

## **Rhythm variation in spontaneous and induced speech**

Amedeo DE DOMINICIS (Università della Tuscia)

### *Introduction*

This paper investigates on whether and to what extent the metric of speech can be induced by the pragmatic conditions of communication.

In the literature, two approaches to the theme of linguistic rhythm may be identified. The first and older one assumes the existence of rhythmic types (or classes). It is a well known binary classification between syllable-timed/stress-timed languages (a third type, called mora-timing, was added later) and goes back to the nineteen-forties (Lloyd James 1940, Pike 1945, Abercrombie 1967, Faure & Hirst & Chafcouloff 1980, Dauer 1983). However, the several attempts to obtain experimental validation have not yet clearly confirmed this hypothesis (e.g. Dauer 1983, Shen & Peterson 1962, Bolinger 1965, O'Connor 1965, Uldall 1971, Lea 1974, Lehiste 1977, Donovan & Darwin 1979, Roach 1982, Wenk & Wioland 1982, Borzone de Manrique & Signorini 1983, Drake & Palmer 1993). But, according to a weaker hypothesis, the perceptual impression of a discrete rhythm type in a given system may arise from the convergence of some clusters of phonological properties typical of that language. Their interaction would result in the syllable-timed/stress-timed perceptual effect (e.g. Dasher & Bolinger 1982, Nespor & Vogel 1986, Dauer 1987, Bertinetto 1981, 1989, Nespor 1990, Ramus & Nespor & Mehler 1999).

In this line of research, it should be noted that the hypothesis of rhythm as an Adaptive Oscillator (Port & Cummins & Gasser 1996) is also relevant for the second approach (rhythm as a conversational resource).

In the second approach, rhythm is not viewed as a constant property of the language system, but as a variable property of conversational interaction and a device – along with other language resources used to manage speakers' cooperation and conflicts. As a result, rhythm has stable characteristics, but may vary due to the conversational tasks that it contracts. This hypothesis derives from conversational analysis studies, and represents rhythmic features in Gestalt terms. Recently, a new impulse has been given by studies devoted to the so-called phonetic details (Cutler 1991, Couper-Kuhlen 1989, 1990, 1993, 2001). In this paradigm, the most prominent feature of the representation of rhythm is its tendency to vary during interaction. Therefore, rhythm is not an intrinsic property of the system, but a tactical resource of the speaker. A demonstration is provided in Brown & Weishaar (2010), which shows the variability of the metric feet (heterometry) in spontaneous speech, in analogy to the phenomena of metrical alternation in music (see also Bertinetto 1989, Russo & Barry 2008, Arvaniti 2009). Furthermore, the studies on rhythm as an entrainment phenomenon (Cummins & Port 1998, Port 2003, Cummins 2009) show how communicative interaction can induce disturbances, perturbations or reinforcements in the rhythmic style of a given speaker.

### *Data*

In the paper, first of all, we will analyze a speech corpus that was elicited by means of an experimental collaborative task. Moreover, we will examine the variable metric of two speakers engaged in a polemical interaction. We elicit, therefore, two corpora: a collaborative interaction (the subjects were asked to synchronize their speech with a recorded one) and a polemical one with overlapping turn-taking.

In each of the two corpora we took two measurements: the intervals (the temporal distance)

between the prominent (stressed) syllables; and the duration of stressed and unstressed syllables. These measurements were used to check the metrical typology (stress-timing vs. syllable-timing) and its variation in the different turns of the corpus. The analysis of the corpus 1 shows that the trend towards a syllable-timed or a stress-timed rhythm can be experimentally induced and is an effect of the communicative interaction; the analysis of the corpus 2 demonstrates that rhythmical patterns vary according to the conversational goals of the speakers.

The results support the hypothesis that rhythm is not a stable property of the system, but a variable conversational resource. It can be induced by means of an experimental device. Finally, its patterns vary according to the conversational goals of the speaker.

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