Conversational Formulations of In-Car Satellite Navigation Systems' Spoken Instructions

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Keywords: satnav; GPS; formulations; in-car talk; conversation analysis; wayfinding; HCI

1. Abstract

In this paper I begin with a theoretical overview of formulations and the way they are viewed within the conversation analytic literature. I then go on to detail how groups of two or more people in cars together, and using talking satnav (GPS) devices to get around, formulate the language of the device (the directions or instructions) in various ways so as to make a shared sense of the wayfinding process and the experience of journeying as a social act. I finish by noting the significance of understanding this process for the design of such 'talking technologies'.

2. Introduction

In this paper I use conversation analysis to describe how people using talking satellite navigation systems (satnavs or GPS) on car journeys together, make shared sense of the directions they are being given. Specifically, I focus on formulations (also known as reformulations and (re)formulations in the literature) in the talk and describe several types of formulations which can be seen in this setting. I begin with a detailed theoretical overview of formulations, a discussion of the breadth of types of formulating behaviour that can be observed generally and formulations' place in conversation. This leads to a review of the properties of formulations, which reminds us of their range of occurrences and applications in talk, and is intended to help the reader go beyond the oft held perception that such utterances are synonymous with summaries of semantic content of the preceding talk.

However, a detailed reading of this first half of the paper is not necessary to appreciate the analysis of recorded transcriptions which follows, and some readers may prefer to omit this theoretical overview, after which I detail the data collection and analysis involved in this particular study, and describe a number of formulation types which help us understand how travellers are making shared sense out of the navigation experience (as part of the journey as a larger spatial and temporal experience). It should be noted that throughout this paper, I will use the terms *wayfinding* and *navigation* interchangeably and in a non-specific, non-technical sense. Utterances emerging from

the talking satnav device will be referred to interchangeably as either *directions* or *instructions*.

3. A Theoretical Overview of Formulations

3.1 An Introduction to Formulations

Conversation analysis is concerned with explicating the way we make sense of, accomplish and order our naturally occurring spoken interactions with one another. This involves examining the reflexive and indexical properties of interactive talk, but also accounting for background expectations and understandings held by participants. Within this system, *formulations* constitute an individual turn of talk where a participant in the conversation produces a *gloss, summary, gist, or characterization of the preceding talk*. Formulations are a part of naturally occurring interactive talk which themselves form a part of what it is they are 'formulating'. They are a part of the ongoing process of developing and maintaining mutual focus, orientation and understanding in talk-in-interaction. In introducing formulations, Garfinkel and Sacks state,

> A member[1] may treat some part of the conversation as an
> occasion to describe the conversation, to explain it, or
> characterize it, or explicate, or translate, or summarize, or
> furnish the gist of it, or take note of its accordance with
> rules, or remark on its departure from rules.
>
> (1970:350)

This, they say, is *formulating* a conversation, and at this point we begin to get a sense of the potential range and variety of formulating we might see as a practice in spoken interaction. They add that in formulating, what conversationalists are doing is (ibid:351) "saying-in-so-many-words-what-we-are-doing (or what we are talking about, or who is talking, or who we are, or where we are)." In doing so, formulating makes the reflexivity of the conversation *explicit*; it challenges conversationalists to reflect (explicitly) (on) the work that is involved in the creation of the formulation as a gloss *but always as an integral part of that conversation*.

3.2 The Theoretical Basis of Formulations

In any consideration of sense making through the analysis of interactive talk, we need to make clear certain fundamental precepts. With regard to formulations, Garfinkel and Sacks (1970:338) stress that as a reflexive structure; language simultaneously constitutes what it is 'about', and is constituted *of* what it is 'about'. This has important implications: that indexical 'certainty' emerges from its own consequences; that the requirement for an indexical 'definition' corresponds with an (unbounded) set of *possible* relations; and that these possible definitions are essentially and flexibly circumstantial. This circumstantial flexibility confirms that meaning is always situated and only achieved deictically. Garfinkel and Sacks continue that (ibid:341) "the properties of indexical expressions are ordered properties" emerging from the "ongoing, practical accomplishment of every actual occasion of commonplace speech and conduct". Consequently indexicality in practical discourse reveals (ibid:339) the "rational accountability of everyday activities" through naturally occurring, socially organised activities. So the meaningful, *in vivo* properties of indexicality occurring in talk-in-interaction make the sense of that talk observable and reportable (i.e. accountable).

In asking how this accountability takes place, Garfinkel and Sacks describe how

accountable phenomena are "practical accomplishments" (ibid:342), and so it is the nature of the process of 'work' necessary to achieve that accomplishment that is of interest. This position means of course that the accountability of talk emerges only from the talk itself and also that it occurs over and above any other pragmatic issues of actual interaction. Indeed Garfinkel and Sacks stress (ibid:351) that it is not merely that formulations are reportable, but the process of formulating is, as a phenomenon, reportable.

This understanding – of 'working' towards a practical accomplishment - leads to the conclusion that situated speech 'means' more than the words themselves can convey; it is a form of glossing practice (ibid:342). So put simply, speech (or any 'text') can be seen as a gloss, within which words and phrases are subject to a situational or referential (indexical) process leading to the greater meaning enjoyed by speech as a situated action. The processing of language as a gloss into language as situated reveals (and is revealed by) its accountability and it is through the indexicality of language that this is developed. It should be stressed that the need for this process is not one born of a 'failure' in the language - some perceived lack of clarity, detail, or extent - but is an inherent property of situated interactive talk; it "extends and elaborates indefinitely the circumstances it glosses" (ibid:345).

In short, we might say that situated practice becomes glossed into talk which, in terms of its constituent phonology, lexis and syntax, cannot 'say in so many words' what it is glossing, and yet in the course of natural, spontaneous and situated interactive talk, *is* routinely understood by an interlocutor in precisely those terms; that is as meaning *more* (or differently) than is being said in so many words. It is through the indexicality that this process becomes visible and through which we can understand how a formulation is working.

Before moving on to a consideration of more pragmatic issues of analysing formulations in talk, there is one further point worth raising as part of a theoretical understanding of formulating. That is Garfinkel and Sacks' observation (ibid:352) that in principle formulating can be done "with script, utterances, or graphics; that is, with circumstantially particular, notational displays". This is significant, in that it reminds us that formulating it is part of an interactional, sense making enterprise which *could* be manifest within a variety of interactional arrangements using a range of sensory forms. This raises the question that if formulating can be manifest in forms other than spoken utterances, can formulating be done (as spoken utterance) *of* interactive phenomena other than (or incorporating others than) spoken utterances. This potentially has significant implications for research into human-computer interaction, particularly studies focused on people's linguistic arrangements and reactions around technology.

3.3 The Conversational Properties of Formulations
Formulations can be viewed as functioning on various levels. On an utterance-by-utterance level it can be said that they are oriented to in the utterance which follows, meaning they have an 'adjacency pair' structure (Sacks *et al.* 1974). Heritage and Watson state, (1979:142) responses to formulations as first part of an adjacency pair

usually involve a *confirmation* (disconfirmations being 'accountable' – in its more common sense of calling for further explanation or acknowledgment). Responses to formulations involve a 'decision'; one based on a 'reflection' on the rest of the preceding conversation; not just a reflection on the formulation itself – the formulation *occasions* this reflexive consideration and understanding, 'in light of' the formulation. It should also be stressed that formulations are not 'ritualized' (either in their construction or in that of their responses); the decision response is rather a 'next action' which demonstrates a point to the understanding. In providing a shared sense of what is being talked about through an adjacency pair, the formulation becomes "implicative for subsequent talk" (Heritage & Watson 1980:254). The sense and significance of prior talk which formulations provide mean follow up responses to formulations are sequentially powerful.

On the level of 'topic', topic organisation is a shared, very real *action* undertaken by conversationalists. Formulations glossing what has been said so far in talk are, crucially, describing what has *already been achieved* in the talk and is now being achieved, in the formulation, "for another first time" (ibid:255). Formulations can be integral in maintaining the sense of what a conversation is 'about'. All formulations – it is a generic feature – involve a reflexive consultation of what went before, both by the 'formulator' and any 'responder', which fixes the topic as a shared focus. Heritage and Watson's data (ibid) suggests most formulations receive confirmatory responses. They also note that the adjacency pair structure does not inherently mean that topic is continued, or rejected. The basis for the response (especially disconfirming responses) need not be the preceding talk, so 'new topic' talk is certainly also possible at such points; the "recourse to the 'rest' of the conversation is far from absolutely constraining on topical talk at formulating junctures" (ibid:256). Similarly, the basis for the response may or may not emerge from the formulation.

Looking at formulations from the perspective of the 'whole conversation', Heritage and Watson say that formulations may be seen as 'candidate' pre-closings. They are collaborative features of talk, with topic being a collaborative construct, but they also have the ability to refocus a conversation onto its practical project, its purpose; potentially closing topic talk by shifting the talk to the practical upshot of the task.

3.4 Formulations in Mundane and Institutional Talk

Drew (2003) describes how formulations both *function*, and are *formed*, differently in different settings. He compares their appearance in instances of psychotherapeutic counselling, talk radio discussions, TV political interviews and in employer/trades union negotiations. His paper aims to highlight the issues involved in linking particular features of talk with *particular* settings of talk. The identification of forms and functions is important because it enables consideration of whether and how language in an institutional setting is drawing on a resource usual in mundane, everyday conversation, or whether what we see is a fundamentally institutional feature of language which may occasionally (and potentially related to its institutional use) be appropriated into mundane talk. This can also help us understand how participants in talk actually conceive a setting compared to how we might label that talk as external analysts.

The significance of this issue emerges when Drew argues (ibid:296) that Heritage and Watson (1979) not only draw their examples of formulations from institutional settings, but also appear to make no overt claim that such formulations have their 'roots' in everyday, mundane talk at all; the formulations are specific to institutional settings and lack any origins in general conversation. This would appear to be supported to some extent in Heritage and Watson (1980:249) where they state, "Formulations seem to be

most densely present in 'service' conversations (e.g., counselor-client conversations) and in radio and television interviews … Our data is drawn largely from such sources".

Where then does the notion of formulations as a part of everyday, mundane conversation but which have, in certain functions and forms, come to also be particular features of particular institutional settings, originate? The answer to this can perhaps be sought in Garfinkel and Sacks' (1970) work (on which Heritage and Watson built) in which they state in the opening sentence of the section on formulations (ibid:350), "Among conversationalists it is an immensely commonplace feature of conversations that a conversation exhibits *for its parties* its own familiar features of a 'self-explicating colloquy'". Of the six brief examples Garfinkel and Sacks use to introduce the concept, three arguably come from mundane conversation while two seem to come from 'interviews' and one from a structured academic setting. However at no point do they consider the significance or relevance of the setting to the occurrence of formulating, and it appears that subsequent work (until Drew 2003, and even then the issue is traced back only so far as Heritage and Watson 1979) did not consider the issue. It has stood without being remarked upon that formulations are "an immensely commonplace feature of conversations", implying a feature present across mundane and institutional talk.

However this is not unexpected when the positioning of Garfinkel and Sacks' paper is considered; it was part of a collection of papers on methodology in sociology and was published as part of the argument for adopting ethnomethodological approaches; predating conversation analysis as we would now conceive it. Hence their paper does not present a feature of language use as we would now expect to see it described, so much as suggest how the study of a feature of language could support sociological reasoning. Although there was no effort made by Garfinkel and Sacks to consider how far formulations were part of institutional as opposed to mundane talk, they clearly had examples to hand suggesting formulations should be common in mundane talk too. I will not address this issue here, but it is worth noting that since this early foundational work in 1970, 1979 and 1980, research into formulations has focused primarily on talk in media interviews and therapy sessions. This may have done more than mean that the potential for finding formulations in mundane talk has been neglected. It might mean that the types of formulations (for example summaries of gist) that have been the focus of the literature are simply not the *types* that are 'common' in mundane talk, and that these *types* have, overtime, unwittingly become synonymous with formulations as a whole.

3.5 Formulations as Metatalk

Garfinkel and Sacks (ibid:350) write, "One finds conversationalists, in the course of a conversation, and as a recognized feature of that conversation, *formulating* their conversation". The first thing to note about this position is that, as stated earlier, it proposes formulations to be *part of what they are formulating*. Thus, formulations are (and this point is reiterated in Heritage and Watson 1979, 1980, and Drew 2003) to be distinguished from certain cases of *metatalk*; talk about talk removed from the progressive interactive tasks of negotiated talk.

We can observe this in certain features of formulations. First, for example, problems related to the indexical properties of talk are not routinely solved through formulating because the formulation, as part of what it is describing, is imbued with the same problems and issues. Thus they do not *explain* (i.e. do not ostensibly fulfill the function 'explaining' in any problem solving sense) what has gone before so much as *reflect* it (or a perception of it - which *may* effectively constitute an explanation). While they may involve some element of clarification, this is part of the ongoing process of such clarifications within interactive talk and is not a property which makes formulations separable from that process. Second, we might consider Heritage and Watson's (1979:126) note that formulations are heavily indexical of preceding turns (which is not the case in all metatalk), meaning in practice formulations lack meaningful sense when removed from their interactive setting. However, in doing practical analysis the distinction between a formulation and other metatalk can be difficult to decide. Drew (2003:296) stresses that many formulations *are* examples of metacommunication, but emphasises that there will also be examples of metacommunication which are *not* formulations; where the 'summary' or similar will not constitute a part of what it is formulating.

So, for instance, it is interesting to consider Heritage and Watson's (1979:150) example of a judge's summing up in a courtroom as a formulation. This is arguably a form of metatalk, but the quandary lies in how far such an utterance is a part of what it is describing and how far it is a metacommunicative commentary, explicitly removed from the interactive to and fro of the rest of the court interactions between lawyers, judges and witnesses. Its use as an example makes clear we are to consider this a formulation. The justification for this lies both in such an utterance's involving a reflection back on the prior talk, but also crucially that it is delivered within that same environment, as a part of that environment and making use of indexical referencing to 'mean more or differently' than it can say in so many words' to those listening. Should such a summing up be produced and delivered later (perhaps more along the lines of a report or press release) we might argue it would no longer qualify as a formulation.

This would suggest that formulations are *not* a part of metatalk or other metacommunication comprising after the fact *reports* of a conversation given to someone who wasn't present. Therefore it must be stressed that formulations and metatalk are not mutually exclusive categories, but rather that a formulation may, or may not have the properties of, and be counted as, metatalk. This section has made clear that different types of formulation may, within the context of 'formulating' be doing different things, and it is to a consideration of formulation types I will turn to next.

3.6 Types of Formulation
Heritage and Watson (1979) begin to label and describe some formulation types. Explicit demonstrations of understanding (which along with other formulations they regard as demonstrating (ibid:129) "preservation, deletion and transformation"), formulations of (ibid:130) "sense or gist achieved thus far in a conversation", and formulations of the upshot of preceding talk, which (ibid:134) "presuppose some unexplicated version of gist". On occasion gist and upshot seem remarkably similar and it is necessary to maintain that upshots need to contain an element both of *consequence* and of the *unsaid*. Features of formulations of gist include: a reflexive, 'folding back' on a conversation, occasioning a fixing or reading of the talk's self-descriptive properties. Heritage and Watson (1980:247) discuss formulations which "do describing", noting that 'describing' is, in practice, rarely an end in its own right and usually forms part of a task or other interactional work, hence it is the *act* of describing rather than the description itself that may be oriented to by others in a conversation. Related to this type of formulation, it may be the broader conversational *activity* - the point or function - of the

conversation that is implicated by the formulation, This might, for example, involve formulating describing as an activity rather than a description of 'topical content'.

An example of this variety, which shows how a formulation can function as metatalk comes from Garfinkel and Sacks (1970:350). The formulation is shown in square brackets.

A: Do you think the federal government can go in and try that man for murder?
B: No
B: It's a matter of state
A: [Now let me ask you this.]

At first glance this utterance seems in no way to be formulating; in the sense of 'summarising the previous talk'. But we need to remember, as Heritage and Watson state, (1979:124), that formulations include instances where "the achievement of conversational order becomes for participants, albeit temporarily, a topic in its own right" and Garfinkel and Sacks' point out (1970:351) that formulations include utterances where what speakers are doing is "saying-in-so-many-words-what-we-are-doing (...or who is talking, or who we are...)". From this perspective we can suggest that the above formulation is formulating the conversation as meaning (if we assume the stress is on the word *this*) 'we are engaged in a question and answer session, the previous question has been answered, dealt with or otherwise closed but the process of question and answer has not concluded', or potentially, if the stress were to be on *me, you* and *this*, the formulation might be that 'the talk we have been engaged in thus far has been you asking me questions which has been in some way frustrating for me and I'd like to reverse that state of affairs'. This kind of formulation, dealing with the orderly management of talk, is clearly quite different from one of 'topical content'.

Another type of formulation of the *description* of talk (as opposed to the action as in the "Now let me ask you this" example) is seen in the case of summaries of 'the story so far'; checking that participants are continuing to be touch with or following the conversation with a 'summary' of the conversation *in toto*. Such 'topic' based formulations may occur alongside formulations of the importance or 'upshot' of the talk.

What all these formulation types share is that they all make explicit that the talk has been, all along, self-explicating, that they are all part of the ongoing 'nature' of conversation, and that they are routine devices not aimed at resolving points of trouble. However, although not part of the 'repair' system of discourse they have the potential to *clarify* in situations where multiple readings of glosses are possible; they can address "practical matters" (Watson and Heritage 1979:138); formulations perceived as somehow faulty can induce retrospection; they can provide a "candidate reading" which may be accepted or not; they are not points of *external* reflection on the talk, but integral to its ongoing development.

There exist however, some key issues which need to be understood when looking into formulation types. The first is something implicit throughout this paper, but which has yet to be stated. That formulating utterances can be, and can do things in talk-in-

interaction other than purely formulate (and express the relevant consequences of that). We see this in those examples of formulations which have strong metacommunicative properties, and also in those examples highlighted in Heritage and Watson (1980). For example (ibid:256), "You really were prepared to commit suicide because you were a big fatty?" (a radio interviewer formulating the 'tale of despair' of the 'Slimmer of the Year') might be analysed as an utterance type 'encouraging further elaboration'. Or, (ibid:257), "so you invented the CIA thing on the twenty third as a cover up" (David Frost interviewing Richard Nixon) might be studied alongside other examples of utterances which 'challenge the previous speaker's position'. This otherness (which is really an 'analytic perspective') may be wholly unrelated and unnecessary to the study of formulations, or may provide some limited insight into how the formulation is 'folding back' on the rest of the conversation, or may be crucial in understanding and identifying a formulation type. However it might also be that these properties to some degree 'mask' formulating behaviour. For example it may be that certain types of 'repetition' (a very 'obvious' and much studied feature of interactive language) function as formulations, and we need to be aware that these categories are not mutually exclusive. It is important to work with an understanding and definition of formulations that will reveal not only types already described, but all varieties of formulating behaviour to be found in a given setting.

However, as will be coming clear to the reader, the descriptions of formulation types in Garfinkel and Sacks (1970) and Heritage and Watson (1979, 1980) do not provide us with an explicit, finite list of criteria which can be used to separate one type from another. The types of formulations they give are not exclusively defined *in relation to one another*. Rather their work has been to show that there *are* types; to show examples of formulations and in doing so, and in varying degrees of detail, show that they are doing different things within and across settings. Considering formulations this way suggests that they are a phenomenon which is not amenable to listing as concretely discrete types, rather that they can be labelled in terms of notional 'types' to aid grouping certain instances and functions of formulations together, but recognising that such types will potentially overlap with one another and may have boundaries which are vaguely, rather than clearly defined. So the discussion and analysis of types in this early work on formulations is not performed in such a way as to facilitate analysts' *comparison of different* types.

Bearing in mind the variety of functions suggested of formulations by Garfinkel and Sacks (above), and Heritage and Watson's (1980:247) acknowledgement that in principle it is not possible to produce an exhaustive list of the properties, types and uses of formulations, the particular concerns and boundaries of any study of formulation types become important. This variance in formulations superficial appearance means studies of formulations need to be clear: are they identifying a formulation type and its variations across settings (Drew 2003), are they identifying variations in one or more specific, pre-defined types of formulations in a particular setting, perhaps to suggest how a particular effect is achieved (for example Heritage 1985), or are they attempts to describe in a more comprehensive way, the range of formulation types and formulating practices seen in a particular setting? In short, when we begin describing actual instances of formulating, the way we group them into types becomes an issue which needs to be handled with sensitivity.

3.7 The Defining Properties of Formulations and Conclusions
In conclusion of this section, when identifying formulations we need to draw on certain criteria which will appear in varying combinations depending on the 'type' of formulation we are identifying.

$ Formulations are utterances which are understood as part of an ongoing and sequential interaction and demonstrate conversations' progressive character.

$ They explicitly reflect on or orient to the preceding talk

$ They involve provision of a fixing or candidate reading of the preceding talk expressed 'in so many words' in terms of its content, action, function, structure, perspective, place etc.

$ As a gloss they mean more than they can say in so many words and rely for that meaning on their deictic orientation to preceding talk.

$ They show that the prior talk has been self-explicating; it is describable and understandable according to a shared understanding.

$ They are not specifically made to solve troubles or repair talk.

$ They are understood in terms of expressing some characteristics of transformation, deletion and substitution in meaning from the situated talk they are formulating.

$ Different types of formulation fulfil different functions in conversation.

$ They take a wide variety of syntactic, lexical and phonological forms.

$ Their properties can contribute to conversation at the levels of 'utterance by utterance' adjacency pair structure, topic management, and the whole conversation (often in the form of metatalk).

However, because formulating is a practical accomplishment in situated talk, all these criteria are subject to the exigencies of real people working with language in real situations and real time; meaning they will be molded by, rather than mold those circumstances. The criteria above are properties which can be used as a guide to identifying formulations in talk, but which need to be used in conjunction with interpretation and understanding of the interaction *in vivo*. Moreover, because what I have discussed thus far is an underlying model of formulations as a phenomenal feature of talk, rather than the manifestation of particular formulating behaviours in particular settings, the criteria listed above have not incorporated developments in understanding the properties of formulations which might be seen in the subsequent literature on the occurrence of formulations of particular types or in particular settings. Nevertheless, with this understanding we can progress to see how important formulations become to the work of developing mutual understanding of their shared wayfinding by groups using their satnav in cars.

4. Data Collection

Volunteers were sought from within and beyond the university environment, who were willing to be audio recorded whilst going on planned car journeys with at least one other individual and where they would be using their own satnav device to help navigate. A small digital voice recorder was provided for this purpose, in line with the approval of the University's ethics committee. Eight separate journeys were recorded, providing 8-9 hours of recordings with nine different participants on the journeys in various combinations. Seven of the participants fell in the 20-39 years age bracket (five were between 20 and 30 years, two between 31 and 39), and two in the 40 plus age range. Each journey involved either two or three travellers in the car at the same time. The recordings were then transcribed using conversation analytic conventions based in those of Gail Jefferson (Atkinson & Heritage 1984) providing c.17,000 words of talk. The transcripts were analysed, with the focus being on that talk which immediately followed any satnav directions. Formulations observed in the transcripts were marked with an arrow.

The speakers in the transcribed extracts are coded as follows. SN=satnav, FP=front passenger, D=driver, RP=rear passenger. F=female, M=male, HS=Han Solo (a character from the Star Wars films). 2=the 20-39 age bracket, 3=40 years or older

5. Types of Formulation Seen in In-Car Satnav Data

I discuss six types of formulating behaviour observed in the data: Formulations expressing the given direction as 'anticipated' or 'already known';formulations indexing immediately visible markers from the landscape; formulating the consequences of a direction; formulating assessments of the satnav direction and formulating instructions as having been accomplished. I also describe situations where formulation is resisted through the use of direct repetition

5.1 Formulations expressing the given direction as 'anticipated' or 'already known'

```
Extract 001
1                    (24.0)
2      SNF           Cross the rotary second exit then stay in the left lane
3                    (4.0)
4      FPM2          Can you remember all that
5      DM3           °Yeah°
6                    (3.0)
7      DM3     →     Go towards the motorway
8                    (2.0)



Extract 002
1      SNF           After two hundred yards (.) bear left
2                    (8.0)
3      SNF           Bear left
4                    (37.0)
5      FPF3          ((coughs))
6                    (16.0)
7      DM3     →     Taking us to Camperdown
```

Formulations of this type (arrowed in extracts 001 and 002 above) involve reflecting on the satnav direction given in such a way that the speaker gives an interpretative label (using different words from the instruction itself) to what they have been told to do. This occurs in terms of a predictive summary of where the instruction will ultimately take the travellers. We can see that such a formulation does two things. It attributes a

navigational motivation to the device and its directions, and demonstrates a perceived knowledge or understanding on the part of the speaker of that 'motivation'; that they know something of the upcoming navigation themselves; they can 'second guess' the device or demonstrate a mutual position placing themselves 'over and above' the device. These formulations are suggestive of a sense of empowerment in the travellers, as opposed to an alternative status as blind followers of successive instructions. These formulations might almost be viewed as a kind of commentary on what the satnav is doing, and an overt demonstration by the travellers that they *can* engage in such a commentary.

5.2. Formulations indexing immediately visible markers from the landscape

These formulations establish shared understanding of positioning ready for the next instruction or manoeuvre. Most significant here is that it shows how an awareness and understanding of the journey 'as a journey' (an experience of travel and navigation) is perceived by both drivers and passengers as something requiring mutual understanding.

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Extract 003
1     SNF          After two hundred yards turn right
2     DM3          (take a right it says)
3     FPM2         Well how can you do that
4                  (3.0)
5     DM3    →     Down here


Extract 004
1     SNF          Turn right (.) then take the second left
2                  (1.0)
3     FPF3         °Tu::rn r::ght°
4                  (34.0)
5     FPF3         Second left
6     DM3          Yeah I'm (tryin to move over to that lane)
7     FPF3         I know
8                  (8.0)
9     FPF3   →     That was the first left
10                 (1.5)
11    FPF3         Fi::::rst left
12                 (1.5)
13    FPF3         Next left


Extract 005
1     SNHS         Aaaw (.) It's ok Chewie (.) after three hundred yards (.)
2                  cross the roundabout (.) second exit
3                  (13.0)
4     SNHS         Cross the roundabout (.) second exit
5     DM2    →     To the left
```

In extracts 003, 004 and 005, the abstract references of the satnav direction become formulated in terms of concrete, mutually identifiable features within the environment and mutually understood relevant movement connected with these as preparation for a

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manouevre (rather than as part of the specifics of an immediate manouevre.

5.3 Formulating the consequences of a direction

This type of formulation, seen in extracts 006 and 007, draws on and can combine elements of the preceding two types; formulations referencing the immediate environment for shared sense making and formulations demonstrating a knowledge which puts the satnav direction into a wider navigational or spatial context.

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Extract 006
1     SNF           After three hundred yards turn left
2                   (2.0)
3     FPM2          (              ) you back to e::r Liverpool
4                   (6.0)
5     DM3    →      So it's left at these lights int it te get te Tesco
6     FPM2          Yeah
7                   (7.0)
```

```
Extract 007
1     SNHS   →      [in three hundred yards] turn left
2     FPM2   →      Oh no (.) we're turning left (.) towards [the sun  ]
3     SNHS                                                    [turn left]
4     FPM2          (I'm going uf) in this direction for quite some time
5     RPF2          Oh dear
6                   (4.0)
```

It involves formulating an explicit, shared consequence of the instruction. In the examples above, the formulation begins with an environmental index to 'anchor' or focus the abstraction in the direction, then an interpretation of the pragmatic upshot or relevance of this. It will be noted that in extract 006 the consequences given are navigational in nature, whilst in extract 007 they are extra-navigational, although still with relevance to the practicalities of driving and passengering.

5.4 Formulating assessments of the satnav direction

These formulations involve an assessment of the quality, accuracy, value, degree of correctness or deficiencies of a satnav instruction. Not in terms of its navigational appropriacy, for which other types of formulation appear to be used (see above), but rather relating to how the direction describes, relates to and corresponds with the travellers own perceptions of a navigational event.

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Extract 008
1     SNF           Turn left (.) then (.) turn right
2                   (5.0)
3     SNF           After two hundred yards (.) turn right
4                   (2.0)
5     FPF3   →      It's not a right turn it's just a bend in the road
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Extract 009
1     SNF           After six hundred yards (.) keep right (.) then keep
2                   right
3                   (5.0)
4     FPF3          I don't understand that
5     DM3           (°    °)
6                   (2.0)
7     FPF3   →      Just (.) kind of straight on init
```

In extracts 008 and 009 we see a corrective assessment of what the device has said, in these cases criticising the accuracy of the terminology used by the device. However we also see instances of formulations marking agreement with the instruction when it is seen to be remarkably accurate, as in extract 010.

```
Extract 010
1    SNHS         Let's take a sharp right (.) in your own time now
2    DM2    →     This is a sharp right (.) it wasn't fucking lying
3                 (4.0)
```

We also see cases where the lines between marking criticism and marking agreement with a direction become blurred, as in extract 011.

```
Extract 011
1    SNF          Bear left (.) then at the end of the road turn right=
2    FPF3         =left
3    DM3          And it said bear left dint it (0.5) do ye think that's
4                 (3.0)
5    DM3          I think it means=
6    FPF3         =I think that means up there bear left it's not actually
7                 a turn is it it means bear left
8    DM3          (°        °)
9    FPF3         Or she'd have said straight on wouldn't she
10                (1.0)
11   DM3          I think it's (.) that'sssss (0.3) we could have gone
12                straight (0.3) to the right couldn't we
13   FPF3   →     Well she just said straight on dint she
14   DM3          One of these (things)
```

In this instance, the travellers must transpose the instruction to "bear left" onto the actual environment; whether it is a turn or more akin to a 'straight on'. The way this is ultimately formulated is as "she just said straight on dint she" - which is in actual fact *not* what the device said at all, but which serves as a useful way of phrasing the instruction in light of the exigencies of the road environment the travellers are observing and travelling through together.

Such formulating behaviour in cars may be representative of a broader behaviour whereby travellers use a greater range of assessment strategies to ensure there exists between them a shared and agreed understanding of their journey experiences when it comes to journey related notifications. For instance, in extract 012 the driver notes a road sign warning of a damaged road surface when no such problem was experienced. So deviation in the correspondence between 'authoritative', 'official' notifications, and the actual perceived experience, become accountable and a point of negotiation for potential agreement between the travellers.

```
Extract 012
1    DF2          What (1.0) the hell's that for
2                 (3.0)
3    FPM2         Dunno (                )
```

```
4      DF2    →      Well it said erm (2.0) erm ((German phrase ))(1.5) what's
5                    It called >there's damage to the road< but I couldn't see
6                    any (back there)
```

5.5 Formulating instructions as having been accomplished

In the case of complex, rapid sequences of directions, there also occur formulations marking the completion of those directions. The formulation reflects back that the travellers have dealt with ambiguities and talked their way through the directions as they reached the respective points on the road. In extract 013 the speaker uses a formulation specifically of the final element of the instruction, to mark a completion of both the discussion and the experience of navigating that section of the journey.

```
Extract 013
1      SNF          Bear left (.) then at the end of the road turn right=
2      FPF3         =left
3      DM3          And it said bear left dint it (0.5) do ye think that's
4                   (3.0)
5      DM3          I think it means=
6      FPF3         =I think that means up there bear left it's not actually
7                   a turn is it it means bear left
8      DM3          (°          °)
9      FPF3         Or she'd have said straight on wouldn't she
10                  (1.0)
11     DM3          I think it's (.) that'sssss (0.3) we could have gone
12                  straight (0.3) to the right couldn't we
13     FPF3         Well she just said straight on dint she
14     DM3          One of these things
15     FPF3         Now=
16     DM3          =Bear left [(        )]
17     FPF3                    [I think] it's up there
18     DM3          (        ) well I think we're alright I think we (
19                  ) going that way
20                  (3.0)
21     DM3          Church looks nice dunt it
22     FPF3         Mmm
23                  (4.0)
24     DM3          What y bear left the:n (0.7)
25     FPF3         Right
26                  (7.0)
27     SNF          Turn right
28                  (1.0)
29     DM3    →     Got to the end=
30     FPF3         =Oh I see yeah (.) yeah
```

This example constitutes a further instance of the importance of wayfinding as a necessarily shared experience.

5.6 Repetition as resistance to formulating satnav instructions

The behaviour seen in extracts 014 and 015 below, involves an attempted formulation of the direction being *resisted* by one or more of the travellers. This occurs when directions are given by the device far in advance of the travellers being able to directly reference them in the environment.

```
Extract 014
1      SNF          After eight hundred yards cross the rotary
2                   second exit
3                   (1.5)
4      FPM2         (                ) looking at vans=
```

```
5       DM3             =Yeah=
6       FPM2            =I'm curious to see what (      ) they can get round (
7                                       )
8       DM3             >Yeah yeah yeah<
9                       (5.0)
10      FPM2            (Are we) going straight on (0.5) (°I must've missed it°)
11      DM3     →       Second exit
12                      (1.0)
13      FPM2            Straight on (are we    )
14      DM3     →       Ye- Yeah second exit
```

In extract 014 the exchange takes place prior to arrival at the junction under discussion. Therefore the participants lack the ability to reference that upcoming environment through a visibly identifiable deixis. Twice over the driver responds to a query about whether they are going to go "straight on" with a direct repetition, not of the entire satnav direction, but of the final two words only; "second exit". Doing this despite the repeated invitation to show agreement with the first speaker by utilising *his* words ("straight on") he makes clear he is not yet willing to put his own, nor accept anyone else's, interpretation on the direction. In essence, the potential formulator is, instead, directly allying himself with the abstract direction at this point in the navigation. It is worth noting that while on many occasions 'straight on' and 'second exit' will be synonymous, this is not necessarily the case, and of course this may help account for the unwillingness to infer more from the instruction than can be seen or is already known through prior knowledge. In this situation, formulating is resisted and repetition used instead.

```
Extract 015
1       SNF             After three hundred yards (.) cross the rotary (.) second
2                       exit
3                       (3.0)
4       FPF3            >Thank you<
5                       (8.0)
6       SNF             Cross the rotary (.) second exit
7                       (3.0)
8       FPF3    →       Straight on
9                       (19.0)
```

In extract 015, which occurs *at* the roundabout referenced by the satnav instruction we see the contrary situation. With the turning visible and in the process of being negotiated the formulation involves a clear rephrasing of "second exit" into a more pragmatic, and more everyday form, "straight on".

6. Summary and Conclusion

I have detailed six types of formulating behaviour observed in the data: formulations expressing the given direction as 'anticipated' or 'already known'; formulations indexing immediately visible markers from the landscape; formulating the consequences of a direction; formulating assessments of the satnav direction and formulating instructions as having been accomplished. To this can be added situations where formulation is

resisted through the use of direct repetition.

It can therefore be argued that formulations play a significant role in the sense making behaviour of in-car groups' use of talking satnav devices, and that they reflect this type of talk as semi-institutional in character. These formulating behaviours demonstrate a number of features: expressions of ownership and authority within the wayfinding process; the move from a forthcoming abstract conceptualisation of the environment to a concrete identifiable object, and in so doing a move from a personal perception to a shared, mutually identifiable one; and the way travellers mark the establishment of a 'reality' to which they can respond. These negotiated shifts in perception and understanding mark the journey and wayfinding experience as a social act as much as one of the 'driver' engaged in an individual operational and navigational act.

It is hoped this work will help build our understanding of the nature of visibility and invisibility within human-computer interaction. It has potential to inform interface developments in future satnav device design, for example the way travellers are presented with information about upcoming landmarks, as well as the potential application of 'tour guide' applications within such devices. It may also have relevance to audio guidance provided by pervasive technologies beyond the in-car environment. More detailed analysis is of course necessary in order to transform these findings into design principles usable in HCI, and a more detailed study of the dialogic relationships involved in the travellers sense making through talk will be a starting point for this.

Notes
[1] Garfinkel and Sacks (1970) use of the term 'member' refers not to a person in a conversation, but to a functioning utterance in discourse; it is a term for language.

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Full Citation:
Elliston, B. P. (2012), Conversational Formulations of In-Car Satellite Navigation Systems' Spoken Instructions. Paper Presented at 45th Annual Meeting of the British Association for Applied Linguistics (BAAL 2012), 6-8 September, Southampton, UK.

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