INTERVIEW WITH GOTTFRIED MICHAEL KOENIG (II)

Ángel Arranz: The text of Composition Processes[1] *is full of inspiration and crucial for me. I took this text in 2006 – 2007 when I was studying in Sonology and it was a sort of diamond into my head, so clarifying in several aspects probably all my life I wanted to know about. How to really deal with computers; what is the role of the computer in its relationship with the composer. I think this text explains it quite clear.*

Gottfried Michael Koenig: I did not know that! [*Joking*]

AA: I have underlined certain aspects I would like to discuss. When you say, just in the beginning, "The concept of composition is accordingly closed with regard to the result, but open with regard to the making of a composition: it tells us nothing about preparatory work, whether it is essential for the composition or not." It seems a statement in the way of composition could be a lot of things. It is not only writing music (for sure, that is a kind of activity), but also you asked yourself what about if composition is a sort of musical, language structure. What do we mean the composition of sound structures and the composition of single sounds? Apparently, the appearance of the computer in the composer activity enlarges the mentality of composer, in the way of not only dealing with notes…

GMK: I think I called it the 'horizon' because, by using computers, you are coming against final things you have thought up for yourself, because your thinking is always directed. The computer just gives another aspect and could bring you to certain ideas you would not have otherwise. I will try and get into the old text again, because I do not have it present anymore. Maybe you could reformulate your question, so that I could see what kind of answer I should give.

AA: With the appearance of computers, composition is understood as a phenomenon that is not only revolving writing notes, but rather there are much more points of interest for the composer.

GMK: It depends on the composer and how one organizes one's ideas. When I started to write the first computer program, it was actually in order to be able to test composition rules. Because I had this serial thinking, there are always previously given rules, according to which notes or other parameters are arranged along the time axis. But on the other hand, it was very obvious that sometimes there were conflicts and the composer would rather correct the combinations, which appeared because the series, running in different parallel parameters, leading into all kinds of constellations. So, sometimes you have to halt the process and ask yourself whether it is according to the rules or still according to what the composer actually wanted to achieve, whether to refuse or to continue with the rules. To test such situations: that has been my first intention.
Later on, I would say, I was always accompanied with the idea of a legal or useful approach to music. Before that I was used to make rules, according to which I could write notes with pencil and paper. And everything, which was on a piece of paper, first of all appeared before an inner eye, or an inner ear, or in my imagination before it could be written down. The composer acts according to rules, so the question was: what is here the composition? Am I composing rules? Could I foresee all the consequences caused by the rules? Or is it just that I accept the authority of the rules in everything in which rules are present? I admit rules must be ok, because if the rule was ok with me, everything coming out of rule must be ok as well. That kind of thought occurred in the background of my mind when I wrote this article, *Composition Processes*, which was produced in order to give a lecture, I think in Denmark.
So, the whole process of what we understand by 'composition' was actually questioned: what is composition? What had been the cause of composition before the computer era? Had we just written down music and called it composition in the end? The other question, which I also mentioned, there is: what is composition? The act of composing, or the finished work, or the piece of paper on which it is notated, or the performance… [*Giggling*] It

is a bit of everything, actually! The moment you write a computer program, you have to define things. If you do not want to change your program all the time, the program becomes kind of a bible, which can be quoted, but not changed anymore. So, you make statements not only for that moment, but also actually for a long time, until you get tired of it and you turn to other business. If you make a piece, just with pencil and paper, and then another piece, you would do it in a completely different way. Both pieces have nothing to do with each other, except that they are from the same author. But if you use the same computer program again, it depends on the weight of the word composition. It changed, so it gets harder to grasp or to describe exactly.

AA: There is other thing that is interesting to notate here. When you say: "The form of a piece and the form of its sound should be connected". So, there is an idea of walking the other way round from the macrostructure to the microstructure, and vice versa. Even along the text another idea appears. You meant that 'concentric and eccentric' approaches. But there is other idea that is 'time expression'. For now on, I would like to focus in this kind of interrelationship between macrostructure and microstructure. I do not know what is more important for you: to compose these minimum constellations, structures in order to create the form, or probably is the other way around. Probably you thought about this kind of big structure, a sort of mental invasion of the work, or something like that, in order to establish a difference between computer-aided composition and computer programming. But I would like to combine this kind of relationships.

GMK: I think when I wrote a text about this matter, I tried to be as organized as possible in order to make something clear. That means that you have to take things apart to make sure what are the parts of the whole. I thought you could envisage the making of the composition by starting with the whole form, trying to get inside. In the end, you have to fill in the details. Otherwise, you could try to start with the details, a series for instance, and then proceed to a group of series, transpositions, permutations and so on, enlarge them, widen them until it comes up as a composition. But I was sure that this was only the educational standpoint. I didn't think for a single moment that the composer would ask himself the question whether he should start from the outside of the form or from the detail. Composers would not do that; even I would not do that. So, this is a more educational point of view to indicate the extremes. The truth is mostly something in the middle. You have something in mind, which gives you enough knowledge about the detail but, at the same time, you see the possibility to enlarge it to the form. Actually you see both at the same time; you look for a way to mediate between both, from the detail to the whole or the other way around. But you would not do both. When you write the detail, you note the large form you want to reach in the end. But when you consider the complete form, then you know that you have to build it up from details, which you have to do one way or the other. Actually you cannot think about the one without thinking at the same time about the other. This distinction between the detail and the large form is a principal question, but not the way I would describe the actual work of the composer.

AA: Yes. In your own words, you say: "We should understand composition as the composition of single sounds in the affirmative when there is a continuous structural connection between the overall form and its parts, right down to the physical sound data, and only then when –in the sense of instrumental tradition- the whole can be heard to consist of individual parts". In other words, it is a completely pertinent question (as soon as you have an idea of continuous composition), in the way that there is not a gasp in the mental discourse. It is remarkable the consideration about the link between the overall form and its parts.

GMK: This is a very special point of view concerning early electronic music. This is a phenomenon we do not know in instrumental music (where we do not compose sounds). In electronic music, sound actually comprises more or less the composition, because you have to put together frequencies, loudnesses and other parameters. In instrumental music, you just indicate the sound by a word like 'trumpet'. It shows what should sound like a trumpet, but you do not compose the trumpet as such. That was our point of view in electronic music (my point of view, specially). I suppose that Stockhausen thought the same: that making a sound is making a little composition in itself. It means that if several sounds belong together in some way, I actually connect one little composition with the next. It makes it even more complicated to talk about composition, because you could talk about the single sound the same way as about a ten-minute piece. So, what is composition? The impact of composition on the composer has changed in electronic music on this especial point of view we are taking here: it is not composition in general, but composition specially for electronic means. If you want to write a computer program instead, you have the same problem as well, only in a different disguise.

AA: Another interesting thing is the way you deal the concept composition as a question of grammar. You quote this: "Composition is the application of a grammar which generates the structures of a piece, whether the composer is aware of an explicit grammar or not".

GMK: This is a general remark, which points not only to electronic music.

AA: It is quite general, so it could be applied for an instrumental composer, and even for a person who is not interested on constructing a sort of language on it. From this phrase is derived that even if you do not want to write a grammar, every time it is implied to construct grammars. That happens with music; that is interesting.

GMK: That is a question very important to me. When I wrote *Composition* Processes in 1978, I already had studied computers, although it didn't own a computer. There was a computer in the Institute since 1971. In 1978, I had already written my *Project 1* and *Project 2*. I realize that when composing, even improvising or using pencil and paper, you make use of knowledge you are not aware of. I called it grammar: the hidden, unconscious knowledge you have and always make use of in everything you do, also when you talk. You know the Spanish language grammar; you can use it spontaneously, without thinking. To write a computer program used to instruct machinery (like the equipment of an electronic studio), you have to take it out, to make it conscious. This is, I think, what I refer to in this passage.

It seems rather strange, even nowadays when I am reading it. It is quite a different definition of composition, taking the word literally: to com-pose, to put things together. The moment you do that, you are busy composing, regardless of the material, what is the end… It does not matter. [*Interjecting*] I am not sure whether I would compose with this objective in mind. Perhaps you would say that composition is regarding elements, whose parts do not aim to terminate in a composition.

[*Self-reflecting*] Your insight into such things is a growing process. The older you get, the more insight you have about certain things! It is a station on a long way, on the way I was at that time. Today I would formulate it differently; maybe a little wider or a little more abstract or a little more general. I said sound production becomes interesting as a composition process, where it gets entangled. It means that the structure generating grammar is related to sound data and not of sound elements, stated or already existing. It is something from the immediate experience of electronic music production, where you are completely depending on a material being produced only by using the equipment, so you are not completely free. When you compose with pencil and paper, you depend on what is in your mind. In the electronic music studio, whether you are conscious of it or not, you depend on the machinery. And then you come and try to make something with the machinery, which is subordinated to you, so that you have a quite different situation: machine instead of a pencil. So there are two preconditions actually, something I am reflecting permanently. [*Exclaiming*] 'Composition process' does not mean: *this is the way one has to compose*! Many ideas come to my mind when talking about composition as a process. What is connected to this process? The composition process is really quite complex. I am no psychologist, so I won't try to explain what happens in the mind while composing [*giggling*].

AA: There is another part where you emphasize the concept 'computer' as a tool. You mention some different utilities. One of them is the computer is useful to solve part problems, musical parts for the composer. One other interesting use is to try out models, in order to simplify reality and to take really a first aural contact. The other interesting point is to compose an individual piece. In this degree of demand, the composer could utilize computers. Therefore, that is a quite big panorama. It could be used from the most exigent composer to the slightest proofs.

GMK: I think the first point is quite simple. Later, when I used my computer for composition, I made complete works. Then I went further. Starting from solving partial problems or composing small form parts, which could be put together into larger musical forms, I went to try out test models, which might become real works (not necessarily, but possibly). When I said that the composer has his or her own scheme of rules, which can be elaborated according to one's own ideas, then this is something I do mostly when using *Project 1*. It leads to many questions from basic material for different parameters to the transition from data tables to musical notation. The material must be arranged in such a way that it is attractive for the musicians to play. I have always been conscious of the fact, that making music is a social process, not a calculation process. Music begins when people come together, take the instruments and play, existing pieces or just improvising; the most important moment in music is when people start playing, after notation or just from memory.

I just read something in the newspaper. It was not related to music, but to people who cannot read; therefore have to keep everything in memory. It seems that keeping things in memory is much easier, if you sing it instead

of only learning the words. Maybe it is on a line with a spontaneous idea I had about the origins of music: that your daily life becomes easier if you have notes. What you sing, becomes a ritual and gives it an exertion. I don't know what makes me remembering it now, but it came back to me it when I read the newspaper and thought: *"Oh, yeah! That is a very nice way of using music!"* It was necessary and, at the same time, a reason for the music becoming separated from the original text, for which it was only a kind of memory stabilization.

> *AA: In those kinds of degrees about using computers, partially or globally, you mention an interesting concept. You say the 'intellectual act of invention'. When you mention that, I think you refer to this utilization of computer as a global creative state: not only to make parts, not only to test, but rather to really make a completely whole piece of music by computer. Which it is a more ambitious thing, I could say.*

GMK: Oh, it is! I therefore think that writing a computer program for a complete piece (or to produce only sections and put them together, which in the end is the same thing) equals the effort of writing the score by hand. Indeed, I always have seen *Project 1* as a composition. It is a computer program, but also a composition, only one that does not appear before endless variations of it [*laughing*].

> *AA: That is the composition of the composition.*

GMK: Yes, it is the generalization of a special composition process. Anytime it is activated, the results are little different from each other because of the built-in random generator. Even if you do not change the input data, only run different series of random numbers, you get variations of the same basic structure. The computer program therefore acts as a score builder, but not only for one piece, but for many of them. The pieces might be completely uninteresting; that is not a problem yet! [*Laughs*]

> *AA: Yes, theoretically!*

GMK: It is a question of what you make the program do.

> *AA: And then in the text you also make a relation of things, mentioning this auxiliary utilization of computers. You mention that it should be used for sonic realization, for data, for the processing of parts, for the production of graphic scores or musical graphics… An also (that is the probably the most interesting part, I could say) for sound modeling: "The sound models from a sound library are assembled to form sound structures". So, that is a bit farer away… Sound structure is the most ambivalent: you could talk about instrumental music, but also about electronic music.*

GMK: There was a time when nobody had his or her own desk computer. During my last years in the Cologne studio, I thought a computer would be the answer for some problems caused by the manual control of the equipment. In order to write and test a computer program, you had to go to a mathematical institute, a computer center, where you can deliver your punched cards. A couple of days later, you could go back and pick up the printed output. You had always to approach a public institution in order to use a computer for composition. I couldn't imagine how soon everyone would have his/her own home computer. It would change the situation, not completely but for a great deal.

Before it came to that, I thought you had to use a public institution and save sound models in sound libraries. There was also someone who did that later quite literally in Italy: that was the cello player Pietro Grossi. He became interested in computer music and founded a center[2], which worked with computers, music models and music sources. I was a centralistic idea, where there was a computer and some composers around it who made music, like making use of a supermarket.

In those days, you could not just buy a computer. When I did my first computer studies at Bonn University in 1963, there was a computer that cost a couple of millions. Our first computer in Sonology was a quarter of a million in 1970. It was only medium-sized, but still… For my first desktop computer I paid 18,000 guilders in

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[2] Koenig refers to the Studio di Fonologia Musicale di Florencia (S2FM), founded by Grossi in 1963, quite similar to Milan Studio in many aspects, although presenting deep basic differences.

1984. It was a computer and a printer with two floppies and no hard disk, which would have cost another 4000.

> *AA: There is other interesting point. You say: 'The fundamental difficulty in developing composing programs is indubitably in determining the dividing line between the automatic process and the dynamic influence exerted by the composer by means of input data and dialogue". Another pretty interesting insight is when you say: "The dividing-line between composer and automation should run in such a fashion as to provide the highest degree of insight into musical-syntactic contexts in the form of the program".*

GMK: Yes, I remember very vividly that I had this idea that I had thought about it a lot. It was also on my mind when I studied my *Project 1* in order to enlarge its possibilities. I thought of *Project 2* as a kind of machine, which produces many *Projects 1*-like programs. I envisaged it as a program generator: a program that generates programs. But the way, *Project 2* relates to *Project 1.* It is not a program generator: it is just a program. Because of more parameters and its enhanced programming possibilities you could produce many more different musical structures than with the *Project 1*.
The bigger program needed more input data. The problem is that a greater amount of data results in more complex relationships, difficult to handle for the program user. It is therefore important to make a well-thought-out choice between the possible number of parameters, their definitions and the selection routines which ensemble the data into the score. I thought by myself: Would one like to typify the character of a musical piece with as little words as possible? Otherwise, we could write ten thousands words and still have not completely described our piece. But, if you could do it with ten questions, that would be very nice. And this is what I did with *Project 2*: I designed a kind of pre-program, where the composer has to answer only a few questions about tempo, duration, dynamics behavior and other features which provoke the program to standardized answers in form of scores that could immediately be listened to. The composer can refine his input data in several steps until he reaches a satisfying result. As a last step he would end up with the sixty-five questions of the actual program, which represent for myself the demarcation line. If you have not enough questions, the composer would not be able to describe the piece he has in mind, sufficiently. If there were too many questions, the composer would be unable to see through the complicated network of interrelationships.

> *AA: So there were independent questions.*

GMK: Yes. In my programming practice in those days, I was not able to make a program where the user would only answer a couple of questions, leaving the rest unanswered. I could have worked with defaults, but wouldn't have known how to do it. In this situation there was only one solution: the user had to answer the questions completely. For questions, the composer was unable or unwilling to answer, I offered what I called 'dummies'. I tried not to overload the composer with questions, which were not related to the problem he wanted to describe.
This case shows the dividing line between the automatic process and the composer's input data. Can a composer ask all questions which come to his mind for the composition of a piece? If he is already 'in possession' of the piece, he does not need the computer anymore (because he knows all the answers already). He can just write them down instead of feeding them to the computer (which would be even more difficult). If there are, on the other hand, not enough questions to answer, then we will never have the piece we want. It is a crucial question: where to start the automatic process and where to draw the line until which the composer is supposed to be asked and to answer questions. I thought about it a lot before I decided for the line defined in *Project 1.* To quote Otto Laske, he called it a *Geistesblitz*: inspiration, flash of genius: a spontaneous idea. Laske pointed with it to the way, *Project 1* answers the problem by putting the dividing line at a certain spot, up to which the composer can state his ideas on the input form. After that, the computer takes over and fills in the rest by means of composition rules, as described in the program.

> *AA: So, it implies that composition should be understood as a question that it starts just before even the level of condition?*

GMK: I suppose that the question of condition is something for the composer. You could say: *"Oh, we put all the data together and the conditions under which the computer can do its work" [joking]*

   AA: Yes, but it is kind of previous to this condition, compositional matter. You could first say: "Hey, this is the part that really rules this, then you hear it and then you establish these conditions", all these questions are you mention in the Project 2.

GMK: Suppose we had an interactive program asking the user: are you a composer? When you had the choice, what would you like? Or: when something happens by random generation, in what way should I respond to it? It means that the questions for conditions could be openly discussed on the screen. After all the questions have been put and the composer has given the answers, the computer knows what it needs and can act accordingly. I don't know whether such a program exists. It would really be dealing with conditions in the discussion or dialogue between the composer and the computer So, I skipped this process [*laughing both*] and said: *"You give me your data and then I will know what to do with them".* Have you ever tried to write a composing program?

   AA: I think I never did it in that serious, global way. Time ago I started some small things in LISP language in order to enlarge a bit some views by doing some specific, little tasks (rather I have done programming in Max/MSP). At the moment I find it enough, since it is really hard even to imagine it.

GMK: Then you came against all these questions. You see now what kind of problems you have to solve. I have thought about *Project 2* for a really long time, because it was an enlargement and it should include *Project 1*. But it should go further and involve more parameters (8 in total). It should allow polyphonic writing (and not only chord sequences) and many things more. I had to think about it a very long time, make many experiments, tests and so on. I was not a sudden mental thing, like *Project 1*. I only experienced that once, the rest of my life was work and not inspiration.

   AA: Wow!

GMK: It had happened and I was very glad about it, because it came with the push. It was something that worked. I could easily answer the questions. The program put them up for me and I could easily built all the data into a piece of music, because the data frame was only rudimentary. It contained only chords in time in a certain rhythm and with some indications for instruments and dynamics. You could do with them whatever you wanted afterwards. The computer had finished and was guiltless of everything that followed. *Project 2* as a tool felt more responsibility and was more difficult to handle. I thought that composing with *Project 2* should make it easier or more variable. Actually it makes it even harder because it puts you in front of finite decisions you don't like and makes it very hard to work around the details of the resulting score. What comes out is really an open field. You could see it as a kind of stockpile of possibilities. *Project 2* is very serious in this point: it comes out with a finite solution. At least, it looks like that. Of course, you can do everything you want with it, but changes, where necessary, are harder to make. Then there was another question: where should here be the dividing line? I put it in a quite different place in *Project 2* and am still not sure whether I should be satisfied with it or not...

   AA: Now I think I should start to really program a lot!

GMK: Yes, it makes life not easier. You get a lot of unnecessary problems! [*Laughing*].

[The interview above was realized by Ángel Arranz September 10th, 2014 at Koenig studio, Culemborg (NL). Source: www.angelarranz.com]