

# Local expertise and landmarks in place reformulations during emergency medical calls



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Received 13 December 2016; received in revised form 23 August 2017; accepted 5 September 2017  
Available online 22 September 2017

## Abstract

Establishing location, or where an ambulance is needed, is a critical feature of emergency calls. We describe how callers and call-takers in a South African Emergency Medical Service (EMS) reformulate place references when trouble arises. We used Conversation Analytic (CA) principles to examine audio-recorded emergency calls, and analysed focus group discussions with EMS personnel about location challenges. Our analysis confirms that place reformulations may arise from misspeaking or recipient recognition. We identify another pattern: trouble with the system, where matching a caller's description of place to the location options on a computerised programme proved challenging for call-takers. The use of landmarks as part of shared membership seems to promote call efficiency, and systems need to be context-specific and informed by local expertise. Finally, we discuss training implications.  
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*Keywords:* Emergency calls; Place reformulation; Landmarks; Local expertise; Conversation analysis; South Africa

## 1. Introduction

Conversation analysts, using recorded calls to the police and 911 emergency services, have identified common features in the interactional structures of these calls (Whalen et al., 1988; Whalen and Zimmerman, 1990; Zimmerman, 1984, 1992a,b).

The caller and call-taker, through an interrogative series of questions and answers, must swiftly establish a contact number, the geographic location or place reference, as well as sufficient details about the medical emergency in order to send out an appropriate medical team. The ramifications of inaccurate, obscure, or misunderstood place references can be catastrophic.

In this article, we report on location-related challenges and place reformulations in calls made to an Emergency Medical Service (EMS) in the Western Cape Province of South Africa. As Stein et al. (2016) have identified, location and positioning of resources play a critical role in determining the accessibility of out-of-hospital emergency services for patients in Africa. As technologies become available to enable better identification of patient location, it becomes important to examine ways of optimising technology use while also understanding patient barriers to accessing EMS

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systems. The rationale for our work is to inform the development of contextually appropriate systems which address the needs of an African context.

There is some evidence that local expertise is an important element of emergency medical calls, particularly in remote and geographically complex areas (Normark and Randall, 2005). Landmarks have been highlighted in the literature as a useful element in emergency calls and an innovative and relevant solution for promoting call and system efficiency (Schegloff, 1972; Dovigo and Redaelli, 2011; Stein et al., 2016). This appears to be a particularly promising strategy in contexts of poor literacy and multiple languages. The area served by the Western Cape EMS call centre has unusual social, linguistic and geographical features which, we hypothesised, would influence how location was negotiated.

### 1.1. Establishing and reformulating place

An often discussed area of conflict in emergency calls is the mismatch between caller and call-taker priorities. The call-takers' primary responsibility is to establish the location of the emergency (the *where*) and so this is the question they often ask first. However, callers frequently prioritise describing the *who*, *what* and *when* of the emergency (Tracy, 1997; Imbens-Bailey and McCabe, 2000; Del Corona and Ostermann, 2012). Callers may even resist the call-taker's persistence in establishing location and delay their response to the *where* inquiry. This probably occurs because location questions appear irrelevant to the caller (Whalen and Zimmerman, 1990; Tracy, 1997), or the caller assumes the call-taker knows their location; for example, through the use of an automatic location finder via their cell phone (Garcia, 2015). The call-taker's need for a prescribed information sequence as well as their emphasis on specific types of information (such as location details) may clash with the caller's need to know *when* an ambulance will be dispatched (Tracy, 1997; Whalen and Zimmerman, 1998; Del Corona and Ostermann, 2012).

The system used to record call data may also impact on the process of establishing location. Frankel (1989) found that filling out a pre-coded form extended the call duration and resulted in inaccurate data recording. Del Corona and Ostermann (2012) studied calls to a Brazilian Police emergency service and found that the electronic forms call-takers were required to complete were problematic, as not all street names were registered in the system. The authors observed that call-takers frequently experienced difficulties when trying to pinpoint locations in less well established neighbourhoods where, ironically, police intervention was most often required. Their findings suggest that computerised systems have created new demands and constraints on the caller and call-taker's ability to establish location, especially in developing and resource poor environments.

Establishing location is further exacerbated when one explores, on a micro level, the unique language features required in a typical location sequence. For any place formulation, there is a multitude of options available to the caller to describe where he or she is, and how the caller decides to frame and express the location might cause problems for the call-taker (Schegloff, 1972).

Kitzinger et al. (2013) identified two main sources of interactional trouble when establishing place: '*misspeak*' and '*recipient recognition trouble*'. A '*misspeak*' occurs when the caller selects and subsequently repairs words to describe the location, thus reformulating the description. '*Recipient recognition trouble*' arises when the call-taker has difficulty establishing the location due to a lack of shared knowledge or understanding, and reformulation is performed by the caller to aid recipient recognition.

Schegloff (1972) discusses the idea of a '*location analysis*', namely, that in order to formulate a location, one needs an understanding of both one's own position and the listener's reference point. If a call-taker is unable to understand the caller's reference, alternative formulations are needed until the location information is, as Schegloff (1972) describes, '*co-present*'. This often requires a '*step-wise recalibration*' (Lerner and Kitzinger, 2007) to fine-tune the location. The caller has to keep adding information until an adequate formulation and common understanding is reached. Because of the specific nature of a location, answers must be conditional to the question, and Kitzinger et al. (2013) report that it is not unusual for a place reference to be reformulated in an interaction. This fine tuning frequently involves the use of unique markers or landmarks which are more easily recognised by those with a '*shared membership*', i.e. a common understanding of the area and terminology (Schegloff, 1972; Zimmerman, 1992b).

### 1.2. The EMS geographical context

Place formulations are affected by context (Schegloff, 1972) and the Western Cape EMS call centre has several contextual challenges. It services a large area, roughly the size of Greece (129 462 km<sup>2</sup>) (Statistics South Africa, 2012a). It is a province of contrasts juxtaposing some of Africa's most expensive properties with poor, informal settlements and rural farming areas. The Cape Town Metropole area is coastal with mountainous as well as flat stretches of land such as the Cape Flats. These are multilingual communities, with Afrikaans, isiXhosa and English being the most commonly spoken languages (Statistics South Africa, 2012b).

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