

Committee 6  
Science and Music: A Unifying Concept

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Music as a Psychic Elaboration of Physical and Relational Vibrations, Rhythms and Sounds;  
Applications to Music Therapy

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**MUSIC AS A PSYCHIC ELABORATION OF PHYSICAL AND  
RELATIONAL VIBRATIONS, RHYTHMS AND SOUNDS ;  
APPLICATIONS TO MUSIC THERAPY**

**Professor Edith Lecourt**

**Introduction**

Sound has been present in the world for ever and everywhere. It is a manifestation of life and movement. In the vegetal, animal and human world, death is the only interruption of sonorous productions. Physically speaking, silence doesn't exist : silence is a psychic abstraction.

Just as universal as sound there is rhythm or, more precisely, rhythmicity, which ranges from simple regularity to repetition of temporal sequences. It manifests itself not only in time but also in space. The qualities of sound and of light depend on it. But rhythmicity is especially useful in time. The abstract and ephemeral qualities of the sonorous world are sources of difficulties and rhythmicity provides the first level of organization in time.

Our own body is built on periodical occurrences, on a plurality of rhythms, from protein cycles to heart beats, and it is also connected to outside rhythms such as seasons, planet periodicity etc. Our body is both a receptor and a producer of sounds, from the discreet pulse noise, a biological production, to the shout, a relational production.

Human relationships are animated by social rhythms, sonorous signals, calls and languages which are sonorous productions adapted to different environments. In some circumstances a human being can also communicate part of his/her internal rhythmicity to a partner, in a way

which is not easy to analyze scientifically.

Music is a creative process present in some species (whales, monkeys, birds etc.), depending on a minimum psychic development, which gives a powerful possibility to act both on acoustic and social environments, creating a familiar sonorous space of expression and communication. This space is generally collective but, in some cases, it can become very private, and even assume the function of a defensive walls like the sonorous stereotypes of some autistic patients.

Music combines sounds and rhythmicity in all their forms. But there is an acoustic property which has a very special place in music, namely harmony : a principle of unity in plurality discovered inside the acoustic composition of some natural sounds.

For human beings this sonorous property is often considered as a natural support, even a proof, of an idealistic unity within the universe.

We will examine these assumptions from a scientific point of view, taking into account the musical experience, its sources and its consequences on human beings.

### **1- The sonorous experience : a need for mentalization**

The concept of "sonorous musico-verbal envelope" proposed in 1987, is an attempt to clarify the functions of surface, continuity and containment found in the musical and in the verbal codes. Each insures a delimitation of a special sonorous space, composed of limited selected sounds, all reproduceable, and mastered by collective rules of combination. Each of these spaces gives a special place to silence as an interpretation of an absence of sounds, a verbal silence or a musical silence. In this last case,

silence is mastered in regular unities, measurable, reduced to its duration.

This envelope is a protection against the traumatic dimensions linked to the human experience of sounds expressed through three main anxieties: anxieties of intrusion from external noises, anxieties of overburst of corporal sounds - both can lead to persecutive feelings, anxieties of lack of sound which is associated with separation and death. The lack of protection and of delimitation finds a response in the sonorous musical and verbal codes. The musico-verbal envelope, with these two faces, offers levels of differentiation and articulation.

The myth of Pan, the god of the wild sonorous environment, for whom animal and human species are not well delimited - Pan was a goat-man creature -, is a very good illustration, a metaphore, of the sonorous experience characteristics. We remember that baby Pan was so awful that the gods of the Olympus laughed at him and placed him alone in a cave where the only answer received to his shouts was their echo. He had no humane psychic protection to help him learn how to distinguish sounds and their meanings.

Once an adult he used this same natural phenomenon, the echo, as his favorite weapon to magnify his power and produce terror, the famous "panic attack", directed to human beings as well as to animals. But Pan could also be the musical seducer god when he played the flute. In both cases his preys being precipitated either in terror or in love could not distance themselves from the god's influence. His two opposite faces are the same we encounter in noise and music. Noise can destroy just as music can bring relief and happiness. Sonorous anxieties are generally

situated at the limit between these two faces, the limit between the inside and the outside, noise and music, meaning and chaos.

Baby Pan lacked a human protection, a psychic envelope which would have permitted him to build his inner sonorous and musical spaces.

The musical face of the musico-verbal envelope sounds, sings, vibrates and resonates in a playful way, whereas the verbal face abstracts, articulates sounds, leading to signification. The musical envelope delimits a musical space, a space of play which encounters the verbal envelope through poetry. This is very important because the anxieties associated to the sonorous world, on the one hand, and the social verbal world, with its constraints of efficiency, adaptation and signification, on the other hand, are often sources of stress. The musical space is always a space of play even if negative emotions can sometimes be associated to particular music pieces.

## **2/ Rhythmicity In music : a psycho-physical support**

As an organization in time, on a regular basis - different from verbal language - , music gives precise levels of differentiation :

. first level : the regularity and the frequency of the sonorous vibrations differentiate each musical sound from other sounds and noises. Very low frequencies are perceived as vibrations, medium frequencies as sounds, very high frequencies as noises.

. second level : the simple regularity (pulsation) of the beat presents no beginning and no end, but supports the musical construction. It pulsates at a specific tempo (rapid, slow). Music is often a complex composition of several tempi.

. third level : the rhythm is an organization of several beats, a sequence of beats with a beginning and an end, regularly repeated. This level introduces a precise organization in time.

. fourth level : the musical movement is a combination of several sequences.

Each piece of music is a combination of these four levels of rhythmicity.

Each of these levels can be compared to other rhythmical phenomena in the world, and, especially, to body rhythms (first level : breath tempi, third level : heart beat, etc.).

Paul Fraisse (1974) showed how the perception of the present - of what he called the psychological present -, can be modified by rhythm. In some conditions rhythm has the power to expand the present. More generally I think that music is a form of enlargement of the subjective present.

A document on an Alzheimer patient presented at our last scientific meeting on music therapy in Paris illustrates this phenomenon remarkably. The eighty two year old woman patient presented a severe memory alteration : she did not remember who she was, where she was, who the people around her were, what she was doing and so forth. While listening to a classical piece of music unknown to her, she was acutely present, attentive to the music. She gave a remarkable gesture accompaniment of it, without any stereotype, finding new movements for any change in sound or rhythm. She anticipated the musical movement and the end of musical sentences with exactness and refinement. She was really inside the music and her face was radiant with joy. This phenomenon lasted throughout the listening. But one minute later she could not remember anything.

It seems that this listening was like an acute present supported by rhythm, as if the musical rhythmic repetitions were nothing but the repetitions of a present moment. The larger musical movement of this piece offered a musical unity of present, a musical expansion of the subjective present.

This is the best illustration I have ever heard of the power of music on time perception, and, especially, on the perception of the present.

Another very precious testimony of the efficiency of musical rhythm was given by the famous neurologist Doctor Oliver Sacks when his leg was badly injured in a solitary mountain ascent ("A leg to stand on", 1984). He had to crawl during seven hours before arriving to a shelter. After two hours of strenuous efforts, a musical rhythm appeared in his mind offering its physical support to his crawling : he began to sing. The music changed sometimes but not the rhythm which sustained his advancing, and from time to time it was clearly improvisation. Doctor Sacks wrote "I entered the music, I melted with the rhythm... all my muscles submitted to the music" (p.25) (1). Of course, this provided him with relief and a positive morale. In the book dedicated to this event, he quoted Harvey's sentence "we are music as long as music lasts". Doctor Sacks experimented once more this power of music : after undergoing an operation on his leg, he suffered from the phantom limb syndrome, he could not be in connection with his leg (did not think of it, did not see it, could not move it). At one time a piece of Mendelssohn's music overwhelmed him and at that very moment he began walking without effort, with joy : his "motoric music" reappeared - his unconscious rhythm and melody of walk came back - and his leg began to be real and lively again. But when this inner music was gone, he once more lost his leg. (p.120-122). So the demonstration

of Harvey's sentence was made. It was as true for our Alzheimer patient as for Doctor Sacks. But Doctor Sacks could overcome his physical disability and recover the reality and the normal use of his leg thanks to a precise support on this musical experiment, while our patient could not.

We know that these musical properties are used in different cultures to produce special psychic states such as trance, hypnosis and drug like effects. In one of the workshops I animated some years ago, we witnessed such a spontaneous phenomenon. The workshop took place on a week-end and its aim was to provide a first sensitization to music therapy. The people's demand was mainly information. The group counted about fifteen persons. After a general presentation of the subject, I offered the group the possibility to experiment the following musical situations : to share personal reactions to the listening of selected pieces of music, to introduce oneself through a short improvisation on a freely chosen musical instrument, to try to communicate through sounds and, finally, to relax with music. We were in the second situation, people were asked to present themselves to the group through a short musical improvisation. One after the other, in a free order, the participants made these "musical portraits". Linda was one of the last. She had chosen a big tambourin. She began to beat on it and, at the same time, closed her eyes. She rapidly developed a wonderful percusslon solo with a huge energy and an impressive dexterity. This lasted quite a long time but was so good that we were enthusiastic. But, after a while, I became anxious because I realized that Linda was "gone" and couldn't come back by herself from this very special state : she was in a trance ! I had to call her by her name and insist that she come back with us, and, to persuade her, I



had to give her the assurance that she could repeat this state but only after coming back ! Fortunately, some years before, I had participated in a seminar on sophrology and hypnosis and remembered how to help people to come back. I had learned that this was the critical point of these practices. When Linda opened her eyes she expressed her surprise : she had not know such an experience before, it was the first time she had tried to play the percussion, she was not a musician, and she was not capable of reproducing such a play in a state of consciousness ! She went on saying that it was a wonderful state and it was very difficult for her to accept to come back.

So great is the power of rhythm on human beings, that it can led them to war and life sacrifice as well as to happiness or mystical beatitude !

### **3/ Harmony : a two faced phenomenon**

Harmony, like rhythm, is above all a natural property of sounds - the harmonics of string vibrations, the sonorous body resonances -, and not a musical creation. But once discovered, this acoustical property provides a physical justification of the power of harmony. Human beings, from the very beginning, have always made the most of rhythm and of harmony through musical creations. Both have been used as organizational principles of the sonorous time/space co-ordinates. This musical creation was reinforced by the place given to mathematics in the differentiation and the analysis of these vibrations in time and space (the frequencies of harmonics are multiples of whole numbers : 2, 3, 4 etc.). Finally, it is the the common chord - called in French the "perfect" chord - that has been considered as the best representative of harmony as well as the ideal

concordance of elements in the world. This property of sonorous resonances is generally taken as a natural basis for the representation of a wider conception of harmony, that is to say a quality of proportion, of balance expressed in physical, moral and aesthetical domains. There is a sort of conceptual collusion between a physical characteristic and a moral quality. And music is taken for the ultimate representation of this : musical harmony as universal harmony - originating with sphere harmony (recorded by Gerard Grisey in a composition, "pulsar") - and opening onto the perfect tuning of human beings for an idealistically tuned and peaceful world where every element would be at its right place and would produce the right sound.

The observation of the occurrences of harmony in sessions of free sonorous improvisations in groups of people who are not professional musicians (during the last thirty years), has led me to consider this musical phenomenon pragmatically. These situations gave me the possibility to analyze this phenomenon, and the meaning given to it by the groups.

Musical harmony, and particularly the common chord, usually appears in the first phase of a group work, sometimes even at the very beginning of the session. It seems as if music were visiting the group, giving a concrete demonstration of the mythical "magic of music". People who do not know each other and meet for the first time, with some musical instruments at their disposal, begin to play - not without technical difficulties - and suddenly find themselves participating in a harmonious musical production, living a peak experience. How not to identify this phenomenon with a revelation of the wonderful power of communion

music ? On a superficial level, this is the case, and it offers a link to a mystical interpretation.

But if we try to understand how it is possible, we discover that this harmonious music fulfills a human need, has a psychological signification. Anxieties linked to the beginning of a group session are characterized by destructiveness, aggressivity, persecutive ideas felt on a regressive and mostly unconscious level. The individual, either seduced or afraid by the group, is losing some parts of his own identity, in a regressive movement. The harmony of music appears to be just at the opposite of this state of mind : chaos instead of harmony should be its natural outcome ! But chaos is too dangerous for the individual as well as for the group, and a human being, even in such a state, even when feeling deconstructed, keeps some forms of organization. What is strongly shared is the need not to accept this situation, the need to struggle together to create a common defense against the fear generated by the situation. The idealization of unity is what is naturally resorted to erase the danger and some simple music elements give support to this defense : mainly rhythm and/or harmony. The result is this musical unity which erases every difference inside the group, transforming it in a powerful united musical body, every member experiencing this magnification through the common peak experience.

This is the psychoanalytic version of this curious musical phenomenon, through a precise analysis of the participants' musical productions, of their verbal free expressions and of their own analyses of the experience after listening to its recording.

They usually express how isolated they felt, how anxious they were as

what to do with their instrument, as to not hearing their partners' and, even for some of them, as to not hearing their personal productions. They felt deeply impressed by the magic of music at that precise moment transforming a sonorous and psychic chaos into a music piece similar to a composer's partition. They all express happiness at having been totally involved in a communion with the feeling of understanding one another totally, without words and without knowing anybody in the group. This is a demonstration that psychic states are always composite as music itself is. Different levels can be distinguished which can be schematized as follows : a level of mastery, a level of consciousness, and a level of unconsciousness (which can be divided in two, considering what I would call an "ethologic level"). Going back to this peak experience, we observe, in this case, that the level of mastery is practically non-existing, the level of consciousness allows to experiment the peak experience of the magic of music when at the same time the unconscious level receives the commonly repressed elements : fear of chaos, aggressivity, destructiveness and the group members' personal fantasies associated to them. I think that the ethologic basis is to be found in the very first sonorous space spontaneously created by people getting together, what I coined the "group's rumor", the early non-conscious fundament of the group's musical space.

But the magic of music is not always operational and successful. Some groups find themselves overwhelmed by anxieties and aggressivity, and find no way to create this necessary spontaneous common defense.

The lesson of this peak experience is that it naturally stays magical. The group members cannot voluntarily repeat the experience - what they

always try to do. Let me say that this is the musical oper of the unconscious.

The next step in the group is a phase of disillusion, of getting back to the group reality : differences between people are felt as threats to one's identity. In improvisations we find attempts to communicate with one another, with many difficulties, conflicts, leadership propositions etc. A musical space has to be built in which each member can place his/her voice. This work will conduct to a spontaneous musical partition. This is when music reappears not magically but as the group's spontaneous creation. This is of course the most satisfying moment of the experience.

Everyone of these sonorous stages is analyzable, a group production being like a radiography of its progression through the process of music creation. Hence the emphasis given to music harmony as an idealistic model for the world is questionable. We had such a national demonstration of it in France, in the nineteenth century, at the "Orpheons" period (1830-1880). At that time politicians tried to apply the musical model to the organization of the society, of the nation, as a new collective ideology. Thanks to Wilhem, a music teacher, and to the Saint Simonian moralistic Society, music became the main tool for the republican education of children and of citizens. Hundreds of bands - named Orpheons - were created everywhere and even more numerous choirs : "give the people, the mob, partitions and they will be united, guided toward harmony by music natural laws !" Each citizen was supposed to be a member of one of these groups, participating in huge musical meetings, demonstrations of harmony overwhelming the country, from the smallest village to the capital, transforming each school, family, factory into a choir

or a band (beginning with the army itself). A special repertory was collected for this education and new compositions especially created to magnify national harmony (Gounod was one of the most famous musicians of this movement). This movement had a good consequence : the general implementation of music in schools and the creation of music conservatories and academies. It is to be noted that it is precisely at that time that music was officially introduced in asylums (especially in the Paris region) as a remedy for craziness : music lessons, bands and choirs, organization of concerts for all the patients. So strong was the idealization of the power of music that it was conceivable that even dangerous and crazy people rejected from society and locked in asylums (not yet hospitals), could benefit from this universal magical tuning. And that was how the first French psychiatrists, Philippe Pinel's followers, also became the first official music therapists in France.

I am not saying that all is negative in this special functional and ideological use of music, but that it should remind us of the importance given to aim : a political pressure, even through music, like any pressure (for example the religious pressure exerted through the unification of the church chant by the gregorian chant), is a form of closeness and abuse (1994). In the case of harmony, as said before, the purpose is the rejection of differences - wrong notes -, of expressions of aggressivity (which is necessary to any human being), of untuned sounds. From this point of view, the cost to be paid by the individual is too high !

In other words, the magical rapid movement of harmonization is precisely the result of the unconscious common agreement to the rejection of otherness.

In conclusion harmony is the positive face of a two faced phenomenon in which the hidden face is rejection, aggressivity, destructiveness. Only the acceptance and composition of the two faces can help us on our way from reality to sublimation. And music offers us an original structure for it : it is polyphony (1994). We have to accept to take some distance from the common chord to exist, to liberate our voice from fusion and to create our personal way among musical relations with other voices. This is also the aim of any psychotherapy.

#### **4/ Melody : collective and Individual**

The evocation of polyphony - a multiple melody and rhythm composition - leads us to melody, a concept not yet developed in this reflection : melody is not directly linked to vibration and resonance, even if every sound is. But melody is as fundamental to music as to language. And if not given in nature through physical phenomena, it is found in some animals like birds and whales, for instance. Human beings produce melodic sounds which are emphasised in music. Melodies are elements in motion, entering different compositions, changing forms, tonalities, being transmitted and recreated : melodies are collective contributions in which each individual can find elements of personal composition. They are the most creative elements of music putting together beautiful selected sounds linked through musical intervals. In groups of improvisation we can analyze at what moment a new melody emerges and what the group does with it (rejects it, composes with it, emphasises it or ignores it). I already analyzed these different forms of creativity in groups of improvisation (1994). I shall not develop this point now, but come back to the use of

resonance and vibration through rhythm and harmony in music therapy.

### **5/ Resonance and vibration In Music Therapy**

Over the last few years a new commercial product of music therapy appeared : the vibrating armchair, and even more amazing, the vibrating adult cradle ! Long musical strings in the back of the chair or of the cradle are put into vibration by the music therapist. This is a very simplistic and direct application of the physical phenomenon : just vibrate together thanks to a string. But these new instruments are very sophisticated and expensive ! The result is an agreeable sensation of vibration. So what ? Of course, if developed in time, this form of relationship creates a very regressive state of dependence (close to addiction). The question is then what for ? And the answer is not very elaborated : pleasure is what it is supposed to bring. The aim of therapy is not pleasure but personal development, improvement and liberation : not a new alienation. You will understand that I am not at all convinced by these new commercial inventions for music therapy !

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The elaboration of natural phenomena like vibration and resonance, realized in music, offers a wide range of psychic and physical implications for the benefit of individual's development : music is guided vibration and resonance on physical, psychic and social levels. Hence it can be used therapeutically to produce, reestablish or maintain balance on each one of these levels, as well as between them all. The musical structure offers a container for sonorous, body and relational experiences, a creative moving and transforming order, and a possible sharing of non verbal significances.



I often cite the story of this young autistic boy who, at four, could not speak but manifested pleasure at hearing music. Once I found him absorbed in the vibrating sound of a metallic ashtray : he behaved as if his body was totally overwhelmed by the sound. I had to untie him from this physical glue effect. Though he was gifted with a good musical ear, he didn't produce any spontaneous rhythm. At the same time his daily life was, on the contrary, very precisely scheduled, due to his educator's vigilance. It is amazingly through an off-beat (accent on the weak beat) I improvised as an answer to his pianistic play, which he received with surprise and real pleasure, that he entered musical time, as it was through bad noises, body noises like farts that he accepted our human musical relationship. I give this example because it illustrates very simply how the three levels always work in music therapy. As said before the sonorous and musical experiences are deeply concerned with body limits, social relational limits and acoustical environmental phenomena. Music is a good support for the psychic work necessary to elaborate primary anxieties, to build new sonorous and relational spaces. And music offers a space for relational play protected from any internal or external dangers.

#### **6/ The question of transcultural music :**

In a previous research (1998) I compared experiences of group improvisations made in different countries (South America, Russia, Marocco, and Europe) trying to analyze cultural manifestations inside sonorous productions. For example, cultural quotations (national anthems, special instrument, etc.) are often used as resistances to the novelty of the experience. It is an example of intercultural musical

practice. At the opposite, what I call the "musical carpet" - a complex sonorous material, multiple pulsations and timbres together, like a sort of minimalistic music -characterizes an attempt to create a groupal background with enough material to give a continuum, physical support and containment, ready to welcome every sort of musical expression. This is a result of transcultural work inside the group. This level can be easily recognized : when as a topic for examination, I give students such recordings to analyze, these productions do not make them think of any particular culture. Conversely a rhythmic assertive beat or a cultural quotation, allow them to recognize the cultural identity of a group.

### **I conclude with a word on tonality.**

Tonality has been regularly discussed (C.Bailoiu, A.Lomax, M.Schneider, J.J.Nattiez, J.Blacking) from the point of view of the existence of universal musical items. I consider that tonality is given by the family sonorous group to the first sonorous productions of the baby. This ajustment, like the orchestra before a concert, gives the tempo, the intensity, and the modulations of the group. The family is the first polyphonic group and offers the first experience of one's voice inclusion in an ensemble. The voices of men, women and children are naturally tuned on different and complementary frequencies, composing what I call the "Family Vocal Group", voices and sounds originally adjusted inside the group. In these psychological terms tonality can be considered as a fundamental universal item of music. It constitutes then a common basis to this "magic of music" discussed before. When musical harmony is spontaneously achieved in a group of improvisation, the primary experiences of the

members' Family Vocal Groups find a common chord, bringing them back to their initial familiar protection against outsiders and otherness. The power of this archaic sharing is an explanation both for the intensity of pleasure and for the state of dependence it creates.

(1) this is my free translation from the french version of the book.

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