupted turn adjacency can lead to miscommunication (Garcia & Jacobs, 1999), but for the most part participants have found ways to maintain intersubjectivity. Werry (1996) noted that participants use addressivity, that is, they use the name of the participant to ensure it is clear who turns are addressed to.

Extract 6 [Paolillo, 2011, example 2]

[339] <ashna> hi jatt
[340] *** Signoff: puja (EOF From client)
[341] <Dave-G> kally i was only joking around
[342] <Jatt> ashna: hello?
[343] <kally> dave-g it was funny
[344] <ashna> how are u jatt
[345] <LUCKMAN> ssa all
[346] <Dave-G> kally you da woman!
[347] <Jatt> ashna: do we know eachother?. I'm ok how are you

Here there are two conversations interwoven: one between Ashna and Jatt and another between Kally and Dave. In order to maintain coherence and understanding, the parties use the name of their intended recipient in their messages. Licoppe and Morel (2018) also note that addressivity is used in Periscope interactions, when a streamer is replying to messages sent via the chat system. Similarly on Twitter, users make use of the '@' symbol to tag other users, making it clear that the message is aimed at them (Honeycutt & Herring, 2009). Participants use a number of other practices to maintain coherence online, such as lexical repetition and lexical substitution (Woerner, Yates & Orlikowski, 2007; Berglund, 2009).

In asynchronous interactions, such as in online forums or e-mail, posts may include multiple FPPs (Stommel & Koole, 2010). In formulating those posts, though, the writer can potentially relax the requirement to respond, such as through finishing the posts with statements suggesting that the post should be understood as a telling, rather than as a series of questions. In these cases, there may be no response to a FPP, but it is not necessarily treated as a noticeable absence. To manage the possibility of disrupted turn adjacency in asynchronous interaction, participants may utilise the ability to quote messages when replying to them (Gibson, 2009). A similar phenomenon is highlighted by Licoppe and Morel (2018) on Periscope, where streamers repeat what has previously been said by text chatters so it is clear what is being responded to.

Another sequential organizational feature which has been identified in online interaction is false adjacency pairs (Garcia & Jacobs, 1998). With false adjacency pairs a turn might look responsive to its prior, but actually the SPP was already being constructed when the FPP was posted.

Extract 7 [JM/IS10/F: 182-190]

1 1.29 Isla: i'll maybe see you sober then 😊

2 I*: *↪ i got pretty mse ~~se~~ on friday so m ~~m~~*

3 *not touching [the alcohol-] || ic || ↔*

4 D*: *[↪ writing ↪]*

5 0.11 Dave: *|| why would you be sober? ||*

6 I*: *↔ (.) drink for a while haha ↪*

7 0.05 Isla: i got pretty messy on friday so not

8 *touching the alcoholic drink for a while*

9 *haha*

Isla and Dave have been discussing going to their student's union one night. In line 1 Isla notes that she may be sober when they meet. She then immediately starts writing an account for why she would be sober (line 2). Dave posts a question at line 5 asking why she would be sober and five seconds later Isla posts her response. Lines 5 and 7-9 appear to be an adjacency pair, but Isla's response is actually being written before Dave posts the question.

False adjacency pairs can also appear because of how the medium presents the data. For example, on a Twitter timeline, tweets appear in the order they are posted and two tweets which appear adjacent in a timeline are unlikely to be related, even if they may appear to be. Take the following example posted by a well-known journal's Twitter feed (@Rolsi_Journal).

Figure 1: Extract from a Twitter feed



The post by Dorothy Bishop may look like it is responding to Jessica Robles, with a SPP which is fitted to the FPP. However, this is an artefact of how these tweets appeared on the Twitter timeline. Experienced Twitter users are aware that these two posts do not constitute an adjacency pair and so, as with other 'false' adjacency pairs, this does not lead to any miscommunication.

Although disrupted and, to a lesser extent, false adjacency pairs are a key focus of studies of online communication, neither of these phenomena seem to cause intractable issues for participants in the interaction. Therefore, we can question whether the notion of them being 'disrupted' or 'false' is a members' or an analyst's category. Participants have developed a number of ways to maintain coherence, across a variety of interactional contexts (Honeycutt & Herring, 2009; Licoppe & Morel, 2018; Berglund, 2009). It is perhaps an unavoidable consequence of analysts' knowledge of talk's conversational structures, that deviation from this is treated as 'disrupted' or 'false'. We should instead explore what nextness or adjacency means online, rather than focusing on its deviation from spoken interaction. Studies of coherence in online contexts show us that paired actions, in the sense of the SPP being "from the same pair type as the first utterance in the sequence is a member of"

(Schegloff & Sacks, 1973, p.296) holds a lot of strength in the organisation of interaction online. Participants can, through action and turn design, maintain coherence in what might seem to be fairly incoherent interaction. Therefore, although the requirement for adjacency is somewhat loosened, we can still refer to paired actions as being a core organizational feature of online interaction.

c) Repair

It has been found that repair occurs in online interaction, but the function and position of repair differs from spoken interaction. Schönfeldt and Golato (2003) note that there is no possibility for a transition space repair, because as noted above, there is no real transition space. Instead, participants can repair in the next opportunity space.

Extract 8 [Schönfeldt and Golato, 2003, p258]

- 2 Bebbi: Winke mal zum Ketzchen
 Wave once to the ((name))
 Wave to Ketzchen
- 3 → Bebbi: Winke mal zum Kaetzchen
 Wave once to the ((name=little cat))
 Wave to Kaetzchen

Bebbi has posted a closing turn to another poster, but has spelt the name incorrectly in line 2. Bebbi then initiates a self-repair to correct the spelling of the name in the next opportunity space. This is not a transition space repair, as there have already been intervening turns; instead this is simply the next space in the chat where this repair can occur. Schönfeldt and Golato also note there is no possibility of third turn repair occurring in online interaction. However, although they did not find this in their data, it is unclear why this kind of repair could not occur in online interaction.

Next opportunity space repairs can be either self or other initiated but are, as with spoken interaction, most commonly self-completed with other-repairs less common. Repairs in online interaction can be used to repair a misspelling or an error of some kind, although this is not their only purpose. In Extract 8, the writer repeated the entire message with the correct spelling so the repair is understood as correcting that turn. Another practice is for participants to mark their corrections using a ‘*-repair’ (Collister, 2011). This repair morpheme involves the participant using an asterisk to mark the corrected version of a previously incorrect spelling:

Extract 9 [Collister, 2011, p.919]

1 Aniko: when I run ot
2 Aniko: out*

This “distinct repair morpheme” was used for both self-repair and other-repair (see also Jepson, 2005, who found marked corrections in second language learning webchats).

While writers can repair potential trouble in the actual chat, there is also the possibility of ‘message construction repair’ (Meredith & Stokoe, 2014), which is not visible to recipients. Garcia and Jacobs (1999) first examined message construction repair briefly in their study on turn-taking and noted that participants may edit their messages-in-progress in response to something posted by another participant.

Extract 10 [Meredith, 2014, p.228]

1 1.23 Rob: STA travel fucked up their flight
2 K*: ~~what~~ (.) || tell me || ↔
3 0.10 Rob: || they paid them but STA
4 forgot to tell BA basically ||
5 K*: ↔ ~~(3.0)~~ ↔
6 0.03 Rob: so when they showed up
7 K*: ↔ [~~(3.0)~~] || me || ↔
8 R*: [~~writing~~]
9 0.03 Rob: || they couldnt board ||
10 K*: ↔ ~~(3.0)~~ ↔
11 0.04 Rob: coz they werent on the list
12 K*: ↔ ~~what tell fuuuck~~ ↔
13 0.04 Katie: fuuuck

In line 1 Rob starts to tell Katie about the trouble their friends had experienced in booking a flight. At line 2 Katie constructs the turn “what tell me”, which, if posted, would be a request for further information. However, before Katie posts her message, Rob posts another turn which continues the story and there is some indication (line 8) that Rob is continuing to write the story. As he is writing and posting new messages telling the story at lines 6, 9 and 11, Katie pauses her writing (line 5, 7

and 10), in order to allow Rob to take his turns first. When she eventually posts her message, she has repaired it from a request for information to a news receipt, which fits the sequential context.

Beisswenger (2008) also noticed a number of deletions of messages during construction and noted that deletions were in response to something posted by the interlocutor. Markman (2005) similarly suggested that the existence of repair during message construction is evidence that writers monitor the conversation, and edit their posts when responding to something posted by their co-participant. Such findings may support the notion that individuals monitor the conversation and seek to avoid misunderstandings, or potentially misaligned posts.

Repairs during message construction may, though, also be oriented to the concerns of participants in how their turns are understood, rather than just as responsive to the actions in the ongoing interaction (Meredith, 2014; Meredith & Stokoe, 2014).

Extract 11 [Meredith & Stokoe, 2014, p.194]

1	03.19	Isla:	right sorry buti'm off to bed
2		I*:	absolutely knackerd ed!
3	00.05	Isla:	absolutely knackered!
4		I*:	speak t let me know when (.)
5			when (.) let me know you training
6			tuesdA a a day?
7	00.14	Isla:	you training tuesday ?

The main interest in Extract 11 is lines 4-6, which comprise the construction of the message that subsequently appears at line 7. At line 4, Isla deletes the turn beginning “speak t” and repairs it to “let me know when”. She then deletes this and replaces it with “you training tuesday?”, which is the message her recipient sees: the repair is hidden. By repairing the beginning of her turn, Isla changes its projected action from a potential closing to a question which makes an answer relevant. Therefore, as with spoken interaction, repair can occur when there is no hearable error, mistake or fault (Schegloff et al., 1977). The notable difference here is that the recipient of these messages does not have access to the repairs, but only to the final message.

There is a question of how suitable the term ‘repair’ is for those edits which occur during message construction. There is a definite rationale for referring to repair when it is visible to all participants, and so has interactional relevance for all those in the interaction. Equally, the use of the term next

opportunity space repair, rather than third turn, transition space and so on may be a reasonable compromise for managing the issues around the position of such repairs. However, during message construction, participants are able to utilise the affordances of the medium to ensure that their repairs can occur prior to the message being sent. Participants are not dealing with troubles that *arise* in speaking, hearing or understanding talk, but instead are dealing with troubles *before* they arise in the interaction. Yet, participants seem to be concerned with similar trouble-sources in message construction repair as they are in spoken repair (Meredith & Stokoe, 2014). It may be, then, that in this case we need to consider having different terminology for repair work which is completed during message construction, such as using the term 'editing' which is a member's category for this practice.

d) Opening sequences

Some of the earliest work in online interaction focused on the structure of opening sequences in IRC. Rintell, Mulholland & Pittam (2001) found a specific structure for such openings: 1) an automatic joining event (AJE) was produced by the server to inform the members of a channel and the joining member that they had entered into the channel; 2) the newly-joined user may choose to produce Joining Initial Behaviour (JIB); that is, they produce a greeting either directed at an individual or collectively to the whole group. Conversely, an existing channel member may direct a Joining Initial Reaction (JIR) to the newly joined user; 3) a response to either a JIB or JIR may be produced, thus ratifying the interaction (Rintell, Mulholland & Pittam, 2001)

Extract 12 [Rintel et al., 2001 p.10]

AJE – [SERVER] – woody has joined this channel

JIB – [woody] – hey all

STOP - [SERVER] – woody has left this channel

Here we see the AJE produced by the server which tells all members of the channel that the user Woody has joined the channel. Woody then produces a traditional collective greeting (JIB), which does not get a response, and they then leave the channel. The AJE functions as a basic signal of a presence, but it does not mean there will be a subsequent interaction. The actual greeting chosen by users can be similar to greetings in FTF interaction (such as hello), with some users having a signature greeting, such as always posting in upper case (Rintel et al., 2001). Overall, IRC openings may be impacted by the affordances of the medium, which initiates the AJE, but users do not take this as an indication that they need to start an interaction as might be the case with a summons.

In one-to-one instant messaging programmes, an interaction must be initiated by typing a message to their intended recipient, which leads to an electronic summons being sent to inform the recipient that a message is waiting for them (Meredith, 2014). The summons itself is both technological whilst also being constructed by the chat starter. The types of messages sent fall into three types 1) a standard greeting (Hi!); 2) a personalised greeting (e.g., 'babe!'); and 3) topic-initiations (e.g., 'fish ate my feeeet!'). For some of these opening posts users follow similar rules to spoken interaction, by using a standard or personalized greeting. The use of topic-initiations as an opening post suggests that in online interaction it is not always necessary to have an opening sequence prior to reaching the 'anchor position' (Schegloff, 1986) of the interaction. This is partly due to the names of the individuals being available, and therefore an identification and recognition sequence is not necessary¹. It may also be that online, users treat each new segment of interaction as if they were re-starting a conversation after a lapse (Hoey, 2015), even if there are days between one message and the next. This may be due to the persistence of previous text on-screen, with previous messages still available to all users, so it is treated as a continuation rather than a new chat. The relationship between the participants also impacts on the opening sequence; for example in more formal environments, such as online counselling (Stommel, 2012; Stommel and te Molder, 2015), there are more commonly opening sequences which involve greetings, welcomes and occasionally a more formal salutation.

In summary, the organization of online opening sequences show how the affordances of the medium are consequential for the interaction. The use of the AJE in IRC, the lack of an identification and recognition sequence, and opening a chat with a topic initiation all orient towards the particular features of those platforms. Opening sequences may vary according to the platform, as well as to the nature of the interaction. In terms of what we know about openings in spoken interaction, these two findings should not come as a surprise. In telephone calls, the medium impacted upon how the opening sequences progressed, and sequences may be omitted depending on the context (Schegloff, 2002). In online interaction, it is clearly true that certain sequences only occur if they are made necessary based on the affordances and the context. As with previous sections, we can consider the extent to which CA terminology around opening sequences is relevant. The most practical approach

¹ In video-mediated opening sequences, there is also no spoken identification and recognition sequence, as this can be done visually (Licoppe & Morel, 2012). In fact, it may be an accountable matter for participants if the face of the caller is not visible during the opening sequence.

is to explore the actions being done in these opening sequences, and then to consider whether the term used for spoken interaction does the same thing. In other words, if the action being done is summoning in the same way as we understand it in offline interaction, then that term can be used. However, not all opening posts are summonses and in such cases the terminology used should not be stretched to fit. This may, then, require different terminology to be utilised where necessary, which clearly fits to the action being done.

e) Lack of embodied conduct

Much research, not just in CA, has noted that interlocutors in online interactions have found ways of representing embodied conduct online (e.g., Crystal, 2001). Emoticons, which are combinations of punctuation used to convey facial expressions, developed online as early as 1979 to convey the stance of the speaker (Benwell & Stokoe, 2006). These then developed into “smilies,” images that reflect these emoticons, and there are now a wide range of “emojis” that can indicate a speaker’s mood or stance towards a particular part of the interaction. From a CA perspective, emoticons are usually understood depending on the sequential and interactional context in which they are used (Markman & Oshima, 2007; Meredith 2014). For example, smilies posted at the start of a turn indicate a stance toward the previous turn, whereas a smiley posted at the end of a turn indicates a stance toward one’s own turn, providing information to a recipient on how it should be understood (Meredith, 2014).

Other practices have developed that allow for some sort of paralanguage in online interaction. Punctuation can be used to indicate the turn’s stance or tone (Crystal, 2001), such as a double question mark (??) which might indicate surprise or incredulity when asking a question. Other typographical resources, such as capital letters, may be used as a resource to indicate tone, which may be understood as shouting (Martey & Stromer-Galley, 2007), or potentially excitement (Meredith, 2014). Non-standard spelling may also be used to approximate pronunciation and prosody (Benwell & Stokoe, 2006), with additional methods used for representing laughter (e.g., hehe or hah; see Petitjean & Morel, 2017).

Another method by which the lack of visual contact has been managed in online interaction is through creating virtual bodies or avatars, which are most commonly used in online worlds and games. Players may utilize their virtual bodies to manage the interaction, such as by walking away from an interaction that they no longer wish to be involved in (Pojanapunya & Jaroenkitboworn, 2011). Avatars may also shift their gaze to indicate that they are unavailable to talk (Brown & Bell,

2004). In some cases, avatars may be treated as a participant in the interaction, and turns may even be addressed to them (Baldauf-Quillatre & Colon de Carvajal, 2015). The use of avatars may well develop further over time and become used more frequently in online interaction and in virtual reality.

A particular challenge for CA research is that online communication has become increasingly multi-modal. For example, many instant messaging and social media applications support the use of GIFs (animated messages), which allow users to display their stance to recipients of their messages (Tolins & Samerit, 2016). Tolins and Samerit (2016) argue that the use of GIFs that display others' body language and expressions can allow users ascribe this embodied conduct to themselves. This use of images to convey an action or embodied conduct can be challenging for CA researchers, and it may be that it is necessary to work with other fields, particularly those studying internet language more broadly, to address such issues.

The future of 'Digital CA'

There has been a considerable amount of research which has examined CA and online interaction and so we have a good understanding of some of the basic mechanisms of online interaction, such as turn-taking, sequence organization, repair and opening sequences. The growing use of the internet for institutional encounters, such as for counselling or for helplines, has shown the potential impact of providing an analysis of such interactions using CA. However, what we know about the organization of online interaction tends to be based on public multi-party interaction, and there has been less investigation into modern social media phenomenon, such as Twitter, Instagram, Snapchat and so on.

The study of online interaction has also provided some indication of how CA findings about the organization of spoken interaction may be more widely applicable. In the examination of online coherence and disrupted turn adjacency, it has been found that paired actions are a strong organizational feature of interaction more generally, and that participants maintain intersubjectivity through action and turn design. Similarly, through analysing opening sequences, we can see how they orient to the affordances of the medium, supporting the notion that the 'canonical opening' is due to the nature of telephone interaction. We also see that participants orient to the same trouble sources in message construction edits that speakers orient to in spoken interaction. Writers also show an orientation to the sequential implicativeness of their messages, and will edit them during

turn construction to manage what may be the expected next turn. Finally, it is possible to see that although turn-taking differs to spoken interaction, it is not inconsequential (Garcia & Jacobs, 1999). In other words, there is a turn-taking system, which is different to spoken interaction and also may differ across platforms, but equally shows how participants can adapt to many interactional contexts.

There are challenges which face CA research in this area. Firstly, there is the issue of how to incorporate the terminology and knowledge from spoken CA to online CA. As previously noted, there is debate about whether terms such as TCUs or TRPs apply to online interaction. There has also been the 'stretching' of some terminology, such as repair, to refer to a slightly different phenomenon to spoken interaction. It has been suggested that there should be a distinct method of analysis for online interaction, known as 'Digital CA' (Giles, Stommel, Paulus, Lester & Reed, 2016). Digital CA follows the same methodology as CA but aims to approach online interaction without any pre-conceived notions. As part of digital CA it is also important to consider how the technology itself is procedurally consequential for the interaction (Arminen et al., 2016). Wholesale transfer or dismissal of terms from CA should not be undertaken until the interaction itself has been examined as a first concern. It is important, though, that those analysing online interaction still engage with the broader CA literature during the analytic process, or we risk reinventing the wheel. On the other hand, it is important to not 'stretch' CA concepts to 'fit' an online action which does not really reflect the same thing.

A second challenge is the multitude of platforms which could – and should - be investigated. Much of the knowledge we have of online interaction is based on chat rooms or instant messaging, and there seems to be a lack of research which examines newer platforms (although there are notable exceptions; Licoppe & Morel, 2018; Reed, 2017). The challenge for digital CA going forward is how to analyse the multi-modality which is so often a feature of newer platforms. Multi-modality has been examined previously, such as in Skype conversations (Licoppe & Morel, 2012), where there are some similarities to the analysis of embodied conduct in face-to-face interaction. However, where gifs, memes, likes, upvotes, retweets and so on are a part of the interaction, these may pose more of a challenge to CA. It may be possible to analyse how some of these features communicate meaning or action (e.g., Tolins & Samerit, 2016), there may be aspects such as 'likes' or 'up votes' which are not easily analysable in any meaningful way using CA. It is therefore important for online CA to draw boundaries around the types of research questions it can answer, and those which are beyond the reaches of the method. In this sense, it will be important to engage with a range of other disciplines,

such as sociolinguistics and ethnography, to consider how CA can be used alongside other methods in order to develop a broader understanding of online interaction. Certainly, it is important engage with ethnomethodology in the broadest sense, as well as to work within more experimental fields. The use of eye-tracking equipment, for example, might provide us with a wealth of knowledge in terms of how people use online platforms. An engagement with proponents of 'big data' may also be necessary for exploring how to collect interactional data from online sources, as well as perhaps providing some algorithms for assisting with analysis of such data (see, for example, Housley et al., 2017).

Finally, it will be necessary to consider how to engage with people's use of technology at the same time as analysing that technology. For example, research which has focused on video games has looked at both the in-game interactions and behaviour, as well as the offline behaviour (Reeves et al., 2017). It is this kind of research that broader studies of online interaction should seek to emulate; that is, recording the context in which the media is being used, as well as the interactions online. This will clearly pose significant challenges going forward in terms of data collection, but it would allow for a greater understanding of online interaction as a site of human sociality.

Online interaction is meaningful for participants: relationships are developed and maintained (and sometimes ended) online; people share their most intimate thoughts, they discuss politics, ask for advice, contact a counsellor or a doctor, communicate with businesses and so on. The variety of different contexts in which these interactions occur offers CA key opportunities to extend our knowledge of human sociality. Firstly, analysing online interaction will allow us to develop an understanding of how the affordances of a medium impact upon interactional practices. There is a much wider ongoing debate around how technology impacts upon our lives in modern society. In using the underpinning theory of affordances, but analysing online interactions in their own right rather than as necessarily impacted by the technology, digital CA can offer a unique insight into if, and how, technology impacts upon interactional practices. Secondly, as media platforms change and develop, so the interactional practices from one platform are used, adapted and embedded in newer platforms. It may be possible to see how particular organizational features persist across platforms, such as paired actions. Others may become notably different, such as repair, and other features, such as those around turn-taking, may disappear completely. This, therefore, gives CA an opportunity which has not been possible for spoken interaction; that is, to see how interactional practices develop over time, and how participants manage to maintain intersubjectivity even when the interactional practices may be remarkably different from spoken interaction.

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