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Foundations of sound therapy

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In the practice of music therapy, the use of the sounds of a live naturally singing voice appears to be the most effective; in some cases, results are obtained whereas there are no results using musical sounds, and generally results are obtained in a much shorter time. Sounds and singing in just intonation are particularly efficient. This practice introduces to a deep understanding of sound therapy. Sketched here are the vocal sound / body relationship and the vocal sound / consciousness relationship, which are relevant in this therapy. Finally clinical examples are given (coma states, loss of speech, old persons, states close to death, mind handicapped persons, depression, etc.).

1 Introduction

By *Sound therapy* is meant here the therapy based on the sounds of the singing voice, preferably a natural singing voice (see below item 5 *What voice and what sounds?*). But this is not simply the use of songs as it is used sometimes in *Music therapy*; the method is deeply rooted in what voice represents to the human being. The experience shows that, in the domains where sound can cure at all, the living natural voice, as it is used in sound therapy, is much more efficient than music or even a recorded song.

The voice is obviously in relationship with the body but also with consciousness and deep consciousness. This is also the case with therapy which acts on the body and, in most domains, on deep consciousness. We study here briefly these two aspects, respectively the sound / body and the sound / consciousness relationships, and then, mention a few clinical cases where this therapy obtains good and sometimes very remarkable results.

2 Sound and body relationship

It is known that the higher sounds of the voice vibrate in the higher parts of the body (e.g. throat and lower parts of the head) while lower sounds vibrate in the lower part of the body (chest and back). It is a very simple and convincing experience to put one's ear on the upper middle part of the back of a person and listen to the sound this person produces, the sound moving, let us say, in the range of a fifth: it goes up and down along the spine and the back of the singer. And hence it is not purely conventional when we say that sounds are *high* or *low*: on the contrary, it is a reality based on the body perception of sound. Moreover, because of its movement the sound structures the spine and therefore the body; this structuring can be shown to be precise. This was about the location in the body of the sound of the voice related to pitch.

Less known is the relationship between the body and the sounds of the voice, independent of pitch, related to the vibrations of different vowels and consonants in the body. A simple experiment makes this evident: put your left hand on your chest and your right hand on the top of your head, and simply say or, even better, sing (on the same pitch), alternatively, A and M; you feel the vibration going from the chest to the head and back again. Singing A O U M you may feel the vibration raising up, respectively from the chest (A) to the throat (O), to the lower part of the face (U) and finally to the upper part of the head (M).

This simple experience shows the relationship between vowels or consonants and locations in the body. The relation is very subtle, for instance on M, the vibration of the parietal bone differs from those in the occipital bone: with the hand, one feels clearly the vibrations of the parietal and almost nothing at the occipital, particularly in its lower

part, while the neck vibrates again. The temporal area vibrates also differently: the hand does not feel any vibration there at all. This is of course a physical data of the body, defining what we may call the *sound structure* of the body or *sound anatomy*. I have measured the vibrations of different vowels or consonants in different locations of the body with an accelerometer; it confirms, of course, what one feels directly in the body or better with the hand, but the advantage of the use of an adapted accelerometer is that it gives the possibility of a precise analysis of the different vibrations¹. However it is very important that a person can feel such vibrations with the hand or directly in the body because this perception has important implications in sound therapy (see below). Thus we have this notion of the perception of the sound, and particularly of one's own voice in the body.

This shows already the depth of the foundations of sound therapy based on this strongly rooted relation between sound and body. But in these foundations, another essential relation is the one between the sound of the voice and deep consciousness.

3 Sound and deep consciousness relationship

By deep levels of consciousness we mean the very first levels acquired in early childhood and even before birth. With the exception of the sense of sight, the means of perception, particularly the auditory system, of the child in its mother's womb are already formed at the sixth month of pregnancy. Let us now consider the phenomenon of the prenatal perceptions of the child.

The sense of sight is very limited since the child remains in darkness; of course there can be visual impressions but no real sight, which remains a marvel appearing with birth and daylight. The sense of smell and the sense of taste are both limited since the placenta and the amniotic fluid – although slightly pervious to some variations carried by the blood – protect the child from too much external change. More active is the sense of touch; indeed, the child may touch its own body and its immediate surroundings; moreover the child feels not only with hands but also with the entire body, as it is also with the perception of sound. The perception of movement is very rich, be it passive – with the mother's activities, standing up, walking, lying down etc., movement which give some elementary notion of rhythm and dance - or active, the child's moving of arms, legs and body, head up or head down.

But the richest and most structured perception is the perception of sound and noise: aural perception by way of the ears – it is well known that in a liquid milieu the

¹ Result yet unpublished. To appear in *Fondements de la thérapie par le son* (Albin Michel, Paris, 2010)

vibrations are very well perceived – but also, as we have seen, perception by way of the entire body. The child of course doesn't hear as we do, due to its isolated environment but due also to the fact that our listening is very cultural and that for us sounds are already full of meaning, while it is not yet the case with a child. The perception of sounds is manifold:

- 1) First are the permanent noises of the child's body (e.g. heart beating) and
- 2) various noises of the mother's body. Since these noises and rhythms do not vary very much except in the case of particular emotions, they quickly reduce down to an unnoticed level of the developing consciousness of the child.
- 3) Varying much more is the sound of the mother's voice with all its changes and inflexions which the child perceives – it has been shown, for instance, that the child notices a possible change of language (e.g. from English to French). Of course the child does not understand the words but can perceive some of the intentional content in the vocal intonation and tone, for instance the joyful, anxious or crying voice of the mother. The sound of her voice comes to the baby through the air but also from direct vibration in her body (see above), so that the child has elementary but deep information on what is happening. The child gets this information from the 'auscultation' of all the sounds and noises related to a given state of consciousness. And hence the first notion of meaning, *the first semantic dimension appears through sound*, much earlier than any visual ability. The relationship between the sound of the voice and the inner state of the mother which the child perceives shows how deeply rooted in our consciousness the elements of sound modality are, at least for the most primitive of these sounds.
- 4) Finally is the level of perception of noises and sounds *external* to the mother's body: male and other voices, cello or piano playing etc., the barking of a dog or per chance – in our urbanized world – the mooing of a cow. It is remarkable that *almost all of what is new* for the child is *discovered through sound perception*. Interestingly, there is also a relationship with an *invisible world* – for the child – through sound.

It is also important to notice that *the first consciousness of space is given by sound*. The child doesn't see but hears the voice of the mother high or low in her body (see above) and the sounds or noises in various locations coming from internal or external surroundings. This sense of space is important for the child to position itself in the right way, head down, in preparation for the moment of birth. It has been shown that children whose mothers sing are in general better positioned for this major event. The consciousness of space is of course also given by the consciousness of movement, but when the mother moves, the physical space surrounding the child doesn't change, and it is only sound itself that can give a clear consciousness of high or low, in front or behind, far or near, before any sight perception could do.

The relationship of the consciousness of space with sound perception is demonstrated also by the fact that people who are born deaf have difficulties in comprehending space. To conclude, in early levels of consciousness, space and sound, and therefore movement and change of sounds, are deeply related, and hence, in our consciousness music and rhythm

are inseparable from movement and space. This perception of movement is naturally related to perception of time; it is interesting to remark that in case of a very deep level of perception of sounds, for example in a strong natural resonance, the perception of time is shortened. But let us reconsider the corporal perception of sound and vibrations.

The body perception of sound by sensing vibrations belongs of course to the deep levels of consciousness and we are usually unaware of it, for instance when we speak or even sing. When practising the simple exercise on A O U M mentioned above, people are astonished to discover the movement of the vibrations in their bodies. This elementary perception, which appears already before birth in a passive way, becomes active when the child is born since the first thing the child has to do, just born, is to breathe, as he/she usually does with a strong and awaited cry: the active relation with the sound begins. It is important to notice that the passive perception of sounds preserves continuity with the period in the womb. But now the child discovers aerial hearing with all its marvels, while the perception in the body is also new since the child starts to *produce* different sounds. Moreover the body of the baby vibrates much more than ours since for small bodies, the surface is proportionally larger than the volume (the ratio surface / volume decreases when the length increases): small children, during the short while they remain concentrated, feel their vibrations very well.

Of the two perceptions of sound we have, either in the body or auditory, the first one is actually the most important. Indeed, those born deaf do perceive sound vibrations in their body, and they can learn to speak and even to sing when trained properly in this corporal perception, without any auditory apparatus; whereas, not to perceive any sound vibration in the body is a sign of mental backwardness. This proves that our perception of sound is deeply founded on the corporal perception of vibrations. Also, clearly, the whole body is involved in the process of perception and / or production of sound, e.g. the vibrations of M reach also the lower parts of the body. This shows that *our twofold perception of sound is completely different from other perceptions*: we see only with our eyes, smell only with our nose, taste only with our tongue; the sense of touch, however, involves also the whole body. But the sound perception is far more structured and elaborate than the sense of touch. The human being is above all a sound (sonorous) being and the dimension of sound is for us the essential one; it includes the deepest levels of consciousness, deeper than those of the sight, it implicates the entire body and is exceptionally subtle, especially, of course, in its auditory hearing ability.

When the child is born he / she discovers all the new sounds and particularly the many different timbres characterized by different harmonic overtones. Very soon the child gets the potential ability to perceive distinctly all the phonemes of all the languages, and the ability to identify them with his / her own production of sounds. The main harmonics were already heard in the womb as transmitted by the mother's bone structure down to the lower part of her back and the pelvis, so that the child is surrounded by them and its *early consciousness is impregnated by the fundamental harmonic consonances*². But of course it is in the air that this subtle hearing of

² See foot note 1.

harmonics will develop all its potential capacities. This discovery of harmonic sounds in the air which is necessary for speech, begins in the first weeks of life and continues for a long while before the child really speaks.

We can now measure how rich and structured the perception of sound is in very early childhood, before the child speaks - before, let us say, the age of three. This belongs to what we call the deepest levels of consciousness. To summarize this, we can say that particularly in its levels acquired before birth, *our deepest consciousness is structured by sound*.

Starting from the age of two, all the discoveries of sounds the child acquired since the mother's womb are progressively integrated in what become deeper levels of consciousness. These levels do not belong to the levels of speech, although of course, the spoken language is based on these acquisitions. Because the ground level of sound is acquired before speech it is impossible to express this level properly in words, as it is for memory related to experience in the earliest childhood before the ability to speak has developed. It is why the sound therapy using the sounds of a singing voice can help in cases where e.g. classical psychoanalysis based on speech has no power.

The deep primitive sound level is *always* present in our consciousness (in the corresponding areas of the brain) and because of its primitiveness it remains unaffected even when other, more superficial levels of consciousness are damaged or destroyed, by accident, illness, stressful situations or age. On this remarkable fact is based the practice of sound therapy which I myself initiated more than 25 years ago.

4 Some clinical cases

The first example here is the case of a person in a coma state because this example introduces very well to the means of sound therapy.

4.1 Coma

A person in a coma who has lost the functions of outer levels of consciousness, can recover these levels and full consciousness when hearing long vocal sounds of a live singing voice, particularly a song the person heard in early childhood. A remarkable case is the one of a person who heard such a song including, by chance, his name; this very person could tell afterwards that as soon as he heard this song, he began to recover. The activity of deep levels of consciousness started by sounds progressively brings blood and activity to other levels of the brain, if they are not destroyed or damaged too much. We have many such cases; the most extraordinary case is of a person who has been in coma for almost two years: recorded songs made no effect but as soon as the singing voice was used, he started to recover. It is important to note that the speaking voice is not enough because the speaking voice remains more superficial as far as consciousness is concerned whereas, as we have seen, the singing voice is related to the deepest levels.

4.2 Lost of speech

As a rule a person who suffers from loss of speech, be it by accident or age, can sing. A typical case in point is that of an old grandmother who speaks no more, sits prostrated, and is left forgotten somewhere in a corner. To this old lady comes a visiting niece who starts to sing a song the lady knew in her childhood or youth: *immediately* she awakes, sings with the niece and, momentarily no longer prostrated, can perhaps even talk for a little while. This has been observed since ancient times, for example in cases of old monks who don't speak anymore but sing in the liturgy. For a person who suffers from loss of speech, the best way to recover speech is through singing. *It is more elementary to sing words on a known melody than to say them*. This may seem astonishing in our nowadays society which is not of oral tradition and where spontaneous singing has almost disappeared. Why is it? Because the *singing* level remains in the more primitive sound level of consciousness.

4.3 Old persons, serious disease, persons close to death

In such cases, the outer levels of consciousness are affected and very weak. The principle of the use of the sounds of the voice is the same; it acts on the deep level which is actually in need of some relation and contact mostly of tenderness. The sound of the voice is like fresh water to this thirsty deep level; this brings relief and peace to the suffering person, who often expresses this relief by tears of gratefulness.

4.3 Mentally handicapped

Here, most of the outer levels of consciousness are limited or, with severely mentally handicapped, almost non-existent. We obtained remarkable results: a man of 30 years who had never spoken, after about ten minutes of hearing adapted sounds of the voice, began to say some words (as 'Mummy'). Another man, severely mentally and physically handicapped, who had never stood or walked before, succeeded in making a few steps. As we have observed, sound is related to the consciousness of space and to verticality.

Good results are also obtained with autistic persons and particularly children.

4.4 Some other cases

We have obtained good results in some functional problems of some organs (e.g. gall bladder, kidney, women's sterility). The explanation we give is the following: the sound of the singing voice, acting on deep consciousness, acts on corresponding levels of the brain, particularly on the 'primitive' and limbic brain, where it has effects on the hormonal activity of it which, being restarted and harmonized, helps the affected organ to recover.

Many remarkable results are obtained in cases of mental depression whereas the speech is of little help.

A special effect is obtained by using a technique of overtones produced with the singing voice. Indeed, concerning the deep unconscious memory of high overtones heard in early childhood, the sound therapy gives the following evidence. Certain persons hearing some reinforced, isolated and sustained specific overtone

produced by a human voice, can experience suddenly pain in one ear (or both ears), and even though the sound is not particularly strong it becomes unbearable to the person, who may even cry or even roll down on the floor because of the intensity of the pain. This comes usually from a quarrel or from shrieks the person heard in his / her early childhood, the characteristic timbre of which is brought back strongly to his / her mind by the overtone. The situation the child was faced with reappears carrying with it frightfulness or terror; the overtone becomes unbearable: one has to stop it. The therapy is well on the way as soon as the person has identified precisely the trauma that was at the origin of this apparently peculiar pain. This shows an important educational principle: except in an emergency, never shout at a child!

5 What voice and what sounds?

This last example when one uses overtones is exceptional. Usually, the living natural voice is the most efficient; there is no need of a voice classically trained in singing e.g. lyric or opera style, on the contrary since a rather gentle voice is recommended while opera singing style can be aggressive. The voice however should be present enough: not shy or hesitating; but in therapy this goes without saying.

Simple sounds on vowels or consonants like A O U M or others are often sufficient, either on the same pitch, either using the interval of fifth. Some simple songs or better chants from ancient traditions can be used. It is also a question of intuition and of experience of the therapist.

References

- [1] Aldrige, D., De la musique en thérapie de la maladie d'Alzheimer, *Alzheimer Actualités*, 99, (1995)
- [2] Granier-Deferre, C. et al., Les prémices fœtales de la cognition, *Le Développement du Nourrisson*, Paris, p.102-138 (2004)
- [3] Herbinet, C., Busnel, M.C., *L'Aube des Sens*, Paris (1991)
- [4] Kisilevsky, B.S. et al., Maturation of foetal responses to music, *Developmental Science* 7-5, Oxford, p.550-559 (2004)
- [5] Reznikoff, I., Therapy of pure sound, *Caduceus* 23, Leamington Spa, England, p.16-18 (1994)
- [6] Reznikoff, I., On Primitive Elements of Musical Meaning, www.musicandmeaning.net, *Journal of Music and Meaning* 3 (Invited papers), (2005)