



## What is cognitive parametric music? Fernando Egido

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Fernando Egido is a composer and sound artist dedicated to the experimental field, instrumental, electronic music and live electronic installations. He investigates the role that the concept of parameter potentially plays within musical discourse.

### KEYWORDS

Parametrization, music, creative process, V!11.

I have been criticized by saying that the texts which I have written about parametric music are too difficult to understand. The purpose of this text is trying to make a *Vulgate* explanation, easy to understand which it is thought more as divulgation, than as a technical text.

There is nothing better to explain something, that use a comparison with another area, I will try to explain the parametric music through a very different sense to the ear; taste.

There is a simple experiment that you can try whenever you want. If you drink a glass of milk sweetened it tastes sweet. If the next day, before drinking the same cup of milk, you eat a piece of toast with jam and then the milk glass, now the glass of milk no longer tastes sweet, it tastes different. We note that it tastes bitterer. However, the milk is the same. This applied to the sound is what we call parametric music. This phenomenon in parametric music jargon is called parametric neutralization.

The fundamental idea of the parametric approach is that the meaning of the materials which form artistic works are relative to the context (as we'll see, the parametric context) instead of being determined by their objective qualities as entities.

Another example, taken this time from visual world, would be seeing a graph through a color filter, if we see a graphic through a blue filter, Blue remains undifferentiated (meaningless and neutralized in the parametric jargon). I.e., the Blues will be equal to whites (they are not

different from the whites ones). Look at the paradox that a color is undifferentiated when is observed with a filter of that same color, this paradox, applied to the sound, is one of the foundations of the parametric approach. From these examples we can derive a basic cognitive rule. If we eat two aliments we tend to ignore (neutralize) the common element in both, focusing our attention on what differentiates both. This rule is the foundation of parametric neutralizations and hence of parametric modulations. Intuitively, we can understand that if we present a series of objects in the time (sounds or tastes) its load of meaning is related to the difference and contrast with respect to the previous one. We only perceive what differentiates them, staying (neutralized) meaningless what they have in common.

We will see it more slowly; an object (a glass of milk) tastes different (means something different, in the parametric music terminology) in function of the context.

Parametric music is based on the idea that the importance of the musical events depends not on its physical objective characteristics but in its significance. And, in turn, the significance is relative to something, to what? To the way in which the interaction of some parameters on each other determines their meaning for a particular Cognitive System<sup>1</sup> [1].

So far we have considered only a single parameter but what happens when the interaction of several ones (properties) interfere?

We are going to see it more slowly. Milk is an object that has the property of being more or less sweet (among others). "Sweetness", is a parameter (property) that has food. We have seen that if two foods followed with different sweetness the second one seemingly is less sweet than what actually it is (a form of parametric neutralization) but, what happens if we define additional properties of foods and see how their interaction influences the significance?.

We will consider several properties of the food as parameters, for example, the bitterness, the temperature, or the spicy, and so on. If we make food a very spicy, sweetness will be masked. If we tried a very spicy food all we prove after it, although not spicy, will lose its flavor (it will lose the signification) will be meaningless by the spicy context. Thus, the significance of certain properties is conditioned to others, i.e. the significance of sweetness is conditioned to the spicy. The significance of a property is relative to another, or what is the same thing for the parametric view, the significance of the process that occurs in a parameter depends on the process that happens in another one.

Each type of cuisine can be defined by a central parameter that determines the other ones. For example, in Mexican cuisine spicy is prioritized over all.

So far, in fact, we have not made any progress regarding the nonparametric conception. However, having studied in such a way the creative fact, gives us an important question, which until now had not been done, which is the fundamental question for the parametric music. Is it really necessary that a central parameter exist for determining the significance of the other ones all time?

Parametric music generates a parametric musical discourse in which there is not a central parameter. We have seen that there are different types of cuisines based each one on a central property, which can be based on the spicy (Mexican), sweet (pastries) or bittersweet (Chinese). What would differentiate a parametric cuisine from a nonparametric one is that

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<sup>1</sup>(Basically, a Cognitive System is a system that is capable of receives a series of data, processes it, and creates same information). Parametric music parts from the idea that the music is the data entry of a Cognitive System. This data will be processed and will draw up a final information, which is to give same meaning to these input data. This is why it's so important, to parametric music, the reflection about how the Cognitive System, in this case the human brain, processes the information. We call Cognitive Model to any of the different forms of process this information. Each parametric work uses a different model or idea about the information is processed and therefore about how there will be a final meaning of the work, depending on the parameter interaction).

while in the parametric one all properties have the same importance, in the nonparametric one there is a hierarchy of parameters wherein a parameter is dominant.

Thus, a parametric music is characterized by the fact that there is no a central or dominant parameter that determines the sound stream. For example, in tonal music, the pitches are the central parameter. The structure of a tonal work specifies how a departure from the original key to a more remote one generates a tension which relaxes when it backs to the original key. In Nonparametric music tension is associated to the characteristics of a particular parameter. For example, in Xenakis' stochastic music tension is produced by increasing and relaxing the densities of sound masses. In general, the process of tensioning in a work are produced through the concept of dissonance associated with a given parameter.

In tonal music tension is produced by certain dissonant intervals as the second, the tritone or the seventh. In Masses music dissonance occurs by the superposition of events. The tension in the music processes occurs relative to the parameter or property that dominates the others. There is music, such as Cage's aleatoricity one, that does not consider the tensioning processes. Parametric music comes from the necessity of liberate tensioning processes associated with a material related to a property or parameter. For this purpose, it was necessary avoiding the centrality of any parameter over the other ones. The conclusion of the research process to accomplish this, was the creation of a series of parametric materials, such as the scale of parameters. Which, unlike traditional music materials, are not related to a particular parameter. Thus a series of new music materials were born based on the concept of parameter. And the parametric music is born as the music that uses those parametric materials.

By stripping traditional materials from their dependence on a property or parameter of the sound, the tensioning process also may be unassociated with a particular parameter. Therefore parametric music tensioning is based on the idea of cognitive dissonance instead of a dissonance associated with a type of material based on a parametric centrality. Cognitive dissonance and the cognitive tension are based on processes of tension and relaxation which occur as a result of the recognition or not of certain patterns or regularities, or by the listener's ability to predict what is going to happen. When the tension is associated with a parametric material is relatively objective, but when the tension is not parametric, as in parametric music, then the tensioning depends on the cognitive processes that are produced in the listener brain, and therefore the public can freely interpret the music.

This is the ultimate meaning of the parametric music, to release the public from the composer intentions, parametric music is a solution to the problem of how to ensure that the public can be an integral part of the magic of the artistic fact. Parametric music achieves this through a few materials whose tension is not dependent on a parametric centrality, but cognitive processes that occur in the listening. So the listener can invent his own meaning of the work. Since sound is a cognitive process that it is not associated with the intentions of the author. Other composers have tried other strategies, like Cage, through the total randomness.

It is very common in the musical literature the description of certain works as visual or spatial, which tend to be works that in some way suggest and facilitate their understanding through a graphical representation. It is also common to hear about classifications of the listening experiences, based on the way in which listeners understands the work, by Visual, emotional, or textual explanations. There are people that understand music by an emotional experience, i.e. feeling emotions (emotional understanding), while others may have a more intellectual understanding of this same work, and represent themselves the work as a figure (understanding visual or intellectual), while there are others for which the music is understand by finding an history (textual understanding). This can serve as a vehicle to try to explain in other way the parametric music.

Another way to understand the parametric music, in an intuitive way, is based on the concept of synesthesia. Synesthesia is used by neurophysiology for studying the phenomena of cross perception, explaining the ability of some people of hear colors or see flavors. The neurological reasons for these phenomena are being studied today, they are associated with temporary or



permanent neuronal dysfunctions due to any alteration of perceptual systems. Parametric music can be, in some ways, explained from these phenomena, since it is based on the idea that parameters can be interdefined. In the same way that a synesthetic can taste colors, we can perceive the pitches through rhythm. The interdefinitions, unlike the synesthesical ones, aren't real but semiotic. It is essential that there is no any central parameter for the parametric interdefinitions to work.

Parametric music, seen from the perspective of synaesthesia, tries to get crossed preceptions through the parameters considered in the work. Synaesthesia crosses the perception of the senses. Parametric music crosses the properties within a same sense perception. Thus we can perceive the dynamics through the pitches or the dynamics through the timbre.

Busevín

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videos:**

<https://www.youtube.com/watch?v=2E89sda8JFs>

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