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Talking as doing: Language forms and public language

Carol A. Fowler [a,b,*]

[a] University of Connecticut, Storrs, CT 06269, United States
[b] Haskins Laboratories, New Haven, CT 06511, United States

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A B S T R A C T

I discuss language forms as the primary means that language communities provide to enable public language use. As such, they are adapted to public use most notably in being linguistically significant vocal tract actions, not the categories in the mind as proposed in phonological theories. Their primary function is to serve as vehicles for production of syntactically structured sequences of words. However, more than that, phonological actions themselves do work in public language use. In particular, they foster interpersonal coordination in social activities. An intriguing property of language forms that likely reflects their emergence in social communicative activities is that phonological forms that should be meaningless (in order to serve their role in the openness of language at the level of the lexicon) are not wholly meaningless. In fact, the form-meaning "rift" is bridged bidirectionally: The smallest language forms are meaningful, and the meanings of lexical language forms generally inhere, in part, in their embodiment by understanders.

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1. Introduction

The study of language by linguists has focused on linguistic competence, that is internalized knowledge of language, rather than on performance. In psycholinguistics where performance has been addressed, language use in the mind (that is, mental processes involved in perception, comprehension, and production planning) have been studied more than language use in the world. This focus on private rather than public language has permitted development of a perspective on language forms that I suggest is unrealistic. Although language forms are the means within language for making linguistic communications public, they are assumed to have properties that prevent their making transparent or veridical public appearances.

In the present paper, I carve out a very small part of the study of public language use, invoking an insight from the study of linguistics that is mostly accurate: language structure partitions into distinct levels of description. I focus on language forms as distinct from the meaningful utterances they compose. A major aim of the discussion is to promote the idea that language forms are public actions, not private categories in the mind. As such, they are adapted to public use. Indeed, they are primarily actions of the vocal tract, not the abstract mental categories of linguistic and psycholinguistic theories. They are adapted also because they emerge from and so are shaped by the requirements of social activities in which language use constitutes a part. The language forms that emerge in that way are perceptually easy to distinguish and are readily articulated. A second aim is to note that, although language forms are vehicles for conveying language meanings, they are also more than that. In addition, they do work themselves in serving (along with manual and other bodily actions) as coordination devices; they serve to foster successful achievement of the joint aims of groups of individuals (Clark, 1996) participating in social groups. A final aim is to acknowledge that the partitioning of language into forms and meanings on which this discussion depends is only approximately accurate, and that matters too. Precisely because languages emerge from and are shaped by social interaction, they are not the tidy formal systems

* University of Connecticut, Storrs, CT 06269, United States.
E-mail address: cfowler@haskins.yale.edu.

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of linguistic analysis. One interesting index of the untidy shaping of language by its use is that the partitioning of language into distinct levels of form vs meaning (the form-meaning "rift" (Levelt, Roelofs, & Meyer, 1999)) is only approximate.

2. Language forms

2.1. Some linguistic characterizations of language forms and critiques of them

In classical descriptions provided by theories of phonology, the smallest language forms are consonants and vowels. They are abstract categories in the mind that have featural attributes such as (for consonants) voicing, and manner and place of articulation. They are the meaningless building blocks that compose word forms. Across the lexicons of language, they exhibit regularities (for example, aspiration of voiceless stops in stressed-syllable initial position in English) that are expressible by rules (e.g., Chomsky & Halle, 1968) or constraints (Prince & Smolensky, 2004).

Meaningless language forms combine in systematic ways (that is, respecting phonotactic constraints) to compose meaningful word forms. This combinability, known as "duality of patterning" (Hockett, 1960), "the phonological principle" (Pierrehumbert, 2006), or more broadly, "the particulate principle of self-diversifying systems" (Abler, 1989; Studdert-Kennedy, 1998), constitutes one of the ways in which language exhibits productivity. There is no limit to the size of the lexicon of word forms for any language community. This is a critical characteristic of language underlying its openness to growth and change at the level of lexical forms.

There is something right about the foregoing characterizations of language forms provided by many theories of phonology. The characterizations at least roughly capture what language users know about their language at the level of phonological form. Featural descriptions offer insight into the nature of systematic phonological processes (e.g., vowel harmony, final devoicing) that characterize languages. They also do a good job of capturing characteristics of sublexical speech errors (e.g., Dell, 1986; Shattuck-Hufnagel, 1979), providing evidence that something like discrete segments with featural attributes are relevant to language performance. Finally, the idea that primitive forms are discrete and recombinable explains one kind of linguistic productivity as noted.

However, there is much wrong with the characterizations as well if language forms such as consonants and vowels are viewed as providing an interface between language in the mind and language in the world. In that central role, if at all possible the forms should be adapted to their public use. Yet, language forms as described in linguistic theory do not make public appearances intact. In conventional theoretical accounts, there are incompatibilities between language forms as known and the activities of the vocal tract that make linguistic utterances available to listeners.

Following are three major aspects of the presumed mismatch between language forms of linguistic competence as they are conventionally characterized and public utterance of language forms:

1) In linguistic theory, consonants and vowels are discrete. For example, the word *bus* consists of three discrete segments /b/, /ʌ/, and /s/. Each segment is characterized by a set of static featural attributes. For example, /b/ is a bilabial, voiced obstruent. However, there are no temporally discrete, static, segments either in the corresponding articulation of the word *bus* or in the resulting acoustic speech signal. (This is known as the "segmentation" problem.) The mismatch derives from coarticulation, the temporal overlap of vocal-tract gestures for sequences of consonants and vowels.

2) Another consequence of coarticulation is pervasive context-sensitivity of acoustic information for the same consonant or vowel produced in different coarticulatory contexts. Although acoustic invariants for phonetic segments have been sought (e.g., Stevens & Blumstein, 1981), they have not been found (the "invariance" problem). Accordingly, it is not just that there are no discrete, static segments in articulation or speech acoustics; there is apparently *nothing* the same in either domain when the same consonant or vowel is produced in different contexts.

3) Even as transcribed phonetically, a given ostensible phonological segment (e.g., /t/) shows endless variation, both within a speaker across contexts and speaking styles and across speakers of different idiolects and dialects.

The foregoing are the major ways in which language forms as their implementation in public action is characterized are incompatible with language forms as they are presumed to be known in the mind. Yet a conclusion that the mismatch is real is surprising. If language forms are the means within language for making linguistic communications public, should they not be adapted to their public use?

My own view is that the mismatch is not real. It has arisen, because theories of phonology have been developed without attention to the role of language forms in public use of language. Therefore, an aim of my research and that of collaborators has been to show that there is no mismatch between language forms as known (e.g., Browman & Goldstein, 1986; Goldstein & Fowler, 2003), produced (e.g., Fowler & Saltzman, 1993; Saltzman & Munhall, 1989), specified acoustically (Fowler, 1994; Iskarous, 2010; Iskarous, Fowler, & Whalen, 2010) or perceived (e.g., Fowler, 1986; 1996; Viswanathan, Fowler, & Magnuson, 2009; Viswanathan, Magnuson, & Fowler, 2010).

One way in which some investigators have proposed to eliminate the incompatibility has been to reject the idea that abstract phonological segments are components of linguistic competence and to propose instead a close similarity between token utterances as produced in the world and memory supporting perception and production. This approach is taken, for example, by exemplar theorists (e.g., Johnson, 1997, 2005; Pierrehumbert, Hopper, & Bybee, 2001). In this approach, as language forms are preserved

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