

## DEAF MUSICAL DIMENSION: REALITY OR UTOPIA?

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### ABSTRACT

Profound deafness may be congenital or acquired, and it is usually considered an unfitting condition to music/sound perception. Deaf people that join an oral tradition (deaf culture) and use sign language, spontaneously, create peculiar styles to express thoughts in different registers (narrative style, poetry, and so on); moreover, visual language effects contribute to create a visual rhythm usually considered 'music' by deaf people. This fact, together with the inclination of profound deaf people to feel sounds through the tactile perception, leads to define a new notion of musical dimension different from the classical notion based on the hearing perspective.

**KEYWORDS:** deafness, musical dimension, sign language, deaf culture, sound perception

### 1.0 INTRODUCTION

In this essay I want to examine comparatively the understanding of what the deaf musical dimension is, and how to define this. The analysis of the expression styles in sign language is the starting point of this work: I will propose some examples from the Italian deaf tradition. However, the tactile perception of sounds is another element that contributes to define the deaf musical dimension: I will explain how it happens analyzing a new form of expressive style in sign language called musical Visual Vernacular (VVM).

The notion of musical dimension is closely related to the concept of music and perception of sounds (and silence). Two dimensions primarily describe the concept of music: the vertical dimension and the horizontal dimension (Schonberg, 1954). On the one hand, the vertical dimension of music is based on the relationships of notes occurring simultaneously and, on the other hand, the horizontal dimension is related to the succession of notes and silent pauses (temporal element of music). In music the notes are characterized by a specific pitch and a specific intensity and, in the vertical and horizontal dimensions, these aspects contribute to define the harmonic intervals refer to the distances between notes sounded simultaneously (harmony). Harmony is a basic element of music, and is one of the most highly developed elements in Western music (Tramo et al., 2001).

Profound deafness is a pathology usually considered an unfitting condition to music/sound perception (Carré, 1997; Maragna, 2000); however, the deaf people spontaneously

show a natural interest to hear music/sounds through the tactile perception of sound vibrations: it is not rare to meet deaf people that assert to 'hear' music putting their hands directly on an amplifier system (Zaghetto, 2013). However, the deaf musical dimension is not only based on the tactile perception of sound vibrations.

Deafness usually indicates the perception impairment called hearing impairment (Bess, 1985; Bess et al., 1988). It is necessary to distinguish the *deafness* written with the lower case *d*, and the *Deafness* written with the upper case *D*. In a clinical context, the term *deafness* refers to a physical condition characterized by a relative lack of auditory sensitivity to sound compared to the species norm (Padden and Humpries, 1988).

The hearing impairment is categorized by its type (conductive, sensorineural, or both), by its severity, and by the age of onset. The hearing impairment may be congenital or acquired, and it is ranked as mild (20-40 dB), moderate (41-55 dB), moderately severe (56-70 dB), severe (71-90 dB), profound (> 91 dB), or totally deaf when the subjects has no hearing at all (Bess, 1985; Bess et al., 1988). Furthermore, a hearing impairment may exist in only one ear (unilateral) or in both ears (bilateral). By contrast, in a cultural context, the term *Deafness* refers to cultural membership within a group that is composed mainly, but not exclusively, of people who are clinically deaf and who form a social community with an identity that revolves around deafness and the use of sign languages to communicate (Janesick, 1990; Ajello, 2002; Lane, 2005).

The members of a Deaf Community (DC) tend to view deafness as a difference in human experience rather than a disability, and they share a common culture called (Padden, 1980; Zaghetto, 2013). In fact, the term 'deaf culture' describes the social beliefs, behaviors, art, literary traditions, history, values and shared institutions of communities that are affected by deafness in agreement with the definition of Lane (2005).

Usually, the members of a DC share a sign language to communicate: sign languages are visual-gestural systems characterized by the presence of a specific vocabulary and grammar, and they are natural languages transmitted through generations like spoken languages (Washabaugh, 1981; Senghas and Monaghan, 2002). The definition of community itself is problematic and the term has been used in different ways (Senghas and Monaghan, 2002).

In this paper, I adopt the term 'community' indicating the deaf people clustered as a social group and characterized by the use of the sign language (Senghas and Monaghan, 2002; Volterra, 1987/2004), *i.e.* linguistic community accordingly to the definition of Hymes (1971) and Duranti (1997).

Music is a cultural fact known among the members of all the communities in the world: music moves the human body and the human heart, and every child in every society creates music, defined to include song and dance, and it is a fundamental activity of *Homo sapiens* as Mithen asserts (2005). Both hearing and deaf communities show the habit to create musical compositions and/or performances. Hearing communities (HC) based the notion of music and the creation of compositions/performances on two key aspects: on the one hand, the use of the musical language and, on the other hand, the listening. From a hearing perspective, the presence of the specific musical language is a key element to define the notion of music and the notion of musical dimension. The musical language is a universal language diversified from the numerous and different spoken languages (Levitin, 2006).

Interestingly, DCs too develop a form of 'music' created without the use of a specific musical language. As I will show in the next sections, the members of a DC use the sign language to create a visual rhythm that becomes the key element to define the new notion of music from a deaf perspective. In particular I will describe examples from the Italian deaf culture: I will analyze and discuss pre-recorded videos of three different types of expressive style in Italian Sign Language (videos: CDs, ENS archive, web videos/YouTube).

### 1.1 The Italian Deaf Oral Tradition

'Deaf-World' is a term related to the ethical aspects of the relations between language minorities that use signed languages (Lane, 2005). The unsuitable construction of the Deaf-World as a disability group is not adequate for four reasons: 1) the deaf people themselves do not believe they have a disability; 2) the disability construction brings with it needless medical and surgical risks for the deaf child; 3) it also endangers the future of the Deaf-World; 4) the disability construction brings bad solutions to real problems because it is predicated on a misunderstanding (Lane, 2005). From this perspective, 'deafness' becomes the basic term to define the deaf cultural system, as I have discussed above.

It is widely known that there is a Deaf-World in Italy, as in other nations, made of citizens whose primary language is Italian Sign Language (LIS) and who identify as members of that minority culture, the Italian deaf culture (Stokoe, 1980; Sandler and Lillo-Martin, 2001; Volterra, 1987/2004; Zatini, 1997; Pizzuto et al., 2000; Volterra, 1987/2004; Geraci et al., 2011).

The Italian deaf people are considered members of the Italian Deaf Community (IDC) characterized by the presence of both a specific deaf culture (Italian deaf culture) and a sign language, the Italian Sign Language (LIS). After the publication of Volterra's research (1987) LIS was recognized as a linguistic system (natural language) and a literary tradition in LIS started to differentiate (Zaghetto, 2012). LIS is a visual-gestural system and it is characterized by a specific

vocabulary and grammar like the other sign languages (Volterra, 1987; Radutzky, 2001).

All the LIS signs are articulated inside the space located in front of the signer: this space is called 'neutral space of articulation' (Pizzuto and Volterra, 2002). Moreover, each LIS sign is characterized by a specific handshape (single-handed or two-handed) articulated inside a specific place of the neutral space (location), and each sign can be uni-directional or bi-directional (Corazza, 1990). The LIS signs are organized in sentences and, usually, the syntactic order is subject-object-verb (SOV); sometimes the order SOV is changed in subject-verb-object (SVO). In LIS, as in other signed languages, the intonation of the sentences is realized through facial expressions (Pizzuto, 1986; Pizzuto and Volterra, 2002; Geraci et al., 2011).

The classifiers (CLs) are linguistic elements usually used in signed languages and, usually or sometimes (it depends), in spoken languages (Keith, 1977; Mazzoni, 2008).

CLs express different characteristics of objects: dimensions (size), shape, texture, position, path and manner of motion. Different objects are grouped in 'families of objects' in which every elements share similarities related to size, or shape, and so on. In sign languages various hand shapes can represent whole entities, show how objects are handled or instruments are used, represent limbs, and be used to express various characteristics. Today, in LIS fifteen different types of CLs are known (Mazzoni, 2008) and these CLs are abundantly used in different registers of artistic expression among the deaf people of the IDC. Among the members of the DCs, as in other HCs, a literary tradition is shared. A literary tradition is characterized by the presence of different styles of expression and, today, six LIS styles are known in Italy: Narrative, Mime, Sign Song, Sign Poetry, Visual Vernacular and musical Visual Vernacular (Zaghetto, 2012).

Each style is characterized by the presence of specific rules, the peculiar use of the LIS signs, the specific rhythm of signs articulation (Russo, 2002; Zaghetto, 2013). Narrative, Mime, Sign Song and Sign Poetry are four LIS styles known and consolidated among the members of the IDC; on the contrary, the Visual Vernacular (VV) and the musical Visual Vernacular (VVM) are two LIS style recently acquired among the Italian deaf people and still defining in rules and structure (Zaghetto, 2012).

### 1.2 The Sign Song

The Sign Song (SS) is a LIS style developed in Italy during the last century as an alternative form of communication among the deaf people educated in the Italian Special Institutes of Education. Today many Italian deaf artists know and use the technique to create striking performances (some examples realized by Lucia Daniele and Laura Di Gioia on [webmultimediale<sup>1</sup>](#)).

SS compositions are characterized by the use of specific LIS linguistic elements: CLs and conventional LIS signs are mixed to create rhythmic articulation connected to body movements (Zaghetto, 2013). In the SS compositions the visual rhythm (linguistically structured) contributes to induce the 'sense of music' described by many deaf artists

(Daniele, 2009). The 'sense of music' is directly related to the use of poetic effect (cyclicity, recursion, repetitiveness, assonance and rhyme) transposed in a visual-gestual domain, accordingly to the use of the sign language (LIS).

Five technical rules characterized the organization of the SS compositions/performances: 1) during the performances body, arms and legs movements are free; 2) visual effects must be created through the coordination of body and hand movements in relation to the structure of the sign sequences; 3) an instrumental accompaniment could be present (usually drums); 4) one, two (or more) signers can realize SS performances; 5) the contents of SS compositions derive from an mental image or from events of the day-life of the signer (Zaghetto, 2013).

### 1.3 The Visual Music

The Visual Music (VM) technique is derived from the SS style (Zaghetto, 2012). Today, the VM is popular in Italy and highly diffuse among the members of the IDC, and it is based on the LIS transposition of songs written by famous hearing composers/singers<sup>1</sup>. Among the members of the IDC the VM technique is known from 2000 and, today, the VM performances are regularly proposed during public events<sup>2,3</sup>. The visual metaphors created by the deaf artists during VM performances directly corresponds to the mental images derived from the transposition of the songs texts. CLs and conventional LIS signs are usually used during the transposition process: the signs are organized, on the one hand, to describe the 'artistic' idea and, on the other hand, to create *poetic effects* related to a specific visual rhythm (Zaghetto, 2013).

Different types of VM performances are known, but the most famous are realized by deaf choirs together with hearing choirs (and/or musicians)<sup>2,3,4</sup>. However, many 'solo' performances are also realized (numerous examples on the web<sup>5,6,7,8</sup>). Usually, during a VM performance, the deaf artists do not directly interact with the sound vibrations: in fact, the music dynamics are not important to create the visual transposition of the song's text. During choir performances the coordination between deaf singers, hearing singers and musicians is realized by a choral director<sup>4</sup> (Zaghetto, 2012).

### 1.4 The Musical Visual Vernacular

The musical Visual Vernacular (VVM) is a new style in LIS recently acquired among the members of the IDC, and directly derived from the Visual Vernacular (VV). This style was diffused/known in Italy from 2008, and today only two style's examples are known: The Third Conversation (2008) and The Conversation (2010) by F. Grilli<sup>9</sup>.

A VVM composition is characterized by the specific use of the LIS facial expressions and CLs (Zaghetto, 2012): CLs are organized in sequences fast articulated like in the VV style. However, in the VVM style an additional element is present: the music accompaniment. The rhythm and the pitch of the notes/sounds is perceived by a deaf performer through the sense of touch (Zaghetto, 2012). This fact leads to organize the CL-sequences in relation to the music parameters perceived. In a VVM performance the artistic idea and the

tactile sensations of the sound vibrations contribute to generate the visual/LIS composition equally understandable by hearing and deaf people (Zaghetto, 2012). In fact the VVM performance is highly iconic. Therefore, a VVM performance is based on the perfect coordination of linguistic elements (CL) and music parameter, and the deaf performer becomes the bridge between two distinct dominions: the linguistic dominion and the music dominion. The tactile perception of sound vibrations is a key element to understand the organization process of the VVM performance. However, VVM is almost unknown among Italian deaf people and it is not really defined in technical and performative rules like in SS or other LIS styles (Zaghetto, 2013).

## 2.0 DISCUSSION

In this paper I describe some style examples from the Italian deaf tradition to support the hypothesis that the deaf people create a peculiar musical dimension based on two key elements: first, the use of linguistic elements to create visual effects related to the body rhythm; second, the tactile perception of the sound vibrations in the presence of an hearing impairment.

In relation to the classical music notion the deaf people create (but not define) a different/alternative notion of music based on three main elements: 1) the visual domain (accordingly to the use of the sign language); 2) the presence of the oral tradition (deaf culture); 3) the tactile perception of sounds vibrations (accordingly to the use of an alternative perception channel to 'hear' music).

The sounds (and the silences) are the *medium* of music (Mithen, 2005). Music is structured on seven basic elements (music parameters, MP): the sound pitch, the rhythm, the music dynamics (slow or fast), the melody, the tone color, the intensity, and the echo back, *i.e.* the distance of perception from the sound source (Levitin, 2006). In the classical Western notion music is organized into two main dimensions: vertical (harmony) and horizontal (melody) based on the use of a specific music notation (Schonberg, 1954). The music notation is the written expression of the music elements/parameters on paper, and the most common types of written notation are music scores.

A music performance is the physical expression of music. Usually, a musical work is performed once its structure and instrumentation are satisfactory to its creators; however, as it gets performed, it can evolve and change. A performance can either be rehearsed or improvised, and improvisation is a type of performance in which the musical idea is created without premeditation, while rehearsal is vigorous repetition of an idea until it has achieved cohesion. Musicians will sometimes add improvisation to a well-rehearsed idea to create a unique performance.

The creation, the performance/improvisation, the significance and, even, the definition of music vary according to culture and social contexts. However, a 'sense of music' and the desire to make music and to listen to music are basic characteristics of the human nature (Mithen, 2005; La Via, 2009). Music is something always related to the sounds perception and, apparently, incompatible to a hearing impairment. However, the deaf people show a spontaneous

<sup>1</sup> www.webmultimediale.org; <sup>2</sup> www.vedovoci.it; <sup>3</sup> www.biellagospel.it; <sup>4</sup> www.ensmilano.it/article/view/id/1355/; <sup>5</sup> www.sostienilemiemani.it; <sup>6</sup> www.youtube.com/watch?v=Rivo8mvGq18; <sup>7</sup> www.youtube.com/watch?v=\_NJhok4sXRQ&feature=related; <sup>8</sup> www.youtube.com/watch?v=Y\_AVDDtKMq0&feature=related; <sup>9</sup> www.drodesera.it.

disposition/desire to make and to listen to music, physiologically and culturally based, in agreement with Mithen's perspective (2005).

In Italy the IDC is present, and it is characterized by its own language system (LIS) and its minority culture (Italian deaf culture). Analyzing the structure of the known six LIS styles it is possible to identify three similar forms of expression in sign language in which the 'musical' element is present: the Sign Song style (SS), the Visual Music technique (VM), and the musical Visual Vernacular (VVM). Analyzing pre-recorded videos I had established that the SS and the VVM are two expression styles in LIS characterized by the presence of specific rules and the use of peculiar linguistic elements. SS and VVM compositions are based/created starting from a visual idea/mental image in agreement with, on the one hand, the use of a visual-gestual language system (LIS) and, on the other hand, with the presence of a deaf oral tradition (Zaghetto, 2013).

As Italian deaf artists assert, the 'musical' element could be discovered in both SS and VVM compositions: the use of a specific rhythm of signs articulation must be considered 'music' without instrumental sounds, and the 'music' is created in a visual context and induced by the creation of *poetic effects and rhythmic effects, i.e. hands/body motions* (Zaghetto, 2013).

Therefore, the deaf artists primarily create a musical dimension through the visual channel on which the linguistic system (LIS) is based and, consequently, the tactile perception of sound vibrations contributes to add new inputs (Table 2). The tactile perception of sounds can be considered an additional element but essential to add a new dimension (tactile) to the deaf notion of musical dimension (it is clear in the VVM performances<sup>9</sup>).

In the VVM performances the visual induction of the sense of music is enriched by the presence of the tactile experience/perception of the sound vibrations: the deaf performer perceives the pitch, the intensity and the rhythm of sounds through the tactile sensation (surface of his/her hands/feet). The pitch and the intensity of the sounds are two of the seven MPs described above and, probably, they contribute to induce in the deaf performer an internal spatial map (spatial map) of the sound sensations, *i.e. transposition of the sounds 'quality' in alternative perception domains, visual and tactile* (Zaghetto, 2012).

In this process the deaf performer categorizes the sound information through the sense of touch, and this fact leads to organize spatially the CL-sequences inside the neutral space of articulation: three main body axes of articulation can be discovered related to the high/low intensity or pitch of the music sounds perceived (Zaghetto, 2012).

The spatialization is the key process to induce the translation of the tactile sensations into a linguistic domain (CL-sequences): the deaf performer visually expresses both the inner/personal sensation of the sound vibrations and the original artistic idea. The rhythm is the third MP perceived by the deaf artist through the sense of touch, and this is important for the timing of articulation of the CL-sequences.

This rhythm is directly related to the rhythm of the music score execution (music dynamics), and it becomes the *medium* to connect the tactile domain to the visual (-gestual) domain (LIS). In spite of the presence of the music sounds, during a VVM performance the 'sense of music' is visually induced as it is possible to observe in SS performances (Zaghetto, 2013).

The VM technique can not be considered a LIS style: in fact, the VM compositions are realized starting from a written text, and this fact is incompatible with the notion of oral tradition (deaf culture). However, the VM is a form of expression that contributes to define the notion of 'musical dimension' from a deaf perspective: in spite of the translation in LIS, the VM performances represent the *bridge* that connects the structures of the SS and VVM performances: in SS compositions visual effects induce a sense of music; in VVM performances tactile inputs are transposed into a linguistic domain and visual effects are created; in VM visual effects are created but based on a LIS transposition of songs written texts and music input can be present (or not). The rhythm is the common element between the three different forms of expression.

Therefore, the deaf people spontaneously create a musical dimension; however, the definition of the new notion is based on parameters, visual and tactile, derived from the perceptual channels used to discover the 'music inputs' (Table 2).

The direct interaction with the sound vibrations experienced by the deaf people is not comparable to the sound experience tried by the hearing people or the deaf musicians that had lost the ability to hear sounds many years after their birth (L. van Beethoven, E. Glennie, C. Buck, for example). People affected by profound deafness have not the possibility to categorize the sound inputs through the usual perceptual channel (hearing) and the idea of music/sound derives from the visual/tactile information. These information converge in the deaf mind to induce the idea of an un-organized 'object' (sound input) more similar to 'noise' than to 'sound'. The notion of sound in profound deaf people reflects, at worst, the hearing concept of noise (Zaghetto, data not shown), and it appears to be related to the perception of noises (hearing perspective), *i.e. the perception of a 'caotic' signal, not structured, not organized (classical notion)*. The deaf people describe the tactile perception of sound vibrations as 'noise perception': they assert to learn the direction, the intensity, the rhythm, and the quality of the '(sound)noise' perceived; through the vibrations they comprehend how to discriminate each characteristic of the (sound)noise (Zaghetto, data not shown). Finally, the transposition of the tactile sensations of vibrations into a linguistic domain is related to a cultural domain (Zaghetto, 2013). Culture consists of language, values, traditions, norms and identity, and deaf culture meets all these sociological criteria for defining a culture (Lane, 2005). The native visual culture of deaf people is expressed by sign language with its own syntax (grammar or form), semantics (vocabulary or content) and pragmatics (social rules of use). Language and culture are interrelated, and the sign language is central to any deaf person that had acquired the culture embedded in the language system that usually use for communication (Duranti, 1997).

Music is a form of culture and a potential definition of 'deaf musical dimension' is, inevitably, connected to language (sign language) and culture (deaf culture).

Accordingly to Mithen's idea (2005), the deaf people, in spite of the presence of a profound hearing impairment, show the desire to 'hear' music: they feel music perceiving the sound vibrations (tactile perception), a process that can be enhanced using the individual holds a resonant/hollow object. Music cognition appears based on complex mental processes involved in listening to music, which may seem intuitively simple, yet are vastly intricate and complex. The natural deaf inclination to listen to music and to create an alternative form of music is relevant: it indicates that music is a deeper cognitive process than unexamined phrases such as, 'pleasing to the ear' suggests.

### 3.0 CONCLUSION

In this paper I support the idea that it is possible to identify and define a musical dimension for deaf people. The new notion is based on the analysis of: 1) three expressive styles in LIS (SS, VM and VVm) related to the oral deaf tradition; 2) the deaf experience of the interaction with sounds vibrations through the tactile perception. Discovering the structure of the three LIS styles I show that the deaf idea of 'music' is, primarily, based on the visual/linguistic input; moreover, I show that the deaf idea of 'music' is enriched by the categorization of tactile stimuli derived from the perception of sound vibrations and, interestingly, the deaf artists always transpose the tactile inputs into a linguistic domain, and they do not create a 'musical language/notation' accordingly to the deaf oral tradition.

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**Abbreviations**

- CL Classifiers
- DC Deaf Community
- HC Hearing Community
- IDC Italian Deaf Community
- LIS Italian Sign Language
- MP Music Parameters
- SS Sign Song
- VM Visual Music
- VV Visual Vernacular
- Vvm musical Visual Vernacular

**TABLES**

**Table 1 - The musical dimension in hearing and deaf communities**

	<b>HEARING PEOPLE</b>	<b>DEAF PEOPLE</b>
<b>STIMULI</b>	auditory	visual/tactile
<b>PERFORMANCE</b>	instrumental/vocal	signed (LIS performance in SS, VM or VVm style)
<b>SIGN / SYMBOL SYSTEMS</b>	musical notes (musical notation) - musical scores (written)	LIS signs (linguistic elements) - no musical scores
<b>ELEMENTS OF THE MUSICAL DIMENSION</b>	sounds - written notes - musical performance	sound vibrations - linguistic visual elements - rhythm (of sound vibrations and signs articulation) - signed
		performance
<b>MUSICAL DIMENSION</b>	something related to the auditory inputs, the musical notation and the instrumental/vocal performances	something related to the sound vibrations and to the articulation of linguistic elements (signs sequences). The visual rhythm becomes the essential element to define the new notion of musical dimension

**Table 1** Stimuli, performance typology and sign / symbol systems to define the musical dimension in hearing and deaf communities.

**Table 2 - Musical language in hearing and deaf subjects**

	<b>HEARING PEOPLE</b>	<b>DEAF PEOPLE</b>
<b>LANGUAGE</b>	spoken language	sign language
<b>MUSICAL LANGUAGE</b>	music language/music notation	sign language

**Table 2** The language systems used by hearing and deaf people to communicate and to create music performances.