Suggestion Sequences during Route Planning

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Abstract

This paper applies a Conversation Analytic (CA) framework to examine how dyads plan a route through a novel environment using video-recordings of pairs of participants planning together with a paper map. I assess the systematic structural characteristics of the suggestion sequences used to propose and respond to route plans. The basic structure of the route suggestion sequence is presented, alongside collected examples that demonstrate the components of this structure. This is ongoing work that shows the potential of such an applied framework and poses several open questions for future analysis of verbal wayfinding planning processes.

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1 Project Context

Wayfinding represents the planning and decision-making component of navigation, and is amongst the most common, real-world domains of both individual and group-level decision making in an everyday context. Wayfinding is not a solitary process but is influenced directly or indirectly by the actions of other people, even by their mere presence. Here, I analyze the interaction of pairs of people (dyads) directly working together on a route planning task, drawn from a collection of video-recorded interactions in which dyads were instructed to plan a route that they would then take together through a novel environment.[1] In doing so, I find systematic structures in the ways in which people interact to develop their route plans. The implications of this research are important and wide-reaching: successful navigation in groups requires successful social interaction, which may be the kind of interaction that supports cohesive and flexible planning. To further our understanding of what contributes to success in dyadic navigational planning, I characterize how route plans are suggested and responded to in such a task.

For this analysis, I employ the *Conversation Analytic* (CA) approach to understanding social interaction. CA has the potential to outline the social actions that people perform when they plan routes between an origin and a destination with another person. By recording interaction as it occurs in the real world in the presence of others, this approach to data collection and analysis can lend more ecological validity to studies than traditional lab-based structured navigation studies. A key feature of the Conversation Analytic approach to data collection [3, 12] is its concern with the study of talk-in-interaction, naturally occurring

[1] These planning interactions were collected by the author as part of a larger study, which is described in full in a forthcoming paper [1].

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conversation as it unfolds within a socially-shared context. This provides a potential inroad to explaining the social processes that take place when two or more people work together to plan and execute a route. Although I use CA in this ongoing work, there are other important avenues for investigation using video-recordings of wayfinding interactions. Notably, Tenbrink [13] has developed an approach called *Cognitive Discourse Analysis* (CODA), which holds potential for future lines of inquiry. CODA appears to have important analytic and focal similarities to CA and makes explicit the insights we might gain into cognition, whereas CA is cautious about making claims about underlying psychological processes. Additionally, CODA focuses on the relationship between spatial language and cognition [14], which further support our understanding of peoples' cognitive representations of space.

Insights from prior CA research show us the structured nature of human interaction. People do not pass information between themselves as a simple information transfer process (such as early artificial intelligence models of human cognition) but do so through speech as well as other modalities, which rely on situated contexts and shared understandings for mutual comprehension. In doing so, people orient both to the actions they are producing and those they are responding to. This demonstrates the centrality of *action* in social organization. For instance, in formulating a place reference, people are sensitive to their surrounding environment and use it in conversational practice to create a local, shared understanding [9]. The work below is also inspired by the task-specific accounts by Psathas and Kozloff [7] of direction-giving activities as they take place in daily social life. The authors outlined typical elements present in the structure of giving route directions as parts of three main phases: defining the situation, information and instruction, and ending phases. The analytic framework of CA has the potential to give us ways to understand how the project of a real-world navigational route plan is constructed and maintained (see Haddington [4] as one example). People clearly orient themselves not only to the spatial task of navigational planning, but to the social task of shared understanding, made central through social actions.

Specifically, sequence organization is concerned with the structure of how conversation is shaped, with the adjacency pair as its building block. Adjacency pairs are sequences comprised of two actions by separate speakers that are adjacently placed [11, p. 59]. The second of these parts (second pair part, or SPP) is made conditionally relevant in a systematic manner by the first (first pair part, or FPP). For instance, if the first speaker asks a question, the second speaker is normatively expected to provide an answer – and if they do not, it is typically for means of expansion or it becomes treatable as accountably "missing."[2] Several basic types of adjacency pairs have been identified in the literature, including question-answer sequences, assessment and acceptance or refusal sequences, and so on. Because this structure is observable and understood by all speakers, it provides coherence to talk in interaction. Scholars have also identified that adjacency pairs are not symmetrical (as referenced in Schegloff [11]): certain responses are either preferred or dispreferred in interaction.

Following what has already been set forth in the literature, I propose there is observable systematicity in the structure of how people make and respond to suggested route ideas. I begin by presenting the simplest structure of proposing a new suggestion in a navigational planning task, then investigate commonly-observed responses to a suggestion. Finally, I briefly pose a few open questions on the organization of suggestion sequences in the context of wayfinding.

[2] If there is no readily available account for a non-answer, the answer is treated as "relevantly absent."

2 Study Protocol

The following sections apply these methods of analysis to the social interaction between dyads who participated in a behavioral study conducted by the author, described in detail in a separate paper [1]. The recordings are drawn from a larger collection of videos recorded between February and November 2018 with undergraduate participants. The study comprised two phases, a planning phase and a navigation phase, the first of which is examined here. Before the start of the study, individuals completed an online pre-study questionnaire asking them to rate their overall familiarity with the region (while not revealing the study site location), their sense-of-direction as assessed by the Santa Barbara Sense of Direction scale [5], and personality as assessed by the Big Five Inventory [2, 6].

2.1 First Phase: Planning

In the first phase, each pair of participants met in the lab, completed a short questionnaire that established that they had no prior relationship with one another or familiarity with the specific study site, and then were provided a paper map and instructions for planning a route between the marked origin and destination points displayed on the map. The specific instructions were:

> "Now, the two of you will be working together using a paper map to plan a route that you will have to walk in the next part of the study – without the map. Working with your partner and using the provided map only, please plan a pedestrian route to take between these marked origin ("O") and destination ("D") locations shown on the map [point to each on the map], minimizing as much as possible the distance and time to reach the destination. Make sure you remember your planned route, as you will *not be able to use this or any other map* when you walk through the environment in the next part of this study."

Their planning process was recorded using a small tripod-mounted video camera. After the dyad reported they were finished, the researcher asked each participant individually to come into a separate lab room to describe and draw their planned route, for later comparison.

2.2 Second Phase: Navigation

In a second phase of the study, not examined directly in this paper, participants were taken by car to the origin point within the study area and asked to navigate from the origin to the destination on foot while being video-recorded and GPS-tracked. To see further analysis of navigational performance and other aspects of social interaction during the second phase, refer to Bae and Montello [1].

3 Route Suggestion Sequence

To begin with the least embellished form of a route suggestion sequence, I look at what appears to be systematic across multiple cases. Route planning begins when there is a shared understanding of the task at hand: a mutual orientation to the origin and desired destination. In cases where the navigation is situated – where the participants are physically co-present and located at the place where they will begin their navigation – the origin point is usually assumed to be the current location [15]. As the participants are given the origin and destination point for this task, those are made explicit in the instruction.

The basic form of a route suggestion follows this structure:

- **(1) First pair part (FPP)**
  Speaker 1 proposes a new suggestion:
  - (a) opens,
  - (b) then proposes route suggestion,
  - (c) then ends and makes relevant an assessment of suggestion at the transition-relevance place (TRP).
- **(2) Second pair part (SPP)**
  Speaker 2 responds by either:
  - (a) accepting the route suggestion,
  - (b) or presenting an alternative, with or without raising issue with the suggestion presented in the FPP.

3.1 Proposing a New Suggestion in the First Pair Part (FPP)

To explore the first step above in detail, I present a few excerpts to demonstrate how this is enacted in the given route planning scenario. Once the planning process commences, the first route suggestion may come in the first pair part (FPP) from either speaker, and is likely to be related to a number of factors (including but not related to social and cultural norms and expectations, personality, and mood). However, the speaker who first makes a suggestion is putting themselves and their suggestion "on the line" to be critiqued or judged by the other person. The speakers display a clear orientation to this: The first speaker often does not simply launch directly into the suggestion but opens with a hedged introduction: "what if we…" or "I think…" or "I would…" It is also worth noting that in the collection of interactions I am working with here, the speakers were previously unfamiliar with one another and are not assigned any leadership roles in the task. Therefore the members of the dyad are not likely to have established assumptions about who is meant to go first.

In Excerpt A.1 (see attached transcripts in Appendix A), speaker A opens her suggestion,[3] using the hypothetical form "what if we": "what if we just go this way" (line 1), before launching into her suggested plan. Suggestions are made with an alignment towards their possible rejection, such as here in the form "we *could* do X" rather than "we *should* do X". This opens the possibility for the suggestion to be rejected or called into question by the partner; it is easier both for the second speaker to make a rejection and for the first speaker to accept the rejection. Another example of a hedged introduction to a first suggestion appears in Excerpt A.2. Speaker A first begins with "I'm thinking maybe this way rather than that way" (line 1), doubly reduced from commitment through the addition of "I'm thinking" and "maybe". She defends her reasoning, "thaway just seems longer tuh me" (lines 1-2), justifying the suggestion of that particular route over other visible options.

Hedging the introduction of the suggestion allows both participants to treat it as a suggestion without a strong initial commitment, which may serve an important social purpose for planning: The first idea may not always be the best one, but there needs to be a 'starting point' for the planning. From the launch point of a first suggestion, improvements can be made, details can be established, or alternatives can be presented. The speakers' orientations to this are shown in the way they do not display strong commitment in initial suggesting, at least not before an agreement within the dyad is established. Commitment

[3] The use of gendered singular pronouns here are not to imply that the following analyses are necessarily gendered (I have seen examples of all of the following across genders), but used to better specify between the dyad and the individual in the writing.

appears to be progressive throughout the planning process, and once a "best" suggestion is agreed upon by both parties, what was once a mere suggestion evolves into a "plan."

It may also be notable that this suggestion is often launched without a separate preliminary statement, such as commonly shown in question-asking [10]. I have not yet found an example of someone asking their partner, "Can I make a suggestion?" as it appears to be assumed that both claim equal rights to do so. However, this may be an artifact of the structured nature of this task, in which participants are known to be gathered for the explicit purpose of planning a route, and no one is pre-selected as a leader.

Next, in making the suggestion itself, the speaker takes an extended turn or multiple turns (turn construction units; TCUs) to present the suggestion. Similar to storytelling in conversation, Speaker 1 claims as many TCUs as required to complete a full suggestion. This appears to be inherent in the structure of a navigational route, which necessarily continues from the origin to the destination, but needs to be jointly continued by both speakers. Speaker 2 orients to this ongoing production by providing continuers such as "mmhm" or "yeah". Two examples are shown in the excerpted transcripts. First, in excerpt A.1, speaker B silently nods (line 2) as speaker A is making the first suggestion, supporting speaker's A act of presenting an option as well as displaying her comprehension of the suggested route. Second, in excerpt A.3, speaker B says "yeah" (or "nnye:ah", line 2) to do the same. In line 4, speaker B expands the sequence merely for clarification, "what IS this in the middle?" which continues in line 6. The rest of the excerpt displays a number of expansions in the original FPP of the base sequence, rising from uncertainty about the correspondence between the map and the environment in the task.

3.2 Responses in the Second Pair Part (SPP)

Acceptance of Suggestion

In the second pair part (SPP), the second speaker makes a response to the suggestion proposed in the first-pair part. The simplest way, and the most unelaborated, is an acceptance of the suggestion. The form of the response suggests that it could be the 'preferred' response in this type of suggestion sequence, but more examples need to be examined to make a stronger assertion for this.

Excerpt A.1 shows a basic acceptance of the suggestion in line 5, where speaker B responds "yeah" in the SPP before expanding the response to clarify her understanding. This, however, follows only after speaker A prompts her for a response by asking "right?" and gives her a justification for the route suggestion: "that's sp- what's gonna be (.) straightforward" (line 4). Excerpt A.4 is another example of an accepted response, wherein speaker B accepts without providing an obvious yes or no, but by rehearsing the route as suggested (lines 10-14). In some cases, the first suggested idea may not be further questioned and is simply accepted. I speculate this is because both parties agree upon it as the same 'best candidate' idea held by both, or that the first speaker has sufficiently convinced the second that it is so. Either way, an acceptance shows an alignment towards the same route, solidifying the suggestion into a plan or the beginnings of a shared plan.

Presenting an Alternative Suggestion

Of course, it is not always the case that the first suggestion is accepted. In several instances, an alternative suggestion is presented in response to a first. In these cases, the presentation of an alternative occurs in the second pair-part, and can be done either with or without directly raising an issue with the suggestion first posed in the FPP. This may be the

structural equivalent of a disagreement with an assessment – an already-identified dispreferred response to an assessment – and so it is often made less directly than an acceptance or an agreement. However, this does not mean the alternative presented needs to be a rejection of or a disagreement with the first suggestion. Presenting an alternative may take more conversational 'work' than simply accepting the first presented idea, but is necessary in cases where the first presented idea is not jointly accepted as the best possible plan. Both parties, if invested in their joint success, need to feel confident that they have exhausted all reasonable alternatives in their planning.

Excerpt A.5 gives a representative example of presenting an alternative suggestion. In line 2, speaker B appears to have immediately accepted the suggestion by speaker A in line 1 with "yeah true," but, following a pause, returns with "or we could also do this like this way" outlining a new suggestion. Alternatives are often presented with this structure: First, the speaker validates (or at least recognizes) the suggestion, then prefaces the alternative in the form of "or" & "how about" (or again a hedged "what if we") and presents the new suggestion. In this way the second speaker not only validates the content of the suggestion itself, but also the speaker's act of suggesting, which furthers the project at hand.

In a collaborative practice such as planning, it is crucial that both parties contribute to the project by actively making and assessing suggestions. By speaker B hedging the introduction of the alternative suggestion, she presents an alternative as if it were 'equally acceptable,' placing it on the table without rejecting the first suggestion. By not merely settling on the first suggestion, the dyad has a greater range of shared route alternatives to consider in the planning process and subsequent navigation. In the conversation that follows, dyads that have multiple alternatives to consider also align to their mutual assessments of these routes in comparison to one another – such as referring to a particular navigational route as "the easy way" or the one that is more "straightforward."

4 Open Questions

This paper contributes several examples to support the use of Conversation Analysis (CA) in the wayfinding context, looking specifically at route planning within dyads. However, many open questions remain, a few of which I describe below. There are also shortcomings worth addressing. For one, CA typically deals with video- and/or audio-recordings of naturally occurring conversation, rather than interactions taking place in an "experimental" setting. Therefore the observed actions may differ from naturally occurring wayfinding interactions in important ways: the dyads know they are participating in research on wayfinding, are meeting for the first time, and may experience reactance from being observed and video-recorded. Though this does not invalidate the application of this method to this set of recordings, I recognize that sequence organization is potentially shaped by these features of the scenario (especially if participants show that they orient to them).

How much do partner familiarity and established social roles play into the navigational scenario?

It is important to explore whether existing social relationships impact who suggests first or the lead during route planning. There is little prior context to assert whether existing social relationships hold true generally for all types of social interactions, and therefore have high transfer to the navigational context. It is certainly possible that leader/follower roles in wayfinding differ from the social roles established within the dyad for other kinds of decision-making. In that sense, this is an isolated task. I am now investigating the role of

prior social familiarity on spatial and social strategies used in route planning and navigation. As the excerpts presented here involve relative strangers, I expect to see whether differences exist for established dyads by making close observations of conversational actions in pairs of friends and romantic couples.

How do responses to route suggestions in the SPP vary from those presented here?

Acceptance or presentation of an alternative are not the only possible options for responding to a suggestion, and I find early evidence of a number of observable variations on the basic suggestion sequence outlined above. One variation is the extension of a previously-made suggestion by means of building off of the previously proposed route. Other practices that may be considered variations are pre-suggestion commentary on the task and expansion during the suggestion sequence, which both appear to be attempts to establish a mutual understanding of the task before beginning. Sequence expansion can be seen in excerpt A.3 in two places, lines 4-6 and lines 13-15; as well as in excerpt A.4, lines 4-5. All three of these examples help the dyad explicate their common ground in conversational practice.

What is the potential for Conversation Analysis to be applied to understanding specific domains of interaction, such as wayfinding?

I plan to expand this Conversation Analytic approach to the study of situated navigation (the situated enactment of the route that follows the planning described above). Further, I hope to consider the use of CODA and what insights the approach could offer when used in conjunction to the CA approach. Future work with a similar scenario to the one presented could gather observations of groups of people planning routes without being tasked to do so in an experimental setting; for instance with tourists or day-hikers.

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A Navigational Transcript Excerpts

I follow conventions in Conversation Analysis adapted from Sacks et al. [8]. This method of transcription attempts to directly capture speech as produced rather than along orthographic rules, aligns overlapping speech between speakers [within brackets], uses colons to indicate the prolonging of a syllable, capitalizes louder speech, surrounds softer speech with °degree symbols°, and represents upward inflections with an arrow. Gestures are described within ((double brackets)). Short pauses are represented as (.); longer pauses are shown with the duration in tenths of a second in parentheses.

A.1 Excerpt 1

```
01 A: what if we just go this way LOOK like right here ((tracing route on
02    map)) (.) and then just like stra::ight there (0.5)
03 B: ((nods))
04 A: right? th- that's sp- what's gonna be (.) straightforward
05 B: yeah (.) what's this though (.)
```

A.2 Excerpt 2

```
01 A: I'm thinking maybe this way rather than that way thaway just seems
02    longer tuh me (0.3)
03 B: oh yea:
04 A: um I dunno this way might actually be longer ((traces path with
05    finger))
```

A.3 Excerpt 3

```
01 A: so: maybe we could go like up here, [and take]
02 B:                                     [nnye:ah ]
03 A: like a footpath (.) instead of walking all the way around
```

```
04 B: yea:h- but I also feel like what IS this in [the middle]
05 A:                                             [yeah^ I   ] have no idea
06 B: so I'm like WHAT is that (0.5)
07 A: so can it be like safer to like go through earlier? (0.3)
08 B: or like, go like this way and just cut throu:gh?
09 A: are we using this foot[path?]
10 B:                       [yeah:] [someth]in like-
11 A:                               [okay  ]
12 B: right here an:
13 A: are those houses?
14 B: I'm assuming ((laughter))
15 A: ss probably a fence or somethin
```

A.4 Excerpt 4

```
01 A: uh (.) if we're dropped off here I feel like (.) the fastest route is
02    like (.) obviously [this] because I dunno if we can cross right here
03 B:                    [yeah]
04 A: I don't know if that's water. [or a park or something ((laughter))]
05 B:                               [nnye:ah ((laughter))              ]
06    (0.2)
07 A: UM we can always like just go alo:ng this road here (.) swee::twater
08    way and then once we see coolbrook we can make a left
09 B: mmhm
10 A: that would be the easiest way
11 B: right at the [round]about, right, right-
12    ((traces path with finger))
13 A:              [yeah ]
14 B: -right, and then coolbrook left
15 A: yeah
```

A.5 Excerpt 5

```
01 A: so mmm the safest way would be to go over around through [here]
02 B:                                                         [yeah] °true°
03    (1.2) or we could ↑also do this like this way
04 A: yeahh
05 B: that looks [longer:]
06 A:            [yeah   ] (3.0) hmm. (2.0) so
07 B: well these ARE like bike paths,
08 A: yeah so: we could [>walk on the side of the<]
09 B:                   [we could walk            ] on the bi↑ke path (4.0)
10    ((laughter))
11 A: then if really if theres nothing like thats right here that we find we
12     can just cut through
13 B: yeah (2.0) or like start here, use the road, >and then< use the b↑ike
14    path [and around]
15 A:      [ye:ah::   ]
```