

TWO QUANTITATIVE-HARD COMMUNICATIVE CHARACTERISTICS OF HUMAN VOICE

Ștefan Vlăduțescu,

University of Craiova (Romania),
Department of Romance Languages and Communication
E-mail: vladutescus@yahoo.com

ABSTRACT

The study approaches the human voice in terms of its communicative paraverbal qualities. It starts from an ideational module consisting of some preliminary assumptions. In essence, the paraverbal communication has no independent existence: it produces communicative meaning only in the wide context of verbal communication. However, we can talk about paraverbal sequential communications, where the paraverbal communication has a relative autonomy. The language (the speech) forms the system called language. In a connected mode, in an abstract plan, the internal system of the paraverbal sub-flow is called paralanguage (M. L. Knapp, F. Poyatos, J. K. Burgoon, T. O. Meservy). The research is an extended meta-analysis of the sound communicative features of the language; in it there are comparatively examined influential opinions of famous specialists of the field. We argue in favor of a triple thesis:

i) the human voice has 9 identity-communicational features: fundamental frequency (Fo), vocal register, tone (height, intonation), volume, accent, diction, timbre of phonation, average verbal flow;

ii) the first two traits are quantitative characteristics; they are fixed, unchangeable: they are hard communicative voice characteristics;

iii) the other seven are qualitative; that are modeled within certain limits; these are soft communicative voice characteristics.

In the present research, we are investigating the hard characteristics, following that in other research to examine soft characteristics.

Keywords: equation of oral communication, quantitative-hard communicative characteristics of human voice, qualitative-soft communicative characteristics of human voice, fundamental frequency, vocal register

1. Equation of oral communication

The human voice is a source of power. It is a communication tool and thus influence. Great orators are glorious heroes of the weapon called voice. We know memorable voices. Where the time has not technically preserved the voices, we have available transcripts of oral speeches. The general equation is OC (oral communication) = Communicative Text + Voice. Indirectly, the voice reads the text audibly or directly it audibly builds a speech. The oral discourse is the vocal interpretation of a text which can be either pre-planned or developed spontaneously (Dejica, 2006). A text "vocalized" by different people has different effects. The voice has communicative influence (Vlăduțescu Ș., 2006a; Vlăduțescu Ș., 2006b; Ilica A., 2010). The voice induces extra-textual communicative effects. The voice infuses the text with specific communicative effects. It has a great communicative potential. This communicative potential has a material anatomic, phonetic foundation and a vocal behavior (Vlăduțescu Ș., 2007; Dima I. C. & Vlăduțescu Ș., 2013a). A voice has features that make it unmistakable. The voice has an identity that makes it recognizable and expertisable. Communicational identity of the human voice has more features (Ashby M., & Maidment J., 2005; Chelaru C. I., 2007; Fletcher J., (2013).

Fernando Poyatos underlines eight traits of the voice: "timbre, resonance, intensity or volume, tempo, pitch (level, intervals, range), intonation range, syllable duration, and rhythm" (Poyatos F., 2002, p. 2). T. O. Meservy and J. K. Burgoon identify three defining features of the voice: "pitch, intonation, and speaking tempo" (Meservy T. O. & Burgoon J. K., 2008, p. 3496). M. L. Knapp considers three characteristics of the "vocal behavior: rate, pitch, intensity" (Knapp M. L., 2008), (Knapp M. L., 1982). P. Glenn holds seven characteristics: "pitch, intonation, emphasis, volume, rhythm, timing, and tempo" (Glenn P., 2008).

2. Voice quantitative (hard) communicative characteristics of human voice

2.1. Fundamental frequency (F_0)

As shown by Ingo R. Titze, the spoken voice or the spoken speech (voiced speech) of an adult male has a "fundamental frequency" (F_0) between 85 Hz and 180 Hz, the voice of an adult female falls, as fundamental frequency (F_0), between 165 Hz and 255 Hz (Titze I. R., 1994, p. 188). For each individual, F_0 is constant as a fingerprint (Bogdan C.-I., 2001, p. 159). From the fundamental frequencies start voice modelling and voice modulation that make the "frequency components of human voice extend down to some 20 Hz and as high as 32,000 Hz" (Freeman R. L., 2005, p. 90). At a middle F_0 frequency, at about 160-180 Hz, also called the ambiguous sex field, the listener's decision about the sex will be drawn to a speaker's identification as a female voice. It is added that the height of the voice and the vocal identity can create difficulties for the listener in their decision on the speaker's sex when the latter are old age and his voice fundamental frequency tends to increase in men or decrease in women, as a normal feature of age (Greene M. & Mathieson L., 2001; Jaffe C., 2012; Gobl C. & Chasaide A. N., 2013).

2.2. The vocal register

There is no doubt that outside the voiceprint, the voice is not an obligation for the brain, it is not a given. It is our ability in some cases to model and to mode the voice, to give it different registers. Processing the sound sonority from the vocal folds occurs on two dimensions: 1) the vocal registration dimension and 2) the vocal resonance dimension. Vocal registration or whatever it is called system of vocal registers is at the level of the vocal folds. It consists of some individualizable modules of tones generated in the same vibratory pattern. Theoretically, on the vocal dimension or register dimension there were defined either 2, or 3, or 4 tone modules. So the registry is a tone module that the speaker-singer produces in one and the same vibratory pattern (Vladutescu S., 2013a; Vladutescu, 2013b).

If the first dimension is the second register dimension, the second dimension is timbre and intensity dimension. On this dimension the basic sound generated by the vocal folds, phonation product, is processed as timbre and intensity. If the first processing occurred at the level of the vocal folds, this second process occurs along the cavities. Now phonation product is not modulated by a vibrator, but shaped by many so-called vocal resonators. This dimension will form the basis phonation product moving outward through the well-known cavities: chest, the tracheal tree, larynx, pharynx, oral cavity, nasal cavity, and sinuses. The route about vocal resonance dimension was called "vocal tract resonance" (Rammage, L. & Morrison, M., 2001, p. 282).

A registry is a frequency range of phonation in which all the tones are perceived as being produced in the same way and have a similar vocal timbre. Registers are modulations of the "voice source" (Bogdan C.-I., 2001, p. 92; Vlăduțescu Ș., 2011; Iuhaș, 2012), the primary spectrum, the basic forms of speech remain within it and tend not to intentionally disguise (the voice). The most popular theory of registers is that of James McKinney. He believes that there are four vocal registers: the frz register, the modal register, the falsetto register and the whistle register (McKinney, 1994; Arhip, 2012; Arhip & Arhip, 2012). An important theory is that of Robert Caldwell, in this, the registers taxonomy has three components (chest, middle, head) with two elements, an auxiliary called "whistle" and an "event" (Caldwell R., 2000). To characterize the falsetto register, McKinney shows that "falsetto is a phonational register occupying the frequency range just above the modal register and overlapping with it approximately one octave. It is produced by the vibration of the ligamentous edges of the vocal cords, in whole or parts" (McKinney J., 1994, p. 101). The vocal registers are internally remarkable through the "place where the control of the vibration occurs". In this way, the low tones produce powerful vibrations in the chest, the average ones cause sensations rising to the palate and the pharynx cavities (throat), and the high ones create vibration sensation in the head. For each of these groups there is a similar tonal timbre and a specific adaptation of the respiratory mechanism. On this basis have been established, for the female voice, three registers (chest, middle and head), while for the male voice, two (breast and mixed). The chest register (or the chest voice) applies to the voice of the female and male, too. It is characterized by a low tension of the vocal ligament and a tension increasingly higher from the acute to severe in the vocal muscle. This register is used to low phonatory frequencies. The falsetto register head includes the head register in women (light voice or soft voice) and refers to high frequencies. The male voice goes through falsetto when laughing or as a sign of great surprise. The mixed register is the transition between the chest voice and the falsetto, where the timbre can have all shades in between. The sylphid voice or the little register is situated in the very high female voice. "Vocal fry" (McKinney J., 1994) or "chest" (Caldwell R., 2000) occurs in normal speech to men and women, when sentences are completed in an extremely low frequency of phonation, so that we may perceive each separate vibration of the vocal cords. Each register has its own field of notes, and finally each overlaps the one that follows, which once again makes recognizable the differences between male and female voice. The overlap sphere between the chest and the falsetto registers in men is between 200-350 Hz. In the female voice the coverage areas are: between the chest register and the middle one at 400 Hz, and between the middle and the head voice at 600 Hz (Bogdan C. I., 2001, p. 101; Dima I. C. & Vladutescu S., 2013b). The overlap areas of registers and their boundaries vary from one individual to another (Karpf A., 2006; Vlăduțescu Ș., 2009).

3. Conclusion

The human voice has two types of communicative features: a) fixed or hard features and b) flexible or soft features. The first form the class quantitative-hard communicative characteristics of human voice. The other class is qualitative-soft communicative characteristics of the human voice. The two hard communicative characteristics are fundamental frequency and vocal register.

References

1. Arhip, O. (2012). Characteristics of Meta-Referential Discourse. *Philologica Jassyensia*, (VIII/2 (16), 123.
2. Arhip, O., & Arhip, C. (2012). Beyond 'Customer is King': Sales and Marketing Promotion. *International Conference on Business Excellence 2007*.
3. Ashby, M., & Maidment, J. (2005). *Introducing Phonetic Science*. Cambridge University Press.
4. Bogdan, C. I. (2001). *Foniatrie clinică*. București: Editura Viața Medicală Românească.
5. Caldwell, R. (2000). *Excellence in singing: multilevel learning and multilevel teaching. Advancing the Technique*. Vol. 3. Redmond, WA: CaldwellPublishing.
6. Chelaru, C. I. (2007). *Un instrument exceptional: vocea umană*. București: Tehnopress.
7. Dejica, D. (2006). Pragmatic versus Syntactic Identification of Thematic information in Discourse. *Scientific Bulletin of the Politehnica University of Timisoara, Transactions on Modern Languages*, 5, 1-2.
8. Dima, I. C., & Vlăduțescu, Ștefan (2013). Some Consequences of the Negative Journalistic Communication in the Austerity Periods, *Science Series Data Report*, 5(7), 2-7.
9. Dima, I. C., & Vladutescu, Ștefan (2013). Certain Current Considerations on the Managerial Communication in Organizations. *Jokul Journall*, 63(8), 24-44.
10. Fletcher, J. (2013). *The Prosody of Speech*. In W. J. Hardcastle, J. Laver & F. E. Gibbon (Eds.), *The Handbook of Phonetic Sciences* (pp. 523-602). (2nd ed.). New York: Wiley & Sons.
11. Freeman, R. L. (2005). *Fundamentals of Telecommunications*. New York: John Wiley & Sons.
12. Glenn, P. (2008). *Voice, Prosody, and Laughter*. In W. Donsbach (Ed.), *The International Encyclopedia of Communication*. Oxford, UK, and Malden, MA: Blackwell Publishing.
13. Gobl, C., & Chasaide, A. N. (2013). *Voice Source Variation and Its Communicative Functions*. In W. J. Hardcastle, J. Laver & F. E. Gibbon (Eds.), *The Handbook of Phonetic Sciences* (pp. 378-423). (2nd ed.). New York: John Wiley & Sons.
14. Greene, M., & Mathieson, L. (2001). *The Voice and its Disorders*. (6th ed.). New York: John Wiley & Sons.
15. Ilica, A. (2010). Extraverbal communication. *Agora, revistă trimestrială*, 5-16.
16. Iuhaș, F. (2012). Mass Media Anthropology: A Post-modern Field of Research. *Advanced Research in Scientific Areas*, 853-858.
17. Jaffe, C. (2012). *Public Speaking: Concepts and Skills for a Diverse Society*. (7th ed.). Cengage Learning
18. Karpf, A. (2006). *The Human Voice: The Story of a Remarkable Talent*. London: Bloomsbury Publishing.
19. Knapp, M. L. (1980). *Essentials of Nonverbal Communication*. New York: Holt, Rinehart & Winston.
20. Knapp, M. L. (2008). *Nonverbal Rhetoric*. In W. Donsbach (Ed.), *The International Encyclopedia of Communication*. Oxford, UK, and Malden, MA: Blackwell Publishing.
21. McKinney, J. (1994). *The Diagnosis and Correction of Vocal Faults*. Long Grove, IL.
22. Meservy, T. O., & Burgoon, J. K. (2008). *Paralanguage*. In W. Donsbach (Ed.), *The International Encyclopedia of Communication* (pp. 3496-3501). Oxford, UK, and Malden, MA: Blackwell Publishing.
23. Poyatos, F. (2002). *Nonverbal Communication across Disciplines: Paralanguage, kinesics, silence, personal and environmental interaction*. Vol 2. Amsterdam/ Philadelphia: John Benjamin Publishing Company.

24. Rammage, L., Morrison, M., Nichol, H. et al. (2001). (Eds.), *Management of the Voice and its Disorders*. Thompson Learning.
25. Titze, I. R. (1994). *Principles of Voice Production*. New York: Prentice Hall.
26. Vlăduțescu, Ș. (2006a). Efabilul și inefabilul, ca locuri ale comunicării. *Analele Universității din Craiova. Seria. Științe Filologice Lingvistică*. 28(1-2), 240-248.
27. Vlăduțescu, Ș. (2006b). Raportul dintre mesaj și discurs. *Analele Universității din Craiova. Seria Științe Filologice. Lingvistică*. 28 (1-2), 386-397.
28. Vlăduțescu, Ș. (2007). Discursul impozitiv. *Analele Universității din Craiova. Seria Științe Filologice. Lingvistică*. 29 (1-2), 371-383.
29. Vlăduțescu, Ș. (2009). *Concepte și noțiuni de comunicare și teoria mesajului*. Craiova: Editura Sitech.
30. Vlăduțescu, Ș. (2011). Feedback, between psychology and communication. *Revista de psihologie*, 57(4), 359-366.
31. Vladutescu, S. (2013a). Principle of the Irrepressible Emergence of the Message. *Jokull Journal*, 63(8), 186-197.
32. Vladutescu, S. (2013b). What Kind of Communication Is Philosophy? *Jokull Journal*, 63(9), 301-318.