



Encryption Theory: Conversational Humor, Prosody and Social Networks in Rural Brazil

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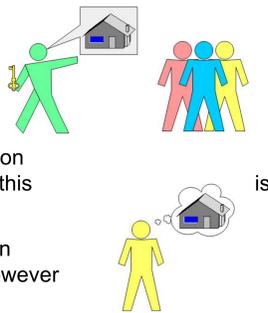
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The Encryption Theory of Humor

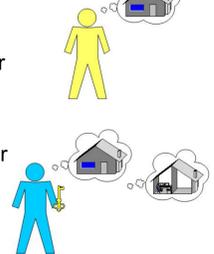
The encryption theory of the evolution of humor hypothesizes that our capacity to construct jokes and to find them funny is an adaptation for honestly signaling compatibility in local cultural variation among potential long-term interaction partners (i.e., friends or mates).

I. Encryption: Humor is understood by means of an encryption-decryption process.

- When a speaker makes a joke, she produces an utterance which affords multiple lines of interpretation.
- At least one of these lines is not understandable without access to some kind of shared prior information (propositional knowledge, preferences, or attitudes); this referred to as the "key."



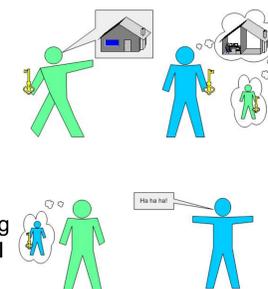
- If the listener does not have access to the key, he can only infer the surface meaning of the utterance, however mundane or non sequitur it may be.



- However, if the receiver does have access to the key, he can "decrypt" the other lines of meaning the speaker included in the utterance; this is more commonly referred to as "getting" the joke.
- The fact that this other line of meaning was intentionally presented makes humor an honest index of possession of the key.

II. Similarity: Understanding humor entails an inference of similarity.

- By producing the joke, the speaker has honestly indexed her access to the key.
- By laughing in response, the receiver has reliably indexed his access to the key.
- Because of this mutual knowledge, the speaker and receiver can be reasonably confident that they resemble one another on the fact of their possession of the key.



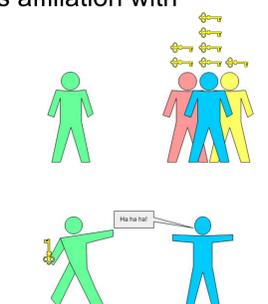
- Those speakers and receivers with greater underlying resemblance will have more occasions for successful humor.



- If this process is iterated over many encounters, speakers and receivers can infer the relative similarity between themselves and various members of the local group.

III. Assortment: Successful humor encourages affiliation with compatible local peers.

- After multiple instances of humor, successful jokes have indicated the relative similarity of local group members to one another.
- Given that coordination is easier between similar individuals, humor will facilitate assortment for greatest compatibility in locally variable features of personality, knowledge, and attitudes.
- After this initial assortment, the use of humor will continue to maintain the social bonds.



Field Site

To test these hypotheses, an ethnographic investigation of the use of humor and its role in social relationships was conducted at the *Assentamento de Boa Ventura* collective farm in Ceará, Brazil, from December of 2006 through May of 2007.

- The farm was collectivized in 1997; prior to collectivization, it was operated as a share-cropping plantation for decades, and has been the site of numerous anthropological investigations.
- Residents engage in both individual subsistence and commercial farming and ranching, and in communal cash crop farming, which funds the collective.
- There are approximately 300 current residents, 64 of whom are *assentados* ("seat-holders") who represent their households at the monthly collective assembly.



Methods

Recordings of naturalistic speech were obtained from two meetings of the collective assembly (1/8/07 and 5/7/07):

- 24 instances of spontaneous production of humor¹ were identified and transcribed both by Flamson and by native speaker of Brazilian Portuguese.
- Each instance was broken into a "set-up" and a "punchline" segment, and compared with a preceding "baseline" non-humorous segment.
- The pitch (semi-tone transformed mean, variability, and range of F_0), loudness (amplitude mean and variability), and speech rate (mean syllable duration) of each segment were analyzed.
- The content of each humorous utterance was coded for the underlying knowledge necessary to understand it.

¹ Instances were identified by the presence of laughter. Although this selection criterion obviously carries limitations in not allowing for the analysis of unsuccessful humor and in possibly detecting unintentional humor, it does avoid making selections on the basis of any particular hypothesis as to the defining characteristics of a humorous utterance.

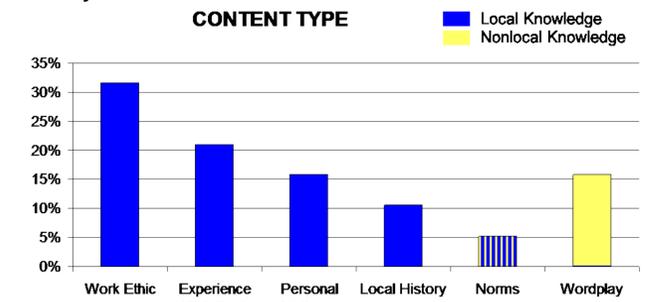
Results

Acoustic Analysis:

- Only loudness was significantly different across all utterance pairs ($F(2,23) = 5.91$, $p < 0.05$, $\eta^2 = 0.20$).
- Baseline loudness was significantly lower than set-up loudness ($p < 0.01$) and punchline loudness ($p < 0.05$), but set-up loudness and punchline loudness were not significantly different.
- Pitch range was marginally significant ($F(2,23) = 2.94$, $p = 0.06$, $\eta^2 = 0.11$).
- Punchline pitch range was significantly lower than baseline ($p < 0.05$), and not significantly lower than set-up pitch range.

Content Analysis:

CONTENT TYPE



- Most jokes (78.95%) relied on knowledge only available to local group members (e.g., knowledge of attributes of local individuals or organizations).
- Only some jokes (15.79%) relied on broadly-accessible knowledge (e.g., puns or wordplay).
- A small category (5.26%) relied on reference to behavioral norms of intermediate localness (e.g., foxes are hunted to protect livestock, not to eat).

Conclusions

Contrary to other hypotheses (Bateson 1955, Forabosco 2008), there is no evidence that speakers are prosodically marking their humor production.

Based on the acoustic contexts of the utterances, it seems likely the increase in volume and the reduction in pitch range in punchlines were a consequence of insuring audibility, and not a means of marking of humor.

Instead, successful humor production relies primarily on semantic content that references local knowledge, as predicted by the Encryption Theory of Humor.