



Proceedings of the International Conference

PIERRE SCHAEFFER:

mediArt

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Pierre Schaeffer: mediArt

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Contents	<i>Forewords by Ivo Malec</i>	5
	Jerica Zihelr <i>Editor's preface</i>	11
	Daniel Teruggi <i>Schaeffer and Rijeka</i>	13
	François Bayle <i>Falling Short...Going Beyond, from Hearing to Doing</i>	15
	Jocelyne Tournet-Lammer <i>Confronting Art, Sciences and Techniques, at the ORTF Service de la Recherche 1960-1974</i>	23
	Dieter Kaufmann <i>Pierre Schaeffer Today: from Research and Experimentation to Academic Recognition and General Acceptance</i>	32
	Francisco Rivas <i>What a Sound Object Is: Phenomenology of Sound in Pierre Schaeffer</i>	35
	Seadeta Midžić <i>"Doctrine de Zagreb": Time Concordance, Divergent Experiences</i>	44
	Marc Battier <i>Pierre Schaeffer's Project of Symphony of Noises as a Founding Moment of musique concrète</i>	53
	Brian Willems <i>Sound, Image, Index</i>	61
	Leigh Landy <i>Thinking Concretely about Pierre Schaeffer</i>	69
	Cedric Maridet <i>Reassessment of Acoulogy for the Cultivation of Sound Practices</i>	75
	Hans Peter Kuhn <i>Lost and Found</i>	81
	Tatjana Böhme-Mehner <i>The Concreteness of Abstraction: Reading Schaeffer in his Context and Beyond</i>	88
	Jelena Novak <i>Acousmatic Voice and Singing Body</i>	95
	Martin Laliberté <i>Pierre Schaeffer Today. Preliminary Steps towards a Renaissance of a Schaefferian Approach to Music?</i>	102
	Suk-Jun Kim <i>A Critique on Pierre Schaeffer's Phenomenological Approaches: Based on the Acousmatic and Reduced Listening</i>	123
	Darko Fritz <i>Images and Sound Created and Synchronized by Algorithm: Vladimir Bonačić's Computer-Generated Interactive Audiovisual Object G.F.E (16,4), 1969 – 1974</i>	134
	Stephen McCourt <i>Analysis of Electro-acoustic Music through Multimedia Aesthetics</i>	144
	Biljana Srečković <i>The Effects of Radiophonic Experience in the Poetics of Pierre Schaeffer and Vladan Radovanović</i>	149
	Elzbieta Sikora <i>Reality and Music: Floating Borders</i>	157

Bonjour à tout le monde.

Ne pas parler l'anglais aujourd'hui est une infirmité. Je suis par conséquent sur ce plan là un infirme. J'espère toutefois que cette infirmité n'est pas en même temps une infirmité intellectuelle...

Je me suis interrogé sur ma place ici parce que je n'ai souhaité ni n'ai eu aucune contribution à présenter, vue l'orientation du colloque vers un thème qui n'est guère mon domaine. Je suis donc présent ici d'une manière un peu symbolique, car invité en tant qu'un des plus anciens descendants ou plutôt - comment dire?- un de rares survivants des "années Schaeffer", celles qui vont du milieu des années cinquante, avec ou sans lui, jusqu'à presque nos jours. C'est une position incommode de doyen, peut-être un peu moins incommode dans la mesure où je la partage avec François Bayle.

J'ai tenu à citer le nom de François Bayle non seulement parce qu'il a fait ici une contribution que je trouve superbe, mais surtout parce que c'est lui qui a pris après Schaeffer la charge de cette espèce d'ovni* appelé le GRM, cet enfant qui après ses débuts extrêmement importants, est devenu un enfant bien fragile. Bayle l'a fait dans des conditions extrêmement difficiles et compliquées de la diabolique administration française, et a réussi à en faire un groupe solide, continuant sa vocation fondamentale d'un groupe de recherches, mais aussi de productions musicales. Rappelons que le nombre des titres musicaux qui y étaient composés est énorme. J'ajoute qu'avec tout cela, il est devenu l'un des compositeurs majeurs de musique électroacoustique, sinon le plus important et, à mon avis, le plus grand. Je ferme cette parenthèse.

Revenons donc à Pierre Schaeffer. Je me sens autorisé à parler de lui parce qu'il m'a honoré en son temps non seulement de son amitié, mais également d'une dédicace où il m'avait appelé *fidèle compagnon de tous nos combats*. Alors, à ce titre là, mes mots seront pour lui, parce que Pierre Schaeffer, en tant que personne dirais-je "privé", en tant chercheur ou inventeur, "personnage-musique" ou administrateur, n'avait évidemment pas beaucoup de place dans tous les débats ici - ce qui est normal compte tenu de la thématique générale. En complément de celle-ci, j'ai cru pouvoir ajouter cette note personnelle de témoin, note à la fois sérieuse et quelque peu légère.

Je ne peux que me réjouir que Pierre Schaeffer soit devenu l'objet d'un colloque, lui qui n'aimait pas les colloques...

Et voilà que cet homme remarquable qui n'aimait pas les colloques, tout en étant l'homme de colloques, est devenu l'homme à colloque! Prenez cela, s'il vous plaît, avec sourire, mais s'il était là, s'il nous écoutait de quelque part, je vous assure qu'il aurait accompagné ce colloque-ci, comme tous les autres d'ailleurs, par un commentaire souriant et bien cinglant, avec une ironie destructrice pour tout le monde et qui, en plus, aurait été intéressante à entendre...

Il n'empêche que sa critique était toujours enrichissante, et s'il y avait parfois une dose de ce qu'il appelait un "cynisme fertile", il considérait qu'en avoir un peu était une bonne chose pour activer la pensée. Rappeler aujourd'hui ces détails, ces tout petits points du caractère de ce personnage qui me viennent subitement à l'esprit et dont on ne se souvient plus, me semblaient avoir un certain intérêt sinon une petite importance pour que je me permette de vous en faire part.

Quant au GRM, dont il ne s'occupait plus du tout depuis la fin des années soixante, sa grande fragilité s'est trouvée aggravée davantage encore sous le coup de l'apparition de l'IRCAM, dont par ailleurs nous ne pouvions, bien entendu, que nous réjouir. A ceci près que, lors de la fameuse conférence de presse qu'a faite Pierre Boulez en 1974 pour annoncer l'avènement de l'IRCAM, conférence brillante, intéressante et pleine d'informations, on pouvait regretter qu'une bonne moitié de l'abondant exposé idéologique menant à la naissance de cet institut était, parfois mot à mot, calquée sur la pensée et les écrits de Pierre Schaeffer, sans que son nom ne soit prononcé une seule fois.

Cette attitude d'"oubli" ou d'ignorance de l'autre, était et l'est toujours bien connue dans le monde musical. Mais ce qui, en l'occurrence, me semblait vraiment regrettable, c'est que l'on avait fait comprendre que la notion de *recherche musicale* naissait avec l'IRCAM, alors que Schaeffer a introduit cette notion vingt-cinq ans plutôt et, en plus, par des écrits importants. Ne prenez surtout pas, s'il vous plaît, cela comme une critique à retardement de qui que ce soit - ça n'a rien à voir. Je voulais seulement retrouver Schaeffer à la place qui est la sienne, donc au départ de cette notion. Car c'est bien lui - et ce n'est pas étonnant compte tenu de sa formation - qui a introduit dans le monde musical la notion de *recherche musicale*. Cette "priorité", a-t-elle vraiment de l'importance? Un peu, quand même... Mais bien que cette antériorité n'est peut-être pas de l'ordre du plus important, ce qui l'est alors vraiment et fondamentalement, c'est que dans le domaine de la recherche, la règle incontournable, déontologique et pratique, est partout et toujours celle de la continuité et de relais: on plante ses racines tout à côté des plantes existantes de la même espèce. Mais constatons que, s'il y avait dans le cas mentionné une erreur, elle a été par bonheur corrigée par la suite: ce que j'ai dit, l'était donc pour Schaeffer et pas contre quelqu'un d'autre.

Cela étant, je ne reviendrais pas sur la ramification de tous les travaux et sur tous les champs d'intérêt de Schaeffer.

Ils sont si innombrables qu'il y en aurait facilement pour plusieurs dizaines de colloques aux thèmes différents. En revanche, si j'ai pris la parole, c'était surtout pour dire sans en demander l'autorisation à quiconque - je dis cela parce je ne suis pas l'homme de grandes déclarations et n'ai aucun droit, à part ma conviction profonde, de prétendre à la véracité de ce que je souhaite "déclarer" - à savoir que je considère que Pierre Schaeffer est, pour la musique, l'homme le plus important du vingtième siècle. Je m'explique, trop brièvement, trop rapidement.

Fortement influencé par sa pensée et sa méthode de regarder-écouter "de plus près", j'en suis arrivé à la conclusion que l'histoire de la musique occidentale - la nôtre - est

finalement l'histoire du système tonal, du système sorti de la gamme dont la source se trouve dans la loi physique. Exploitant ses degrés et leur hiérarchie, elle a pu, pendant des siècles, construire non seulement sa grammaire, mais à partir de là, le développement de plus en plus complet de combinaisons de tous ses degrés pour en faire le berceau d'un langage. Tonal. Dans cette histoire splendide, aux avancements et sursauts permanents, le temps a néanmoins fait son oeuvre: l'usage constamment plus élargi des degrés dans des combinaisons qui exploitaient leur totalité, a fait éclater automatiquement leur hiérarchie d'origine au point qu'en fine, il n'en restait plus aucune. A cette fin d'hiérarchie issue très naturellement de l'intérieur du système, est venue alors s'imposer une autre, extérieure celle-là, car introduite en effet par la décision d'un acteur extérieur (Arnold Schoenberg): il met au-dessus d'elle une grille volontaire de douze degrés chromatiques égaux qui abolissent toute hiérarchie et qui font naître un nouveau système "contre nature", signant *ipso facto* l'acte de mort de l'ancien.

La musique, cet être mystérieux, ne pouvait pas supporter longtemps une décision qui lui est imposée sans que l'on lui demande son avis. Et son avis s'est à nouveau tourné du côté de la nature! C'est donc le moment où "intervient" Pierre Schaeffer sans le vouloir expressément, qui ouvre la voie vers tous les sons, franchissant la limite qui les autorisait à exister et être représentés uniquement par la note: tout son, d'où qu'il vienne, peut devenir de la musique!

L'étude du son, l'apprentissage de l'écoute de sa réalité, l'écriture "libérée" des obligations traditionnelles en inventant une autre façon d'écouter et d'écrire à partir de cette écoute là, voilà le beau fruit du son "universel" qui existe et signifie en tant que tel.

De là, avec l'avènement de nouvelles technologies, il n'y avait qu'un pas pour trouver d'autres "systèmes", nombreux, davantage personnels et non "obligatoires" pour quiconque. Ce pas là a été, bien entendu, très rapidement franchi, mais l'aurait-il pu le faire si vite, si l'horizon ouvert par Pierre Schaeffer n'en avait pas créé les conditions de base?

Ma dernière phrase serait pour constater que tout le monde aujourd'hui, qu'il soit dans la musique écrite ou acousmatique, est au fond l'héritier de cette trouvaille de Schaeffer. Qu'il en soit conscient ou non! Car cette conscience-là n'a finalement plus aucune importance aujourd'hui: on vit dans la musique avec ce qu'il est donné et l'on s'en sert sans penser à d'où cela vient: le tragique privilège de grandes trouvailles! Mais si l'on accepte ce fait dans la pratique quotidienne du créateur - et c'est l'essentiel - il ne doit pas pour autant être permis de l'oublier tout simplement. C'est pourquoi je ne souhaitais pas l'oublier aujourd'hui, ici, où l'on parle d'un autre Schaeffer; car le "mien" est bien celui que j'ai eu l'honneur de considérer comme le personnage le plus important pour la musique dans le XXème siècle.

Il nous aura permis, quoi que l'on en dise, de continuer à créer de la musique.

Merci!

Transcribed by Vilma Bartolić

*NB. "ovni" – abbréviation française pour "objet visuel non identifié"

Forewords by Ivo Malec

Hello to all.

Nowadays it is a handicap not to speak English. In this regard I am handicapped. I can only hope this handicap does not affect intellectual capacities, too.

I had to ask myself why I am here – I did not wish or offer to make a contribution because the chosen subject of this colloquium is outside my field of expertise. Therefore, I am here in a somewhat symbolic capacity, so to speak: I was invited as one of the oldest descendants or – how should I put it – one of the rare survivors of the “Schaeffer years“, which began in the mid-fifties and lasted, with and without him, almost to this day. The position of a doyen is not the most comfortable one – it is made a bit less uncomfortable as I share it with François Bayle.

I have to mention François Bayle, not only because he has provided a superb contribution here but – ultimately – because, after Schaeffer, he took over the charge of that peculiar *ovni*¹, the GRM², a baby that had an extremely important start but turned out to be quite frail. Bayle did it in the very difficult and diabolically complex system of the French administration and managed to consolidate the GRM as a group continually dedicated to its fundamental vocation of musical research and, equally, to musical production. It is enough to recall the enormous number of musical works composed within the group. All of this makes him one of the most important, if not the most important composer of electro-acoustic music and, in my opinion, the greatest one. But I have digressed.

Let us turn back to Pierre Schaeffer. I consider myself authorised to speak about him because, in his time, he honoured me not only with his friendship, but also with a dedication in which he called me *fidèle compagnon de tous nos combats*³. Therefore, I will speak for him because Pierre Schaeffer as a “private person“, as a researcher or an inventor, a “music-person“ or an administrator, obviously did not get much space here, quite understandably given the general subject of discussion. I thought I might add a word or two of personal testimony, both on a serious and not so serious note.

I cannot but rejoice in the fact that Pierre Schaeffer, who was not a fan of colloquia, became the subject of one... To see this remarkable man who disliked colloquia but was colloquia goer, having become a subject of a colloquium! Please, take my words with a smile because, if he were here, if he were listening to us from somewhere, be sure that he would show up at this colloquium as he used to at all the others, throwing in a humorous but no less caustic comment, with an irony that everyone would find destructive albeit interesting to hear...

¹ “Ovni“ - a French abbreviation for “Non-identified Visual Object“. (author’s note)

² GRM - *Groupe de Recherches Musicales*; The Group for Musical Research.

³ A faithful companion in all our battles.

Nevertheless, his criticism was always enriching. And even including a certain amount of what he called “fertile cynicism”, he believed that, in small doses, it was a good thought activator. I thought it would be interesting and even important enough to recall today this kind of detail, those forgotten tiny idiosyncrasies of his that re-emerge before my eyes as I speak; that is why I take the liberty of sharing them with you.

As for the GRM – which ceased to be a preoccupation of his by the end of the sixties – its profound fragility was aggravated even more by the blow it suffered with the arrival of the IRCAM⁴ which was, of course, something that we could only have been happy about. An even greater blow considering the regretful fact that Pierre Schaeffer’s name was not even mentioned at the famous press-conference held by Pierre Boulez in 1974, at which he announced the forming of the IRCAM – an otherwise brilliant, interesting and very informative conference – even though over half of the ideological platform of the Institute actually replicated, word for word in places, Schaeffer’s thought and writings.

This attitude of “oblivion” or “ignorance” of the other was and still is commonplace in the world of music. However, what I found really regrettable here was the fact that the public was left with the understanding that the notion of *musical research* was born with the IRCAM, even though Schaeffer introduced it twenty five years earlier and, moreover, in his very influential writings. Please, do not take my words as a belated criticism of anyone – they are not. I just wish to restore Schaeffer to his rightful place as the father of this notion. Indeed, it would not surprise us given his professional formation, to know that he was the one who introduced the notion of *musical research* into the world of music. This “precedence”, is it really important? Yes, to a certain extent... Although this precedence is not perhaps of the highest order of importance, in the field of research there is, everywhere and always, a rule of the greatest, most real and fundamental importance – the imperative deontological and practical rule, the rule of continuity and of relay: we put down our roots next to the existing plants of the same species. For the record: if there was a mistake in this case, fortunately it was corrected later; everything I said was for Schaeffer and not against anyone else.

This being the case, there seems to be no need to elaborate again on the ramifications of the entire body of Schaeffer’s work and on all the fields of his interest.

And his interests were so countless that dozens of colloquia could be organised, each on a different subject. On the other hand, I decided to speak primarily in order to say the following, without seeking anyone’s permission (and this I specify because I am not a man of great statements and nothing other than my deepest conviction gives me the right to lay claim to truth of what I wish to “state”): I consider that, for music, Pierre Schaeffer is the most important personality of the 20th century. Let me explain myself, very briefly, very quickly.

Strongly influenced by his thinking and his method of looking-listening “closely”, I concluded that, in essence, the history of western music – our music – is the history of

⁴ *Institut de Recherche et Coordination Acoustique/Musique*, Institute for Research and Coordination in Acoustics/Music.

the tonal system, of a system issued from the scale the source of which are the laws of physics. Using the degrees of scale and their hierarchy throughout the centuries, music was not only able to build its own grammar but also, based on that grammar, to develop an increasingly complete system of combinations of all these degrees, which gave birth to a language – the tonal language. However, in this splendid history full of fits and starts, time has taken its toll: this constantly increasing use of degrees in combinations, which resulted in the use of them all, necessarily shattered the original hierarchy of degrees, and so much so that, in the end, none of it survived. This intrinsic hierarchy, issued very naturally from within the system, has been substituted with another, extrinsic because of being imposed by a decision of the external agent (Arnold Schoenberg): with the hierarchy superimposed as a voluntary grid of twelve equal chromatic degrees which abolish every hierarchy, resulting in a new, “counternatural” system which *ipso facto* marks the death of the old system.

Music, this mysterious being, could not live for long with a decision forced on it without its consent. Therefore, it soon returned to the nature! And that is precisely the moment when Pierre Schaeffer “intervened”, without doing so deliberately, working his way towards all sounds, crossing the boundary that used to authorise their existence and unique representation by means of the classical musical notation: any sound, wherever it may originate from, can become music!

The study of sound, learning to listen to its reality, a musical script “freed” from traditional obligations, the invention of a different way of listening and of writing down what was heard - that is the beautiful fruit of the “universal” sound which exists and has a meaning in itself.

From that point on, and with the advance of new technologies, there remained only a small step towards finding a multitude of other “systems”, more personal ones, which are not “compulsory” for anyone. Naturally, very soon that step was made. But would we have been able to make it so quickly without the fundamental prerequisites created with the horizon opened by Pierre Schaeffer?

And just one last word, for the record: today, be it in notated or in acousmatic music, deep down we are all heirs to Schaeffer’s discovery, whether he is aware of it or not! This awareness finally lost every importance today: in music we live with what is given; we use it without giving a thought to where it came from - a tragic distinction of great discoveries! If we accept this as a fact in the everyday practice of a “creator” – which is essential – this does not mean that we are allowed to simply forget him. That is why I did not want him forgotten here today, when we are speaking of another Schaeffer. “My” Schaeffer is the one whom I had the honour of considering the most important personality of the 20th century for music.

Whatever one may believe, he would allow us to continue to create music.

Thank you!

Translated from French into English by Radmila Zdjelar

Editor's preface

by Jerica Zihri

Pierre Schaeffer's work, among the ones most often mentioned when we speak of art and "new media" in the 20th century, is actually only partially known. Reduced to one single concept, *musique concrète*, it has become only famous pre-history of something as widespread as the sampling technique. It therefore seems that today it poses no challenge before us. But is that really so? And who is he actually: a media researcher or an artist?

The hundredth anniversary of Schaeffer's birth was an opportunity for re-evaluation and updating of the knowledge on this composer, researcher of music and visual media, theoretician and writer. These Collected Papers are a modest contribution to that occasion. They contain almost all the participants' lectures of the International Conference *Pierre Schaeffer: mediArt* organized in Rijeka by the Museum of Modern and Contemporary Art from 5 to 7 October 2010. The Collected Papers contain texts of different discourses, ranging from scholarly and scientific to informative ones, as well as some previously published texts. Nevertheless, all these contributions contextualize Schaeffer's work and theoretical postulates in different thematic complexes. Therefore it was important for us to collect and present them in a joint publication.

Disregarding the fact that Schaeffer never visited Rijeka during his life, this city proved to be an adequate place for the commemoration of the hundredth anniversary of his birth. It would be enough to mention that Ivo Malec, before leaving for France in the mid-twentieth century and his encounter and work with Schaeffer, was the acting art manager of the Rijeka Opera House for a short time. We were therefore extremely pleased when maestro Malec accepted our invitation and participated in the work of the conference. His final, impressive speech showed us that the Schaeffer essence has actually remained in the memory, thinking, considerations, and evaluation not only of his personality and role in art, but also in the philosophy of creation in the 20th century. Therefore the transcript of maestro Malec's concluding speech is included in the introductory part of this publication. A further connection of Schaeffer with Rijeka could be the fact that the Museum of Modern and Contemporary Art is traditionally inclined to and open towards interdisciplinary projects and contemporary art practices, especially the ones that follow the development of new technologies and means of communication. The collaboration with Heiko Daxl and Ingeborg Fülepp on the European *x-oP* project and *Media-Scape* festivals, as well as the collaboration with musicologists Nikša Gligo and Seadeta Midžić was the reason why the Rijeka Museum partly joined the commemoration of Schaeffer's anniversary, that is the programme, which under the common title *The Years We Make Contact: Homage to Pierre Schaeffer*, immediately after Rijeka, took place in Zagreb.

During the 1970s Pierre Schaeffer often visited Zagreb. As a guest of the Music Biennale Zagreb he participated in the accompanying meetings and gatherings; he gave lectures at the Gallery of Contemporary Art, at the Faculty of Humanities and Social Sciences and

at the Zagreb Radio and Television. Some of these events are noted in “Pierre Schaeffer’s Zagreb Diary“ (*Doctrine de Zagreb*), which was the topic of Seadeta Midžić’s paper at the Rijeka conference. She pointed out that Schaeffer’s diary notes of 1961 do not only reflect the Zagreb episode at the Music Biennale, but also the notion of contemporariness determined by interdisciplinary thinking and works. They include simultaneous events concerning the New Tendencies movement in the Gallery of Contemporary Art as “strong but also only partial expressions of mobilization of the Croatian spiritual and social forces, at that time creatively manifested and internationally perceived, like for example the Zagreb School of Animated Film, Zagreb Radio-Drama, but also the Praxis Journal, initiated by Zagreb philosophers; they were a sort of background and an in-depth guarantee of the spiritual revival and social revolution“.

Therefore, fifty years later a reminiscence of these events was important, not only to hear music, but also the protagonists and followers of that time. Thus the Centre of Croatian Visual Artists’ Association (HDLU) and the Museum of Contemporary Art Zagreb hosted programme created and moderated by Daxl/Fülepp, Seadeta Midžić, Nikša Gligo, Daniel Teruggi, and Dalibor Davidović from 8 to 10 October 2010. In the *Gorgona* Hall, along with Pierre Schaeffer’s music (*Symphonie pour un homme seul*, *Étude aux chemins de fer*, *Étude pathétique*, and *Étude aux objets*), works by Christian Zanési, Daniel Teruggi, Michel Chion, Bernard Parmeggiani, François Bayle, Ivo Malec, Silvije Foretić – Janko Jezovšek were presented and a work by Frano Đurović was premiered. All three evenings concluded with the screenings of films selected by Jocelyne Tournet-Lammer (*Le Monde et les ondes de Pierre Schaeffer* by Lisa Deramond and Gérard Folin, fragments from the films made by the Music Research Service in the period from 1965 to 1973, and *La leçon de musique* by Nat Lilenstein). The portrait of Pierre Schaeffer made in 1971 by Enes Midžić was exhibited as well.

In accordance with Schaeffer’s work, the events in Rijeka and Zagreb were recorded by the Third Programme of the Croatian Radio, and by the end of 2010 there were three broadcasts under the common title *Found Time – Commemorating Pierre Schaeffer’s 100th Birthday*, a tribute by Programme Manager Iva Lovrec Štefanović. In this way, the Croatian cultural public joined the French national program, which devoted a lot of attention to Schaeffer’s jubilee.

It is, therefore, a pleasure and an honour to be a part of Schaeffer’s jubilee and on behalf of the Organizing and Programme Committees and the Editorial Board, I would like to thank everyone who helped and supported us. We are also very grateful to all the participants whose expertise and work made the conference and the publication possible.

Translated from Croatian into English by Andy Jelčić

Schaeffer and Rijeka

by Daniel Teruggi

Pierre Schaeffer was born in Nancy, France, in 1910. An engineer, a composer, a man of the media, a philosopher; a personality that strongly changed our understanding of music and the role the media have in our society. 2011 was hence a year of celebration for all those who have known and worked with Pierre Schaeffer and also an excellent occasion to question the importance and the validity of his ideas in France and abroad.

Pierre Schaeffer was a great inventor of institutions and as such, an inventor of the very efficient and strong ones. The GRM (*Groupe de Recherches Musicales*), which I direct today, was created in 1950, with its former name, the GRMC and has existed with its present name since 1958. In 1960 he created the *Service de la Recherche*, extending research to different domains of the image and sound production. When the former broadcast organisation was separated in different companies in 1975, parts of this *Service* were integrated in Pierre Schaeffer's last invention: the *Institut National de l'Audiovisuel* (Ina), the institution in charge of France's audiovisual memory. These institutions have not only survived many political changes, but have gone through strong technological evolutions. Pierre Schaeffer used to say that these were "impossible but necessary institutions" and their necessity has proved their strength until our days.

During 2011 many events were organised to celebrate the birth of Pierre Schaeffer, disappeared in 1995. Paris organised a very important symposium, with the complicity of Jocelyne Tournet, a specialist of Schaeffer and of the *Service de la Recherche*. Also in Nancy, Schaeffer's birth city, as well as in many other places in France and in the world events were organised, where his music was played, his ideas discussed and his memory celebrated.

I was then very positively surprised when in January 2010 Seadeta Midžić entered my office at the GRM and very convincingly proposed to organise an event dedicated to Pierre Schaeffer in Rijeka, Croatia. She explained to me she had known and worked with Pierre Schaeffer and had even invited him to Zagreb in 1963. She told me that there was great interest today in his ideas and that the Museum of Modern and Contemporary Art in Rijeka was highly interested in hosting such event. Schaeffer and Croatia was not something totally unexpected for me; one of Schaeffer's very important collaborators, Ivo Malec, Croatian composer, worked with Schaeffer since the 1950s, developing his ideas as well as becoming one of the outstanding composers of his generation in France and Europe. However, Ivo Malec retired from the GRM in the nineties and even if we still keep strong links with him, it was somehow strange that a proposal like this would happen.

Thus we started to think about and organise this event, which took place in the charming city of Rijeka, where Schaeffer never went, however where many Schaeffer's specialists and lovers gathered for two days in order to present their ideas, analysis, perspectives and contemporary thoughts based on the huge work that Schaeffer did during all his life.

Many of the participants new themselves already, however many people we didn't know came to talk about Schaeffer or his influences on them and their personal work. Artists, composers, thinkers, all came together with a common purpose and the possibility through the sharing of their views and conceptions, to enrich their perspective and to understand the new aspects of his life and work.

It was indeed a unique event, in the warm weather of the first days of October, in a wonderful conference room where we all felt "at home", with the dedicated events such as a concert, film screening, exhibition opening and all our wonderful Croatian friends that made those days a happy and friendly moment.

Somebody who doesn't know Schaeffer would naturally question as to why Schaeffer, what is there so particular and interesting in his work and actions? To answer in a very global way: Schaeffer was one of the first persons who understood the impact and action that the media, mainly broadcast, had on our society. How the concepts such as creation, transmission, communication, interaction, had totally new meanings within this domain. He did not only work and theorise on these issues, but he mainly created the conditions through which all these new perspectives could be experimented, put to work and brought to the audiences, thus opening the way to the huge media and internet revolution we are living today.

Probably one of his greatest contributions, which already in the fifties brought him a worldwide recognition, was the development and invention of "musique concrete" using the radio technology to manipulate and organise recorded sounds, he opened the way to all the contemporary work on music and technology: electroacoustic, electronic, acousmatic, live electronics, electronica, or any name that is used to express this new and particular relation between the music being composed by means of technological devices, either electronic or digital. The GRM still continues to work on many of his concepts and to experiment with any new means for musical creation.

Pierre Schaeffer, as many writers and thinkers, has to go through the challenge of time, fighting against oblivion and earning his place as one of the great figures of the twentieth century. This work cannot be imposed or accelerated, it is the result of other researchers and thinkers working on the ideas, analysing and criticising them and putting them in perspective with other strong ideas of our time. The great achievement of the conference in Rijeka, was to permit the ideas to circulate, the people to meet and communicate and new elaborations to develop. We have to sincerely thank to all those who made this event possible.

Falling Short... Going Beyond... from Hearing to Doing

by François Bayle

Pierre Schaeffer's *objet musical* marks an *emergence* in the dynamic sense of the term. This is a modern point of view. My aim will be to show how. Fairly early on, and in very distinctive words, I wanted to draw attention to the *acousmatic mode*, thus referring back to the experiment with the Pythagorean device mentioned by Schaeffer, a listening activity not "without seeing" (as is all too often said), but rather "through/across" (other means of articulation). This idea, taken up again, added to and re-worked, was extended into the ramifications which might be expected: the *acousmonium* as a means of sound-diffusion in performance, the *acousmathèque*, an active centre for the analysis and conservation of works, and the *acousmograph*, a means of indexing. I act/react, invent/correct, produce and retain within a "milieu", a new "environment". This is the electro-acoustic system, where the loop is conducive to the appearance of elements which "stand out" perceptually or are "pregnant with meaning" (in the sense in which René Thom uses these words /"saliency/pregnancies"/ to designate types of morphodynamic peculiarities, local or trans-local). This closed circuit acts as a device for sensory saturation, which lends itself to "the taking on of shape" (in Gilbert Simondon's meaning). From the inexorably dissipative nature of the flux of sound there emerges a parallel world, where the image, with its many properties, is sustained. Which led me to say that *no sound produced from a loud-speaker is the same as any other*. Understood as a "sign of", the *sound-image (i-son)* is perceived by the ear as a multifaceted complex: linked to a referent, a diagram of forces, an autonomous figure, as well. Analysis of it is enriched by the semiotic distinction, triadic and circular, which means that the image appears in turn as an *icon*, an *index* or a *symbol* (cf. Ch.-S. Peirce).

"Every musical civilisation starts with noise and, from it, draws out the sound".

Thus Schaeffer seems to indicate in his *Treatise* that in his opinion the implicit categories which govern and keep the Western tradition within its context should be revised.

Translated from French into English by Christine North

1- ... on emergence

If it were necessary to make an index of the vast *Traité des Objets Musicaux* in one sentence, I would, after considerable hesitation, perhaps choose this idea, expressed by Hugues Dufour (in *Ouir*, 1999): "Every musical civilisation starts with noise and, from it, draws out the sound." It seems to me that the pyramid of the work, with its seven books and 662 pages, is built on this particular point and balances its vast project – the work of a lifetime – upon the initial question "how to do and why hear" all the way to its horizon, that of a "language of objects".

A noise carries significance (not one without the other...).

Perhaps it even gives it shape? In any case it nurtures it.

The poet is already convinced of it (Ponge: the original onomatopoeia).

The physicists sort the forces of the cosmos in four fundamental interactions (Newton, Einstein...).

While the mathematicians define the structure of dynamic adventures (Leibnitz, Thom ...).

Among them, the philosopher, the observed observer, the inventor of concepts, grasps and describes phenomena, distinguishes between the known and the unknown, the great

and the small perceptions (Merleau-Ponty, Deleuze). Since Husserl, we are in the “new state of things“, interested in their form but even more in their formation and especially attentive to their *emergence*. And the *musical object* is one of them.

2 - Schaeffer in future tense

One of the first to sense this feature of the era that accompanied the technological irruption, Pierre Schaeffer, leaves us a considerable amount of material, thousands of pages, on an astonishing century of which he was an ardent witness and representative.

His curiosity, be it musical or technical, focused or torn between several desires, is only satisfied by human experience, only really nourished by difficult situations, rebellion or rupture, and surpasses itself only through the trial of writing, considered not so much as a work, in which he hardly believes, but rather for its qualities of procedure to elucidate by testing the words, work diary, device used to make note of the essential, otherwise always vanishing, ambiguity. This material consisting of language, texts, lectures, essays, novels, words and music, unique in their diverse genres, exists not only as an accomplished work but also and often as an open site, as design or vision, as perspective or possibility. Thus Michel Chion, on the *Traité*, asserts: “Let me present the future: it’s a book... More than a machine, much more than a technique, each book is our future as long as it conveys either answers that contribute to the promotion of knowledge and often have to wait a long time before being recognized, or questions that stimulate curiosity and modify or renew our approach to the world. And on both these levels the *Traité* is a big book of the future.” And the precise inventory made by Jocelyne Tournet of the polymorphous work contains several other minerals.¹ It’s wonderful to have such material to dig one’s teeth into!

3 - The chain and its links

I wasn’t perhaps, as it were, the best of the companions, but doubtless the most devoted associate during the first years of “inventing sound“ which I will mention below, and when the time came (around 1966), I was found to be the best prepared to *take over*, where a replacement was not a consideration...

Thus, the pages of history turn themselves, or simply the pages of a score taken up “at a moment’s notice“. I followed on at the right moment, with a new team and new means: the tools of the *Traité* and also the “time regained“ of music.

It is of interest to recall an earlier event: “... he started working with us, but he quickly lost courage. Obviously, he didn’t trust our talent. And as for me, when he stopped coming, I have to admit, passionate as I was, I felt pretty relieved. We worked without him, but because of him. Day and night in the studio...” etc... The lines I have chosen and that rather ambiguously seem to come from me, are in fact those of Schaeffer himself (in his *Entretiens avec Marc Pierret* – 1969) evoking his master of the time, the actor Jacques Copeau and his first attempts at the Studio d’Essai of 1943 where the new solfeggio of a new kind of expression, radiophonic art and its different laws (that of the microphone, the school of sincerity), was being discovered little by little. Schaeffer had

¹ Tournet, Jocelyne (2006), *Sur les traces de Pierre Schaeffer*, Paris, Ina/La Documentation française.

an inkling in 1941 already, in his remarks on *Arts-relais*, the anticipatory notes jotted down on paper, improvised under pressure during troubled times and to which he must absolutely come back to one day... For him, this was to be a run through of the first stage and a taking over.

We know the rest: 25 years later the TOM (... of hearing, that tour of the world!) was published, a second big Schaeffer cycle was ended, only to nurture another straight away. And many more. And here I am *mutatis mutandis*! Recounting the next, third episode, the beginning of which would match the preceding lines!

It was, as I have mentioned, the “time regained” of music. This era, the time of studios and machines, sound coming from noise, indeed we “worked them without him”, sometimes helped by his criteria of listening. But also, most often, stretching beyond, towards other regions of emergence.

Fairly soon, I was to use characteristic words to mark this attitude, and if not to fix it at least to define the renewed “modality”. By modality, I meant not only a manner of doing, but also a modification of being, listening to emergences on the look-out for metamorphoses. The *acoustmatic modality* picks up the Pythagorean device, mentioned by Schaeffer, of a listening activity that is not “without seeing” (as is said too easily) but “through” (other articulations)... This extended, renewed, re-use was stretched to its logical ramifications: thus, the *acousmonium*, as a projection tool in concert, the *acousmathèque*, an active place of analysis and conservation of works, and the *acousmographe* as an index tool. Their more or less common use will have proved their relevance.

4 - My origins

My training, my reflections as a composer, place me at the intersection of two currents. First of all the *école concrète*, which trained me in the art of describing the nature and the values of audible events considered sonorous or musical “objects” according to their context and/or their function. Thus, having had the privilege of contributing to the elaboration of the very unusual *Traité des Objets musicaux*, and having followed its various stages (completed under the direction of Schaeffer, with “*Solfège de l’objet sonore*”, whereas I myself later involved Michel Chion in the enterprise of creating *Guide...*),² my listening was founded on this art of listening, in essence phenomenological (referring to Husserl). In the process of doing that and in an antagonist spirit rather than a contrary one, I developed (under the influence of Karlheinz Stockhausen) the organicist tendency to consider the object, either sonorous or musical, as an energy knot, a movement heading for a goal, a project, something “to be”. (Whitehead, Merleau-Ponty, and nearer to us Thom, Deleuze). So, my musical choice is to be found at the intersection between

² Schaeffer, Pierre (1966), *Traité des objets musicaux*, Paris, Seuil.
Schaeffer, Pierre (1967) *Solfège de l’objet sonore*, Paris, Grm, , reedited Ina Grm, 2005.
Chion, Michel (1991), *Guide des objets sonores*, Paris, Ina-Buchet/Chastel.

a phenomeno-logy and a teleo-logic, on which I have relied to form the central concept (in my opinion) of *image de son* (image of sound)(Peirce).³

I will thus move on to the question of “from hearing to doing“ in these procedures in connection with a will to organise the *morphodynamic* (on the one hand) and *orientated* (on the other) processes. It will be noted that the master words that condense these ideas form two triads: *constraint – emergence – behaviour* (criteria of the formation of i-sonic entities) *articulation – logic link – operation* (orientation criteria of the perceptive entities).

5 - Acting / reacting ...

I act / react, I conceive / correct, I produce and retain,... at the heart of a “background“ (in the particular Gilbert Simondon sense of the term). Thus, it is necessary to define in its very nature the characteristic situation that removes the act of composition in its traditional Western aspect (musical system, instrumental organisation, predictive notation) and places it in the midst of another “environment“. It is that of the electroacoustic chain with its different links (producing, transforming, editing, inscribing and saving) that closes on the primordial *act of listening* in the shape of a *continuous interactive loop* realized through dialogue interfaces. The procedural character is dominant with its corollary of effective verification in real time. This (phenomenological) loop predisposes the appearance of perceptive “saliencies“ and of “pregnancies“ (in the sense René Thom uses these terms to indicate the types of morphodynamic, local or translocal singularities). This closed circuit serves as a sensory saturation device, suitable for “taking shape“. Let us remember that these conditions of expression which are natural in visual arts (also known as spatial arts) are only a recent acquisition for a time-art such as music, making it necessary to have access to advanced technology to which is attached the idea of a breach (behavioural, societal, etc...) opposing traditional arts to technological arts, especially as regards the criterion of writing. As a result, through the deeply different tools of transformation, the question of articulation stays active, as well as that of production / reproduction, that underlie the issue of all writing. The aim of my presentation is to show how.

6 - This modus vivendi...

We first need to establish that this modus vivendi (and operandi) comes out of a change of scale and spatio-temporal quality of the world which is no longer mechanic but electronic: the possibility of isolating micro-positions in a modulation. Especially one that is isomorphous to an acoustic pressure wave coming from an auditive scene, and whose audiovisual and data era will have developed the ordinary miracle to a great extent.

Thus, from the irreparably dissipative nature of the sound stream, a parallel world arises in which the image is maintained with its many qualities:

- first of all, *reproductiveness*, allowing a reiteration, a reactivation of the perceptive effect (never the same, and that always stays dissipative, though revealing its

³ Bayle, François (1993), *Musique acousmatique, propositions, positions*, Paris, Ina-Buchet/Chastel.

phenomenological variability: the variety of listening angles, fleeting connections that influence your judgement, even to the point of reversing it),

- secondly, *malleability*, through partial or radical transformation: the endless deployment of a form by compression/stretching, inversion, inter-modulation, etc...,

- at last *receptiveness*, its descriptive histogram, revealing the pilot saliencies that can be subjected to any morphological treatment (describers/modulators).

Which leads me to suggest that *any sound produced by a loudspeaker is unlike other sounds* and that it needs to be regarded not as the immediate acoustic correlate of an action, but indeed as its relay effect via a mediating device which produces a representation of it: an image. Schaeffer spotted this displacement as well as the first one, described it, and then disregarded it.

The question that emerges (apart from that of the compromise on more or less bypassed likelihood: *what is it?*) thus becomes, according to Laswell's phrase that is applicable to any process of communication through images, the intentionality of *who says what, to whom and to what effect?*

So, understood as a "sign of", the *image of sound (i-son)* appears to the ear as a multifaceted complex: connected to a referent, a diagram of energies or just as well an autonomous figure. The analysis of it is enriched by the semiotic, triadic and circular distinction according to which the image is presented in turns as an icon, an index or a symbol (due to Ch.- S. Peirce).

7 - The invention of sound

This daring formulation is not exaggerated in order to attract attention to this recent and fundamental emergence: the sound-object.

"Every musical civilisation starts with noise and elicits the sound from it..."

This is how Schaeffer showed us in his *Traité* that it is necessary, according to him, to revise the implicit categories that rule and put Western tradition into perspective.

This realization is strengthened by the appearance of electro-acoustics that imposes a new way of considering and treating sound: the change of scale in the study of the acoustic phenomena entails a change in the nature of musical language. According to Hugues Dufourt,⁴ "the 20th century is marked by the increase of dynamic forms from instrumental causality, be it from percussion or electronic technology [...] that rehabilitate the energetic aspect of sound. And from there a new aesthetic of sound"... "Furthermore, electro-acoustics did not only enhance the sensorial equipment, it displaced it from the centre, engaging the ear in a fine dialectic of states and transitions. This "induced tension" of the ear constitutes a new imperative for sensibility, it also inaugurates a different order of expressive values, [...] it enables differentiating continuity without breaking it up".

At last, this final remark, concerning what I call the hand/ear, a composite organ at the heart of the acousmatic device: "...the mechanical gesture/instrument relation is substituted by a neuro-dynamic relation between the tiny expressive impulsion and its electric relay, between the influx of the nervous system and its translation" its audible

⁴ Dufourt, Hugues (1999), P. Schaeffer: Le son comme phénomène de *civilisation*, in *Ouir*, Paris, Buchet Chastel.

result that adjusts itself to this singular particularity, “of the exclusive aptitude of the ear to perceive unstable forms, bearing big consequences: the possibility to stretch this dynamic requisite to all aspects of music“.

8 - the hand-ear connection

If it is true that the eye listens, the ear assists the hand as it proceeds to give shape to the audible form. A short circuit occurs during this connection, all the more efficiently if intuition is on the ball and anticipates the result. The quality of the operating interface is of the utmost importance, as the selection and the establishment of connections between the pilot saliencies (local) and the emerging pregnancies (translocal) depend on it.

(To mention a historic example, it is thus the interface that was conceived by Jean-François Allouis for the Grm *Syter* processor that offered the possibility to memorise groups of operative parameters in the shape of circles of various diameters. The control surface – run up and down by a cursor, “reacting through gravity“ in the vicinity of these circles - more or less large - of memories of states – became a real instrument with a variable sensibility in real time, an efficient model, elegant in its interactivity!)

This subjective connection (by being heuristic) enables the exploration of topological accidents, conducting a non-linear selection in the view of a temporary pre-organization, adjusted and reorganized little by little. At this level we already see, under the guise of a behaviour deriving from fugacity of speech, the first signs of a scriptural process!

9 - hearing-reading

Inspired by the famous “First I find, then I search“,⁵ though more modestly I will now say that, due to my experience of tools for editing and treating my memorised i-sounds, *First I read, then I write*. Listening (hand-ear), thus being assisted, is installed in a symbolic space-relay, according to a “layout“. Indeed, I perform *listening-reading* while selecting in an i-sonic process, such as such a morphological saliency, by giving it a functional articulation, by deconstructing iconic or diagrammatic i-sounds. I do this in view of *listening-writing*, by the emergence of integrated groups, the invention of figures to be, that will converge, step by step from the start to the finalised organisation.

The acousmatic modality is thus equipped with the adequate means for constructing the piece as a full scale model: an aptitude through its completely defined structure to reintegrate real time of shared listening, to adapt to an external projection space, to be animated by a live interpretation in harmony with an audience. One could be satisfied with that (well, does the composer really ask for more?). But it would be very simplistic to compare an acousmatic piece to a mere audiovisual product (e.g. a radiophonic or record production). The corollary to this point of view would mean only caring about a conservation of media (essential of course), ignoring analysis of the contents, essential for a user (why preserve it otherwise?). Further reflection, not originating in the behaviour of invention this time, but more as an introduction to receptive behaviour, open and diverse by nature, thus coming back to *listening-reading* the piece, in its general form as well as in each detail of its structure, a tool of *writing what is heard* becomes possible, even indispensable: the *acousmographe*.

⁵ lent to Picasso by Jean Cocteau, and for some time the motto of the concrete approach!

Now to the other side of musical communication, to be considered as a hermeneutic approach, a graphic and readable indexation of the piece that is seen as a “morphodynamic landscape“ of which one (or several) map(s) would be useful. Naturally, the map is not the territory, and the effort of representation that is done *afterwards* aims for the symbolic reduction (e.g. necessary functional landmarks for memorisation). Thus, starting from the objective base of a sonagram⁶ (the definition of which can be subject to adjustment, present or not in transparency) superimposed layers of graphic objects will, according to different points of view of listening, allow *indexing* several descriptive or functional approaches.

An identification sheet of the auditive scene, still lacking in perceptive analysis that can be glimpsed however, should allow the descriptive and critical birds-eye view over these morphogenetic landscapes full of saliencies and pregnancies that exist in productions of this kind. The new norms of prehension emerge from the deployed sonorous whole, on the one hand drawing inspiration from the intuitive ear, from its velocity, but also from articulate modes of writing and more generally schemes and archetypes that prompt the desire to listen. It is thus possible to consider acousmatic behaviour through a change of a paradigm and an interpretant. Because there is no superfluity deriving from the visible or the foreseeable to orient the audition or predetermine the horizon of expectations according to some reference system, the *competence/performance* model (I understand what can be done, or see what is happening) fails. A more general interpretant replaces it: the *coherence/listenability* couple (I find my way through my sensations, I choose those that pull me together) working as a detector of alerts or of decipherment, articulations and supports, saliencies and pregnancies.

From then on, acousmatic modality is nothing other than an individuation through listening in the sense Gilbert Simondon describes the symbolic journey according to which diversity “takes shape“, i.e. stops being divided, (diabolized): it becomes individualized.⁷ Which reciprocally sheds light on perceptive thought, floating and diverse in itself, seemingly giving it significance.

This “crystallization“ needs the assistance of an “associated environment“ where the “shape-taking“ is going to take place: the studio and its tools, its operations involving sensory motor behaviour in rapid interaction, involving the trained hand/eye/ear, clever (via ingenious interfaces) in forming/deforming a dynamic object of which the desired/ found trace of its transformations can be maintained.

The orientation of sensations, e.g. the triggering clutch, the interaction that stimulates, agitates, weaves relationships and figures, nurtures coherence, listenability of the “auditive scene“ where the “actants“ suddenly appear and act, mysteriously, it seems...

⁶ or better still an analysis using wavelets, closer to perception...

⁷ Simondon, Gilbert (1989), *L'individuation psychique et collective*, Paris, Aubier.

10 - envoi

As will have been understood, given the pain I have taken to indicate my references, the *acousmatic project*, seen in its entire extent, was thus built on several grafts from various sources. I haven't made an inventory of it, only tried to further the rebound of this endless from hearing to doing adventure. So many have illustrated this:⁸ from P. Henry to L. Ferrari, from B. Parmegiani to Ch. Zanesi, from M. Chion to D. Dufour, with the two extremities of the arc of the *Grm* saga,⁹ Ivo Malec from the very start and Daniel Teruggi at present... And naturally, I would first of all like to pay homage to Pierre Schaeffer. To say to them, but to him above all, how grateful I am. He inspired me to these lines, which I realize extend beyond his intention, perhaps through my excess but just as well by default of course. Like the objects that he didn't want to use himself, they are eccentric, they fall short... and go beyond... Probably it is so in every relay race – such are the rules. And as my turn to pass on my relay comes, hopefully I have helped liberate forces, in view of other rebounds, towards other goals...

Translated from French into English by Isabel Thomson

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⁸ ... at Grm, but also elsewhere, the list, incomplete: thus from F. Dhomont to R. Normandeau, from D. Smalley to J. Harriison or T. Wishart, from Å. Parmerud to N. Barrett, from M. Redolfi to G. Racot or Ph. Leroux, from A. Vinao to H. Tutschku or L. Brummer, from E. Sikora, D. Kaufmann to B. Ferreyra, A. Vande Gorne, Ch. Groult,...

⁹ The Groupe de recherches musicales, founded by Pierre Schaeffer in 1958 with Luc Ferrari, François-Bernard Mâche, following the Groupe de musique concrète started in 1952, with Pierre Henry, Philippe Arthuys...

Confronting Art, Sciences and Techniques, at the ORTF Service de la Recherche 1960-1974

by Jocelyne Tournet-Lammer

We are going to talk about some sociocultural concepts inside the community created by Pierre Schaeffer in 1960. This is an opportunity to remind you of some experiments and technical advances that were tried out. When applied to art, these brought about changes (in creation, user behaviour, etc.). The changes in both needs and means of expression that creators used from the 1940s led to researching devices and perfecting the “tools”... Pierre Schaeffer renewed the art of radio broadcast. After the invention of concrete music, the “generalizing image” of his research work on “sound objects”, brought painters, musicians and film makers closer, producing the works of art. Then lighter recording meant other changed habits (“direct recording” of people in the street, actors, scientists and philosophers...). This new flexibility also favoured reflection on how to use the media.

Pierre Schaeffer was a researcher, an inventor, a pioneer of interdisciplinarity, coupled with research on the modes and systems of expression in media practices. A director and a theorist in communications, Pierre Schaeffer was also the founder of new and innovating structures – The Studio d’Essai, Studio-Ecole, Soraform (Société Radiodiffusion de la France d’Outre-Mer), Groupe de recherches musicales (GRM), The Service de la Recherche, which inspired the idea of Ina (Institut National de l’Audiovisuel) - to mention only the best known.

His structures which included observation, training and research centres, were created as much for experimenting and comparing the results, as for imagining and focusing on the new programme forms and new features in communication.

Each of his laboratories enabled the founder to experiment himself as they were always at the forefront of technical and technological progress. He also offered a large number of people the means of experimenting themselves. When you follow the chronology, you can see that Pierre Schaeffer always welcomed new techniques, favouring their development or their transformation, encouraging their use before anyone else did, he studied the impact of their use as well. You give a meaning to what you write, to how you express yourself. It is necessary to speak about what is essential.

Developing the Art of Observation

Of course, each new technique causes an alteration, as much in artistic creation as in the way users handle this technique. A change in the means of expression and communication made available to artists and creators entails a change in the expression and a variation of needs. So there occurs a renewal in types of art and a need for new types of research.

However, within the structures that Pierre Schaeffer created, each person was able to use new techniques as they appeared, finally transforming or adjusting them (let us remember the Groupe de recherches techniques /GRT/ for instance with Phonogene, Morphophone,

Diafilm, Animographe, and so on) to produce experiments or programmes, creating the original programme.

We should remember that almost all the production and many other elements coming from the outside, became material to be analysed and studied, objects to be confronted and analysed and different activities linked to their production.¹

Solving the Mystery of Communication: an Essential Aim.

This corresponds to one of the research objectives, whilst realizing that another part of the method consists in forging links, correlations between art and technique, between those that do and those that produce, and between all these people. Producing and sending messages always concentrating on the sense of these transmitted messages and the public who receives them.

At the Service, the researcher who is also a professional, must always keep in mind the well-known formula from the communication theoretician Harold Lasswell: who says what? to whom? how? what effect does this have? (or why?). In other words, one of these instructions implies “*Produce like everyone else but think about what you produce*”². These instructions apply to any type of production or medium (sound, text, image...).

The Background

Without going too far back to the past, as we are not trying to retrace the whole history, let us simply recall some stages of these corporate and professional attempts which led to the Service de la Recherche.

Inspired by the works of Jacques Copeau, whom he met during the Second World War, in 1942 Pierre Schaeffer launched the Studio d'Essai, a type of radio art laboratory. Pierre Schaeffer was one of the first people to handle drama on the radio. In 1942, he began writing an essay on *Esthétique et technique des arts – relais*³ where he questions the media structures in radio and cinema. Sound and image, voice, the microphone.

When the Studio became the Club d'Essai at the end of the war under Jean Tardieu, he continued to develop remarkable radio programmes. You can find more about this in the *Dix ans d'essais radiophoniques* which provides a general idea of the various themes.⁴

The programmes that Pierre Schaeffer invented, wrote or directed during this period introduced the new types of programmes, for example *Entretiens entre Paul Claudel et Jacques Madaule* (1943)⁵ or *La Coquille à planètes* (1944),⁶ the magazine *Une heure*

¹ Cf. Jocelyne Tournet-Lammer, *Sur les traces de Pierre Schaeffer*, Ina/La Documentation française, Paris, 2006

² Pierre Schaeffer, *Les Antennes de Jéricho*, Stock, Paris, 1978

³ Pierre Schaeffer, *Essais sur la radio et le cinéma, 1941-1942*, Allia, Paris, 2010 (the first issue)

⁴ First issue RTF, 1962, second ORTF, 1965 and third, Ina/ Phonurgia Nova, 1989

⁵ Gallimard/Ina, Paris, 2005

⁶ Ina/Adès, Paris, 1990

du monde (1947). Early on he considered the impact of information or other messages transmitted via microphone or over the air.

Following the invention of concrete music in 1948, he launched the Groupe de Recherche de Musique Concrète (GRMC) in 1951 which then became the Groupe de Recherches Musicales (GRM) in 1958. The later one still exists at the Ina.

While abroad on various missions in 1952, he started the project of setting up the Sorafom (Societe de Radiodiffusion de la France d'Outre-mer), followed by the first Studio-Ecole in 1955. The last one was first intended to welcome African trainees and later to train radio technicians and professionals coming from Africa. Everything still needed to be set up at this stage in the French Territories where there were only skeleton stations with nothing much happening.

What had interested him most until that period were the social uses of radio and these concerns were always to remain with him. It is possible to consult different theoretical works such as *Avenir à reculons*, *Discussions between Pierret/Schaeffer*, *Antennes de Jericho*, *Machines à communiquer I et II*, to note but a few.⁷

He created a real network in three years and the number of radio stations went from three to fifteen. He set up an infrastructure hiring on the spot, training African professionals and executives who could then present and produce programmes. This transfer of technological know-how was a new phenomena at that time.

Television Prolongs Radio

We have seen that in 1958 Pierre Schaeffer turned the GRMC into the GRM Groupe de Recherches Musicales. While he changed the team, enlarged the objectives, put forward the idea of a musical theory for musical objects, his interest for the cinema as a means of expression grew. He organized a series of meetings with film-makers, musicians, technicians. . . he was convinced it was necessary to mobilize research not only in music, especially as television was being developed. His concern with the perceiving methods, modes, means of expression and message impact increased. Radio or television like cinema are not *types*. He always maintained that they were communication set-ups.

Then, little by little, television was installed everywhere. All these experiences and of course, the invention of concrete music and different sound manipulations, thanks especially to the use of magnetic reel, would lead him to use his research in sound pictures on film. Following the welcome the *Manifestation de musiques experimentales* received, an opportunity presented itself in May 1959 in Paris. This success reassured him and in October of the same year, he set up the Service de la Recherche. The official opening was in January 1960. Soon Pierre Schaeffer found himself without a budget, or set-up, and with a hugely vague mission that was however very vast:

- to promote various studies (interdependence in artistic, technical and economical endeavours in radio and TV),

⁷ Cf. bibliography

- to animate experimental centres like the GRM,
- to apply research results inside and outside the RTF.

For those interested I refer to some texts written on this subject.⁸ I would like to draw your attention to his extraordinary talent both as a group leader and an administrator. Pierre Schaeffer's approach is unique with his way of mixing so many different and various types of production, products, and studies. This is what he later called a "utopia" and is in fact corporate research.⁹

"Walking" towards Utopia

One of the main objectives of this new Service - an extraordinary and unique observation post - was to establish links between art and techniques, establish the relationships between arts, groups and between people. As production had become material for analysis, it would also help to contribute towards trying to "reveal the mystery of communication".

So these first try-outs occurred through the contacts of painters, people working in the plastic arts, musicians, film-makers (Luc Ferrari, Jacques Brissot, Gerard Patris, for instance) sometimes producing surprising results, with works often winning prizes at festivals... This was a period when one filmed objects. Film-makers created works showing the relationship between sounds and images (there were many examples). These comparisons provide the opportunity for transforming tools, focusing on technological points in order to improve an area of work (Kamler's animation tool, Jean Dejou's animographe, for instance).

With the arrival of the new, handy and lighter ways of filming and recording such as Coutand's light camera or Nagra's portable tape recorder, followed by the video, film-makers changed their way of seeing and doing things and modified their investigations.

After various try-outs oriented inwards and filmed in-house (the general group meetings for instance), the film-makers turned towards the outside world. The young researchers showed interest in people once again. They no longer filmed only objects, but subjects. This was the beginning of news programmes, documentaries, filming the public directly in the street (in the waiting rooms at the stations, the slums, for instance) as well as unknown storytellers. André Voisin's series *Les Conteurs* achieved a great success and led to television broadcast, to TV channels. They also filmed well-known men, actors at first, and then scientists and philosophers. This was the beginning of the popular series *Un certain regard*.

What takes place behind the scenes is filmed. Take an actor for instance, he is not just asked about one of his performances, but how he reacts to the character he plays

⁸ Jocelyne Tournet-Lammer, *Le Service de la Recherche de l'ORTF : expérience historique, école pionnière*, <http://www.ina-sup.com/ressources/dossiers-de-laudiovisuel/pierre-schaeffer-quel-heritage>, and cf. bibliography.

⁹ Pierre Schaeffer, *Les Antennes de Jéricho*, op.cit.

(Michel Simon, Simone Signoret, Anouk Ferjac, Delphine Seyrig, Pierre Brasseur, for instance). Pierre Schaeffer asks others to film orchestra rehearsals (Gerard Patris and Luc Ferrari's series *Les Grandes Repetitions*). These are all attempts at answering the following questions: What is this? How is it done? What purpose does it serve? How does it work?

Some of them improved their technical know-how, brought poetry into the movie narration or their look upon society while following up their artistic creation (Piotr Kamler, Peter Foldes, Robert Lapoujade, Jacques Rouxel, Jacques Brissot, Marie-Claire Patris-Schaeffer, for instance).

From 1964 onwards the Service became recognized: it started producing for the TV channels. But we must remember that it did not simply *produce programmes like other channels*, its ambition was to produce and to search, to search on what it was producing.

Behind the Mirror

All these productions will hide for the other types of production.

Of course, over the years some film-makers perfected their technique or tried to make a filmed narrative poetic, but the flexibility of using lighter material, followed by video would also enable a more profound reflection on using the media and the change in user's behaviour. This was the beginning of experimenting set-up situations, role playing and other variations of behaviour used for television. The examples include: *L'Observateur observé*, *Dynamique de groupe*, *Psychodrame* and later *Enseignants, enseignés*.

Video helped this internal approach. Video-clubs started appearing.

We also started filming in schools, at universities; teachers, different social classes and their way of looking at this television object (see the Jean Frapat's series *À vous de jouer*). We also watched the programmes of foreign TV companies (Czechoslovakia, Canada, the USA, Russia, etc.).

Of course 1968 saw a big change. In the same year the Service was confirmed as having a welcoming role. We gathered testimonies from teachers and students. These were filmed again ten years later... these are Marie-Claire Patris-Schaeffer teaching files.

The link from this era coupled with its experience encouraged researchers to dig deeper into the sociological and political impact of its activity. We renewed the links with the university. Lighter technical production (Super 8 and mobile video especially) inspired film makers to go further, to try new experiences in the local television (Aubignan, Carpentras, etc.).¹⁰

Once again a new need appeared: to renew the television types. Jean Frapat was a virtuoso who launched the series *Vocations* to which Pierre Dumayet readily agreed and where everything was filmed on video.

¹⁰ Two towns in the south of France.

The narration became a source for the show. "Television is a confessional" said Pierre Schaeffer when he saw the results of this new series.¹¹ Then later on we had the series *Tac au Tac* that filmed two men drawing and replying to each other with their works...

From 1970 onwards, the studies on teaching methods using the media have increased. The university researchers asked to carry out educational programmes. These were also carried out within the Service. Pierre Schaeffer gave a series of 12 conferences in Paris on the theme *Machines à communiquer*. These are still remembered by many of our contemporaries. These reflections on communication encouraged people to open up to new ideas and dialogues.

Mobilizing the Crowds

We also notice a deepening of investigations in the series *Un certain regard* which started to devote several programmes on the same subject, interviewing philosophers and practitioners like Andre Leroi-Gourhan, Jean Piaget, Jean Rostand and many others.

This was a period when there was a lot of questions about the major world problems. These concerned people living in the country, in towns; farmers, technocrats, university staff, retired people, the young who had problems finding a job, or those integrated into the society, scientists or philosophers, and those in prominent positions... Everyone, from all walks of life, expressed a great disquiet. There existed all these major problems that we didn't talk much about, but they were there. An increase in population of course, but also pollution, nuclear energy and these are only some of the examples.

The Service drew nearer to scientists interviewing them about their responsibility. They were asked about what they knew and what they didn't know, confronting them in their various areas of work.

The Service also interviewed the protestors: Ivan Illich, Georg Picht, Jacques Ellul, all of them not well-known to the public. Meetings were arranged with some great *leaders* preoccupied with political and social questions, and prospects. Those interviewed included Georges Dumezil, Michel Crozier, Hannah Arendt, to name but a few.

Despite the disagreements and different points of view that could exist in scientific areas of work, Pierre Schaeffer, got well-known personalities to discuss problems through his series *Un certain regard*. From 1966 to 1968, some of them agreed to talk about their work in front of the camera (Louis Leprince Ringuet, Andre Lichnerovicz, François Jacob, Philippe L'Heritier, Roman Jakobson, Claude Levi-Strauss, François Denisse...).

Gradually, confrontations also started in front of the camera. These were about the future of humanity (Georges Friedmann and Jean Fourastie) or an obsession with the future (Alain Touraine and Hassan Ozbekhan) or the gap that remained to be filled between the natural sciences and culture (François Jacob and Claude Levi-Strauss).

¹¹ Cf. *L'avenir à reculons*, Casterman/poche, 1970

A Converging Movement

It opened up to a deeper study on science and how it was used, the big machine in CERN (Genève), computers, machines and men. A detailed study on the atomic bomb was conducted. You should know that these programmes were finally shown after having been refused for two years...

During the last years, the Service dared to try more political subjects, from Margaret Mead to Indira Gandhi while evoking the Pugwash movement, China or Vietnam. But it kept a balance as it also programmed Jean Rostand and Gaston Bachelard.

Just before the ORTF split, in 1974, a detailed study of religion was made which would never be broadcast. A new series about the arts, mixing sociologists, creators and the public, was launched (*Parcours critique – choc en retour*). Four of these programmes were shown, but the series did not continue after the ORTF split in 1974.

I am emphasizing this series, *Un certain regard*, for several reasons. First, because it lasted for 10 years, from 1964 to 1974, and included 170 programmes (more or less), then because it displayed the Service de la Recherche style, showing Pierre Schaeffer's ambition for television and his interdisciplinary, multifaced approach. Whatever his subject, the specialist had a social and a responsible role to play.

The set-up of communication amongst others, what television must represent other than a role of information and entertainment, was a means of knowledge. And a means of knowledge providing intellectual freedom. The change in mental structures took place by observing. "I am convinced that among the immense stock of images throughout the world, there exist essential factors for those who want to understand social mankind." Once again I recommend you read what he wrote (*Avenir à reculons*).¹²

As a Conclusion

Even when laughing and using their sense of humour, the Service de la Recherche's participants did not choose the easy path: The *Shadoks* are a good example of a series that makes the public laugh but has a message. This programme made quite an impact (Wasn't France divided into two because of it?). Isn't Lasswell, whom I mentioned at the beginning still present?

Whatever the types (drama, series, information, etc.), images have a political, sociocultural, or a teaching impact... and if the evolution in techniques interferes with the content, then professionals, responsible citizens, must be aware of their responsibility to the public they address.

What radio and TV production that has remained after 40 years of activity tends to prove is that Pierre Schaeffer's approach was constant. It leant towards man and society. Art and technique were used to advance science. His different approach to a university catalyzed

¹² Op. cit.

the ideas and energies of his era, based on a description of men and machines and on the future of society. And let us give meaning to all this.

Pierre Schaeffer was convinced before everyone else that in order to understand how things work, we must observe through action and within a setting. He was also convinced that you have to mobilize the troops to show man our society's destiny. This has not already been played out, it lies within the hands of the men who make up society.

I simply want to add that there exists a stock of images and sound recordings to illustrate this speech.

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Translated into English by Elizabeth Neylon
(Service de la Recherche 1971-1974)

Pierre Schaeffer Today: from Research and Experimentation to Academic Recognition and General Acceptance

by Dieter Kaufmann

Pierre Schaeffer's centenary is first and foremost a homage to the discoverer and inventor. By his discovery of the infinity of the sound world, and thanks to new technical advances, he opened the doors to a new approach to musical composition, inventing a vocabulary for naming and organising the new sound elements into syntax, available to any composer who wished to use it and to find his own individual musical language. Initially, he was a young "Fauve", a late futurist, placing himself as a "résistant" against the old aesthetic, against the realm of harmony and counterpoint, confronting those who represented the reassuring old values, overturning their doctrines – he was a revolutionary, even a "sound extremist". "*Epater le bourgeois*" (to challenge the received wisdom) was the message of his *Etudes de bruit (Sound Studies, 1948)*, and his *Traité des objets musicaux (Treatise on Musical Objects, 1966)* was more a philosophy of music than an instruction manual for composers. But there was nobody in France ready to transform the resulting revolution into a system or, to speak positively, to guarantee his future by being admitted to the "pantheon of the immortals". This is where my assessment of Schaeffer begins, although I do not know to what extent he was influenced by those who collaborated on the three recordings released in 1967 (*Solfège de l'objet sonore*) with his own commentary. It was in that same year that I arrived in Paris, having received a French Government scholarship to study in Olivier Messiaen's class, and the following year, with his recommendation, to begin a training course at the GRM (*Groupe de Recherches Musicales*).

Schaeffer had a preference for collaboration among artists. First, there was the symbiosis with Pierre Henry, which was perhaps the most fertile, although opinion is still divided today as to which of the two was the composer, which the theoretician or, shall we say, the ideologist.

Then came a period of close cooperation with Luc Ferrari, who sometimes took "His Master's Voice" even more literally than the master himself (I think Ferrari followed Schaeffer's path, but he was stricter, especially in the relationship between culture and politics).

Next came the period which I would term "academisation", marked by the publication of his important didactic work, *Solfège de l'objet sonore*, assisted by Beatriz Ferreyra and Guy Reibel, the latter eventually succeeding Schaeffer in his post at the Paris Conservatoire.

Finally, Schaeffer decided to give the direction of the *Groupe de Recherches Musicales* (GRM), the Schaefferian Empire, to François Bayle, who was very faithful in his supervision and management of the master's legacy, but who was an exponent of a less

learned and more imaginative language as a composer. Nowadays, the GRM is run by Daniel Teruggi and Christian Zanesi.

It was certainly to Schaeffer's credit that he recognised the importance of describing sound phenomena outside the usual parameters (pitch, duration, intensity and timbre; and we have to thank Stockhausen for adding the position and the direction of the sound reaching the listener's ear). This was a great step forward compared to the Cologne school of electronic music, represented by Herbert Eimert. Schaeffer had called sounds which consisted of an ensemble of acoustic qualities *objets sonores* (sound objects), instead of breaking them down into physically measurable elements (or parameters). The analytical approach of the Cologne school would never have been able to represent or explain a complex sound (according to Schaeffer's definition), even if it consisted only of a dog barking. And so Schaeffer encouraged composers to treat such a sound as a personality not to be confused with a physiognomy, which one risked losing by reducing it to measurable units.

On the other hand, it seems problematic to me that Schaeffer should make a difference between *objet sonore* and *objet musical*; he claims there are sound events which are not capable of becoming musical objects because they contain too much or too little information. And so they cannot pass the test for admission into the circle of well-behaved candidates.

Schaeffer does not forbid certain procedures as in traditional harmony treatises, but his classifying of examples as acceptable and unacceptable for inclusion in the realm of musical objects remains for me a form of classification that deserves the term "academisation".

I wonder if *any* sound is not worthy of being considered a musical object, even if its form has undergone treatment. Schaeffer's aesthetic innovations were too powerful, too important to be subsequently reduced or relativised.

John Cage gave us the gift of his term "happy new ears" and Schaeffer has shown us how to achieve this; but he wanted to make a system of it, a sort of academic treatise. This was perhaps a temptation, typical of the 20th century, that was already noticeable in the debate between Arnold Schoenberg and Josef Matthias Hauer or, much later, in the case of Adorno. Whenever musical theory begins outlawing or avoiding certain musical phenomena and expressing its convictions by negative descriptions, it soon generates a counter-current attracted by this negative phenomenon. With Debussy, even Puccini, certain aspects of functional harmony had become negligible; Schoenberg's twelve-note system was surpassed by his pupils Berg and Webern, and later by Messiaen's *Mode de valeurs et d'intensités* and one could even say that all Western doctrines of musical form were overturned by John Cage.

A musical aesthetic which sets up mandatory systems of values can only be the expression of its own time, destined soon to become a historical phenomenon. The

individual aesthetic of the next “genius” will jump on it to show the new way. (Today there is nobody except Boulez to believe in the eternal domination of the latest “avant-garde“.)

In Vienna, it is now usual to call any musical theory “historic“; but it is of course difficult to resist the temptation of becoming “historic“ in one’s own lifetime.

The “Schaeffer school” – if one may use the expression – is, however, extremely useful: it is a “School of Listening“. His *Traité*, unfortunately not yet translated into many languages, has saved generations of students from the narrowness of historic models dating from the Renaissance (for example Fux or Palestrina) to the liberty of free decisions, as long as they do not take the treatise (a theory like any other) too literally. The next revolution is already waiting at the door and as Schoenberg said, “The second half of the century will destroy by overestimating me what the first half missed by underestimating me.“

Another of Schaeffer’s ideas has not yet been realized as he would have wished: he dreamt that *musique concrète* developing into “acousmatic art“ would, not should, become the new musical profile of the audiovisual media. After many years of fighting for this idea, Schaeffer realized that it would not happen during his lifetime, and this probably explains the bitterness that accompanied his old age.

But it must be said that, at least on the technical level, this has finally come to pass – most of the music on radio and television today is no longer produced by acoustic instruments. On the other hand, the aesthetic level, Schaeffer’s promises have not been fulfilled yet. The banality of the dream workshop reigns supreme in the music of the media, instead of concrete reality. We must not, however, lose hope. It is possible that a more creative new generation will head towards Grandfather Schaeffer’s dreams of the high seas, rather than sink into shallow, popular waters.

“Life, a dream“, for Calderón, “The Dream, a life“ for Grillparzer – one rarely takes the decision oneself.

But “To be or not to be“ – after 100 years, for Pierre Schaeffer it has been decided. He has gone down in history as a pioneer, not so much as a composer or music theoretician but as one of the most inspiring philosophers of the media age.

Translated into English by Gerald Glynn

What a Sound Object Is: Phenomenology of Sound in Pierre Schaeffer

by Francisco Rivas

One of the major contributions of Pierre Schaeffer is the development of “sound object“ concept. Not only because of its importance in the aesthetic concept of sound, but also because it really opens a wide field of research about understanding of sound as a *phenomenon*.

In this writing I am trying to track the origins of Schaeffer's theory in Edmund Husserl's phenomenological philosophy. From a phenomenological *point of view*, the *sound object* only exists in the border of our inner perception process. So, the understanding of our sound world has to deal with the *way we have to perceive sound*, not only as *body*, but as *mind*, and also as a cultural and *transcendental structure* of the recognition of sound data. From this perspective the being of sound can only be found in the listening experience: so, doing a phenomenology of sound is doing a phenomenology of listening.

This research tries to fit some concepts from the phenomenological approach, to develop a model to describe the process through which sound became an object of our consciousness. To do this, we relate categories made by Husserl (especially *Hyle and Morphé and noematic process*), with Pierre Schaeffer's description of the listening process.

L'objet, lui, est dans ma tête.

Pierre Schaeffer

First of all, I would like to thank the official organizers of this event for their kind invitation and their interest in my work, as well as for the facilities provided to attend this forum and to get together around with all participants with whom I share the same respect and admiration for the unique work of Pierre Schaeffer.

Today, one hundred years after Schaeffer's birth, continuing to develop the topics that he so passionately and eagerly cultivated, is the highest and fair tribute we can pay to, in my opinion, one of the greatest sound-theory masters of all times.

I do not think it would be too much to say that the major contribution of Pierre Schaeffer, among many others, is the introduction of the phenomenological approach in sound studies. It is indeed a key and significant contribution, a revolutionary one, that completely transforms the understanding pattern towards our relationship with sound, and, still ongoing, continues to raise new questions and to stimulate plenty of research which emerges from its ambitious programme.

Reduced listening, Époché, intentionality, a subject-object correlation, a perceptual unit, the activity of consciousness... these are some of the categories which Pierre Schaeffer extracted from the phenomenological discipline to explain the relationship of the ear and the sound material. But perhaps the *sound object* is the conceptual node from which a phenomenology of sound can be built.

This paper tries to explore the concept of sound object based on a second reading of Schaeffer's writings and in the light of the influence of Husserl's phenomenology on the formation of such concept. Eventually, it attempts to sketch – even if they are not mentioned in Schaeffer's writings - some questions that the analysis reveals, that allow us to boost, following the track of Schaeffer and Husserl, a new programme of research on this subject matter.

Phenomenological Framework in the Construction of the Concept of Sound Object

While the influence of Husserl in Schaeffer appears to be very clear,¹ perhaps it is not so obvious how the phenomenological approach specifically impregnates the construction of the concept of sound object. It is important to consider that Schaeffer's search is the search of a musician seeking to create categories so as to be able to describe his musical experience along with his musical results (of that what he calls *la recherche*). Perhaps, we can say that Schaeffer's main interest was not to develop a "phenomenology of sound" as, but rather such to create a theoretical and conceptual framework that attempts to understand and describe *the musical experience itself*.²

Of course, the French composer's great intuition was to realize that the only way to achieve this goal was precisely to develop the most detailed possible description of the musical experience understood as that, as *an experience*.

And it is exactly that, the purpose of phenomenology: as the *science of experiences*, phenomenology is the detailed description of how a phenomenon is built on experience. Husserl - the father of phenomenology - precisely bet on the fact that knowledge is possible only within the framework of *our own experience*, and it is only in it, where the essence of things can be shown to us and given to our understanding.

Since the sound only reveals itself to us while we are listening, therefore, the phenomenology of sound is, above of all, the phenomenology of listening; that is, a detailed analysis of the sound-being in the listening act, and at the same time, an analysis *of the being* of the listening act, through which, it becomes clear the essence of such sound.³

¹ This is not so evident when we compare the results and evolution of Schaeffer's programme with the architecture of Husserl's phenomenology. Schaeffer himself recognizes that he met Husserl quite afterwards in a rather spontaneous or unconscious way: "For years, we have often built phenomenology without knowing it. It was only later that we acknowledged, due to Husserl's heroic demand for acuteness - which is far from being our pretension - the definition of object that our research claimed for." (*Pierre Schaeffer, 1966:262, author's translation from French*).

² To a certain extent, it is possible to support Sophie Brunet's statement regarding the *Traité*: "Musical research is not philosophy... it is not only about the sound object perceived in the way it gives itself to the process of listening, but about music as such, and a music in its making process." (*Pierre Schaeffer, 2002: 267*)

³ This is why Schaeffer himself defined his *Treaty on Musical Objects* as a *Treaty on the Listening act*: "Thus, the *Treaty on Musical Objects* is, from its very beginning, a *Treaty on Listening Act*... the object implies the subject, it is the subject's activity confronted with every object what creates musical items." (*Pierre Schaeffer, 2002: 283, author's translation from French*)

Then, it is all about understanding the sound as a *phenomenon*. After all, saying “phenomenon” within the phenomenological jargon means “an *object* given to our consciousness”; it means, an object that we have access to through experience and thanks to this experience, it can exist and be constructed.⁴

From this approach and despite the different interpretations the notion of sound object has provoked, I believe that when Schaeffer speaks of “sound object”, we should understand that he is referring to the object produced from the activity of a subject that comes into contact with the sound through the listening experience. The sound object, above all, is the *experienced object*, the *object heard*.⁵ In that sense, the *territory* for the existence of a sound object is *our ear*, and therefore, to understand what a sound object is like, it is necessary to understand how this sound object is built in during the very process of listening.

The Sound Object as a Product Achieved from Listening Intentions

This need to understand how the listened sound is built in our perception is the impulse that leads Schaeffer to interweave his amazing and powerful model of the Four Modes of Listening.⁶

This model is well-known and, although complex and also worthy to be submitted to various analysis, that is not the topic we are dealing with today. I will only say that, from time to time, it would seem that Schaeffer did not want to identify what he called the “sound object” with the audible result from the four categories of listening. There are some chapters in the *Traité* that seem to confine the sound object to the exclusivity of the *reduced listening* process. From my viewpoint, if Schaeffer’s theory were to be coherent with the phenomenological point of view – as it tends to be occasionally - then it should be inferred that the notion of sound object is found at every listening intention, whether conditioned or not. Sometimes, the brilliant, although complex concept of reduced listening, appears to have seduced Schaeffer to such an extent that it did not allow him to assume the basic condition of the sound object as a *perceptual object*, before anything else. From this perspective, what I am interested in presenting with this analysis – based on Schaeffer and taking no distance, I hope - is the theory of a sound *objectified* in the listening act, as inferred from the analysis of Schaeffer, but in light of Husserl's phenomenological categories. This will enable us, I believe, to get a more complete understanding of the formation process of the sound object in consciousness, from the point of view of phenomenology.

⁴ Not only in Husserl, but as early as in Kant, the concept of phenomenon did not only imply the thing that is perceived, but the body and consciousness that perceives it. The phenomenon is just the meeting point between a perceived object and the consciousness that perceives it. It is never the thing in itself, *but the thing for us*.

⁵ Knowing the thing implies a detailed description of the territory where it reveals to us. This territory, the phenomenal one, it is then the interaction experience we have with it: the thing as such, plus space, plus time, plus the objective and subjective circumstance where appearance occurs. That is, the thing, plus us, the ones that perceive it. (*Cf. Pierre Schaeffer, 1966: livre IV*)

⁶ (*Cf. Pierre Schaeffer, 1966: 112-128*)

Sound Object: Sound *Objectified* in Consciousness

To explain the process by which the sound is formed once it comes into contact with consciousness, that is, the way it is *objectified* by it, let us return to the two fundamental concepts of Husserl's philosophy: *Hyle* and *Morphé*.⁷

Hyle stands for the sensitive data offered to our perception by the manifestation of any sound; the data that integrate the *raw* appearance of sound (as Schaeffer would say) and thanks to which – unintentionally –⁸ its existence can be realized. The hyletic is something that allows sound to be heard, and therefore, understood by our consciousness as a sound. If what is presented, is not of listening quality, then it is not a sound *for the* consciousness. Thus, these elements that make sound *something audible* are in fact the *hyletic material*.

So, what Husserl does, is to establish the difference between this hyletic material, from the manner in which such sensitive data is *animated* in consciousness. In other words, the way such sensitive elements *take shape* in our consciousness, through a process performed by the consciousness itself - this time intentionally indeed - and called *morphé* by Husserl.⁹

Let me provide an example. If I hit this table, immediately my senses capture the result in a sound manner, my ears are set into vibration by the resonance in the air produced by the physical contact of my hand with the wood. The result, in a certain frequency width, is that these vibrations are *issued* and I can hear them. The presence of this hyletic material in my ear allows me, from the very beginning, to identify that, what I am currently hosting at my consciousness, is a sound. If we want to match it, to Schaeffer's Four Mode Table, then we would say it is the listening mode he calls "ouïr", *to hear*.

When I hear the sound of the hit, my mind reacts and begins to make a very fast search process on the print itself, to capture the ontic delimitation of that sound; that is, to understand what kind of sound that is and to collect its distinctive features so as to identify it in my consciousness. *I myself give shape to this sensitive impression* looking for a sound object in my mind that I can refer to into consciousness. Schaeffer realized that this identification normally wonders for, rather than the sound itself, the source or cause that produces it: "What sounds?", is what we ask immediately. "This guy has beaten the table," we could respond. (Instead of *What sound is it?* or *Which kind of sound is it?*). As we all know, this intention of listening, which asks for the origin or source of sound, is

⁷ Husserl uses Greek to accomplish an original linguistic meaning. *Hyle* can be translated as *matter* and *Morphé* as *form*. (José Ferrater Mora, 1979)

⁸ Husserl assumes that the perceptual work of consciousness is "intentional", just as it was proposed by his teacher, Franz Brentano, from whom Husserl and also Schaeffer get this notion; meaning that every consciousness is a consciousness of something, and that there is an intention that sets an activity of the consciousness towards the object. However, Husserl also proposes that there are non-intentional components in consciousness, through which consciousness –with no intention at all - ends up owning the contact with the object. (Cf. Edmund Husserl, (1985) § 36)

⁹ For the interesting and complex *hyle/morphé* theory, see Husserl (1985), Jacques Derrida (1966).

what Schaeffer calls *écouter, to listen*.¹⁰ But even when we ask ourselves for the cause of the sound, rather than the sound itself, to say: “that is a hit on the table“ and recreate it in our consciousness, is already a process of shaping it (*morphé*).

This dialectical interaction between *morphé* and *hyle* may seem quite abstract, but it is easy to illustrate. Just try to remember right now the sound produced by the hit - like you are already doing - and an attempt to recreate it in your memory, in your consciousness. This hit you are now *silently listening* to is not the sound fact, but the sound image we made out of it in our consciousness. And the *shape* it has in our minds is the product of the work and the activity (*morphé*) developed by our consciousness to recreate it. This sound heard is exactly the trace of the consciousness's work.¹¹

As Schaeffer brilliantly realized, this initial shaping of the sound object in our consciousness, describes the extra-acoustic elements; for example, it leads us to the physical object - not the acoustic one – that produces the sound.¹² But to Schaeffer, the extra-acoustic elements do not properly convey to us what the sound object is, precisely as a sound, in its phenomenal sonorous manifestation. The sound object is neither the physical body that produces it nor the physical vibration that is spread in the air, but the sound matter which is presented to our ears.

But to get in contact with this pure sound matter we need, Schaeffer would tell us, to get rid of all the familiar conditions in our ear and to detach it from the immediate response of using non-acoustic elements to understand the sound. To accomplish this task, he presents Husserl's idea of *phenomenological reduction* which invites us to place between the brackets and leave the suspended extra-acoustic elements, and to focus on the description of what, in consciousness, the sound represents by itself. To Schaeffer, the reduced listening is the gateway to the sound object regardless of the extra acoustic meanings that it carries.¹³

Noematic Sound Object

It is interesting to find that Schaeffer's reduced listening could be equivalent to what Husserl called the *noesis*.¹⁴ This is the process by which consciousness moves within the perception of sound to try to *grasp* the essence of the sound it is aiming at. This process is related, as mentioned before, to Schaeffer's reduced listening or the intention or mode, he called *entendre*.

¹⁰ Afterwards, Michel Chion has called this *causal listening*. The causal listening determines the being of sound as the cause that produces it. Usually, this is a transitive listening act that goes fast from the very sound to the being or process in the world that produces it, making sound an index of an extra-acoustic happening. Michel Chion (1993), p.33

¹¹ In another text to be published shortly, I describe the temporal features of this activity regarding the *primary* and *secondary impressions* from Husserl's *Phenomenology*.

¹² Cf. Pierre Schaeffer, (1966): 268-270, 674-678

¹³ Cf. Pierre Schaeffer, (1966): 270-274

¹⁴ *Noesis* is also a Greek word, which can be translated as: “to see by finding out“, in contrast to the mere act of “seeing“ and then of “thinking“. This was a commonly used term among the Greek philosophers to define a “wise seeing act“ or a “thinking seeing act“, which is at the same time an “intuition“. Ferrater Mora, 1969, II: 291-292.

Using *noesis*, consciousness travels through the received sound perception to infer from it as many features as possible (Schaeffer's "qualified perceptions", which will result in the morphology and type of the sound object). It is this object produced by the noesis and obtained by the consciousness, that Husserl called *noema*. I believe that it is not too much to say that Husserl's *noema* is what in Schaeffer is understood as sound object, properly speaking.

Following closely along the lines of this theory, we can say that: the raw sound, understood as a *hyletic material*, which is eventually animated due to the different morphologic activities performed by the consciousness, until it detects its most distinctive features, is what we can definitely call the Sound Object.

Consequently, once the sound object has been formed, it becomes an object, in the "dialogue" and movement performed inside the consciousness by the different listening intentions regard to the given sound.¹⁵

Some Misunderstandings Regarding the Sound Object

To conclude this first approach, I would like to analyse some controversies that have arisen around the understanding of the concept of sound object in Schaeffer's work.

1) Is it the sound object, an object exclusively produced by the reduced listening act?

In Schaeffer, we can observe a tendency to limit the sound object to the result provided by the exercise of the reduced listening, and where apparently the abstract and extra acoustic materials accompanying a sound would not be part of the sound object as such.

Can we infer this and still be consistent with the phenomenological approach? (at least, the Husserl's approach?)

I would say both yes and no. Yes, because thanks to the phenomenological reduction, we can understand what, out of all we hear, is a sound material, a sound itself, and what its meaning, context, causality are; that is, the extra-acoustic information.

But we should note that linking a sound to the source that produces it, understanding it as a significant material, making it an index of something else, is also a part of the process of giving *shape* to it in consciousness and turning it into an "object" – for the conscious.

We *objectify* a sound when we become aware of its presence, by linking it to an object that is not the sound but its cause by attributing meanings to it, "soaking" it with our own emotions. But we also objectify a sound when we "selflessly" listen to it and analyse its morphological composition as a specific sound matter.

¹⁵ "*L'objet, est lui, dans ma tête*" (The object is, by itself, inside my head.) Pierre Schaeffer, (1966): 679

Thus, from the standpoint of phenomenology, Michel Chion would be right when he notes that the sound object is *more* than the object produced by the reduced listening.

His proposal for an *object-sound*, or better yet, the *audium*,¹⁶ is consistent with the phenomenological approach and we can say that is closely identified with the *noema* or the *noematic sound object* that we have raised here from Husserl's statements.

It should be understood, finally, that when Schaeffer speaks of a sound object, he does so having in mind - rather than a total sound phenomenon of consciousness - a *musical object*,¹⁷ capable of entering into relations of organization and composition in the language of music.

While Schaeffer claims - and this is one of the major objectives of the *Traité* - that coining a grammar to describe any musical sound object in terms of morphologically and typologically, it is more convenient (*suitable*,¹⁸ as Schaeffer says) to *reduce* the object to qualified perceptions (like mass, harmonic calibre, intensity, decay, iteration, etc.) which are in fact sound matter, and therefore, the material for musical construction.

However, if we want to be consistent with the phenomenological approach we have used, we should make a distinction between the *sound object* and the *musical sound object*.¹⁹

I think we must conclude that, for consciousness the sound object is the synthesis of: the sensitive impression of the sound material provided, plus the way in which we animate it in our mind, plus extended relations to extra acoustic regions allowed by this sound; such as can be the cause, the sign, the spatial reference, even the emotion that makes us feel, the related cultural environment, the memories we have on it. All this, plus the exercise of grasping its distinctive features as a sound itself, regardless of any extra sound information it provides us with.

2) Is the sound object exclusively the recorded object in a carrier?

Following strictly the phenomenological approach, we would have to say no. It is true that thanks to a sound recording, such sound can be experienced as many times as the

¹⁶ "The *audium* is the sound just as the perceived sound, with no possible confusion with the real source (or the causal complex that is its source) or with the vibrating phenomena that study the acoustic subject matter. Unlike Schaeffer sound object, the *audium* is the object of all listening acts – reduced, causal, figurative, semantic..." Michel Chion (1998): 341.

¹⁷ We should not forget that the title of the *Traité* was changed by Schaeffer, from *Treaty on Sound Objects* to *Treaty on Musical Objects*. cf. Sophie Brunet, in Pierre Schaeffer, 2002: 265

¹⁸ And let us remember the importance that this concept of "suitability" had for Schaeffer. (Cf. Schaeffer 1966: 669-672)

¹⁹ In fact, by reading Schaeffer, we can state that the objective of his *Traité* had much more to do with the musical organization of sound than with the description of the sound object. Schaeffer himself accepted that priorities went to the object, leaving aside – because of the very magnitude of this task - a treaty on musical organizations. Cf. Schaeffer 1966: 663 (And here we can find another nice topic of study: the relation between object and structure, which is not to be analysed in this paper).

reproduction allows it and, as a result, modelled and animated in our consciousness in a fuller and richer manner.

However, for phenomenology, any sound we hear and which allows conscious operations to be activated – intentionally or not - is already a sound object, regardless of whether this object is “diluted” in the flow of temporal events and becomes ephemeral.

As stated by Schaeffer himself and Chion, the existence of a sound is limited to the *temporary hearing framework* where by it can be modelled in our consciousness.²⁰ (Cf. Chion, *Le Son*, page 304)

Let us recall that, for Husserl, to say “object” is equivalent to saying an *unfinished object*, an object that depends on the particular listening conditions, a “here” and a “now” (and a “was”) of listening, in which it occurs and lives.

The Sound Object is a Temporal Object

It is a pity that, for space reasons, I cannot go deeper into this topic (that of the problem of time on the sound object concept, which is essential) but it is impossible for me not to mention it at least: the sound object is essentially a *temporary object* and therefore its *existence* is due to the laws of perception of time in consciousness.

In another paper, I shall describe how, according to Husserl, we can conclude that a sound object does not exist except through the flow of consciousness that occurs in a sequence of *impressions, retentions* and *protentions*.²¹ And that the *essence* of the sound object, its *noema*, is formed in a *parallel dimension* to the reality of its occurrence in time, through a process of consciousness that Husserl called *concealment* or *masking*.

The sound object is an object whose being is simultaneous to its disappearance and, therefore, the territory in which it actually exists is that of the *remember*, that of the *memory*.

Finally, I cannot avoid mentioning briefly that Schaeffer’s reflection on the sound object takes us inexorably to the subject. If the sound object is constructed on the subject, then also the subject is *constructed through* the sound object (there is no object without a subject or a subject without an object). For the sound being to be donated, to be displayed in its abundance, it is necessary to expand and develop the perceptual and imaginative consciousness of the subject.

In the end, the search for a sound object – artistic or not as it may be - takes us to a search of the subject, a search that allows us to find ourselves, perhaps, in the mirror of the object being searched...

²⁰ Cf. Michel Chion, 1998: 304

²¹ Edmund Husserl, *Lessons*, 2002.

To conclude, I would like to say, as a tribute, that Schaeffer's thinking is, like the sound object, an *unfinished object*, full of resonances which still demand from us a careful - and reduced - listening.

I trust his words, sounding again in ours, and continue to give them shape in our consciousness for much longer.

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Doctrine de Zagreb **Time Concordance, Divergent Experiences**

by Seadeta Midžić

Pierre Schaeffer visited Zagreb for the first time in May 1961, at the occasion of the Music Biennale, where he kept returning regularly (in 1963, 1965, and 1969). He was invited as a thinker of unique experience, who cherished freedom with the power of contradictory truthfulness of a civilisationally unburdened approach to things and ideas, as a researcher, organizer, inspirer and research conductor, theoretician of music and ideas. Pierre Schaeffer's Zagreb diary, *Doctrine de Zagreb*, clearly speaks of the fact that MBZ is not only about music, but also about understanding and experiencing the contemporary period, determined and formed by multidisciplinary considerations and works. MBZ is a strong, but at the same time only a partial expression of mobilization of Croatian spiritual and social forces at that time manifested creatively and internationally recognized, like for example the Zagreb School of Animated Film, Zagreb radio drama, and *Praxis*, a journal launched by Zagreb philosophers; they were a kind of background and backup, a guarantee of spiritual renewal and social evolution.

What can the West offer us? Freedom from something, that is a lot; but that is insufficient, it is much less than freedom for something... Something is a new ingenious author, a new social philosophy, an art movement, scientific discoveries, new principles in painting or music. It happens rarely that we are able to find that something. (Czesław Miłosz, *The Captive Mind*, 1953)

Explosion, says the artist Julije Knifer of the events in Zagreb by the beginning of the sixties, naming as its cores the Music Biennale, New Tendencies, and the Zagreb School of Animated Film and – as a simultaneous deviation, even an antidote to modernism inclined to constructivism and progressivism – the Gorgona Group. Among other things, we must at least add the GEF short experimental and short films of that period and the much more discrete, mature authorial and production life of the authentic Croatian radio drama on Zagreb Radio, with a constant European echo. For the time of still functioning and real zones East/West, deeply inscribed into the awareness of the cultural division and situation as well, this seemingly sudden and forceful, but still well-conceived and distributed manifestation of accumulated and to the greatest part almost clandestinely, privately collected information, knowledge, and insights, is a rise of an environment, which is tired and excited at the sometime, to the level of asking essential questions and seeking existential answers.

Fed on the energy from juxtaposed sources – strivings and clashes – desiring universal changes, but in accordance with the general demand for the almost idealistically humanistic purpose of individual and social existence, this new platform, having come into being like a tectonic shift, like the emergence of a new continent, suddenly handed over artists, scientists, and scholars to the freedom and chaos of open space. This space will become increasingly populated not only with new ideas and deeds, but, like in Ionesco's *The New Tenant*, will also be flooded by confusingly attractive fragments of other people's experiences and achievements, with shells of recognized but also obsolete

systems, by seductive fragments of worn out or unclear traditions, and petrified mute skills. Playing with the interpretation of the lines of force and the destiny of this space, human and musical, in which the “stage scenery is brought down“ and which is since 1961 officially, publicly, and factually the space of examination and creation attained in Zagreb (with great effort and enthusiasm aligned with the European creative impulses and dilemmas, sometimes also achievements), at the third Music Biennale in 1965, almost as an illustrating dispute of this state and processes, Milko Kelemen’s opera *The New Tenant* after Ionesco’s text was premiered together with the collective musical work of the GRM-composers, *Operabus* after the text by Pierre Schaeffer.

The image of this concrete abyss populated with traces and results of contemporary strivings, desperate ambition, and efforts, connected with the logical presumption that this is also the fate of the art of the environment encountered by Schaeffer at his first visit (at the exhibition 61 in the Gallery of Contemporary Art, where the scheduled panel discussion with the artists took place), we find unified with an open warning in his daily notes and the report from Zagreb from 29 May 1961 under the title *Doctrine de Zagreb*. About this real and spiritual state speaks the record of a fierce reaction, very unexpectedly triggered by a seemingly improper and harmless question: “How does Mr Schaeffer feel about the major manifestations of contemporary art?”

“Like the entire life that he seems about to leave flashes before the eyes of a drowning man, Mr Parać’s question has pushed me into the vertiginous abyss of my memories, both the old and the new ones. Nono’s recent opera in Venice, electronic, algorithmic, and concrete concerts, the Paris connoisseurs from the *Sphere musique*, the Bavarian high society in Donaueschingen, the Rhine region around Cologne, *Silences for Three Pianos* by the merry Cage trio, Mercenier, Tudor, and, as a consequence, I must endure the memory of provincial outbursts of Debussy, bearded like my uncles who were restorers of antique furniture, of the frenzied Ravel who drove the subscribers to the Conservatory concerts crazy, the dangerous Slav Stravinsky; Walkures that produce squeaking sounds on the pulleys of their catenaries and the rapture of Good Friday, which was attacked by Mauriac as the Devil’s temptation, I can hear the finale of the Ninth Symphony turned into howling, thanks to the full presence of the membership.“ (A short comment regarding the crowd, full membership, howling and the *Ode to Joy*: experiential recognition of the essence of the existence of a work as a phenomenon has its prophetic dimension: 11 years later, in 1972, the *Ode to Joy* was accepted as the anthem of the Council of Europe, and in 1985 Europe accepted it as its anthem. Because of the equality of languages, the EU anthem is in the instrumental version, without text.)

“As soon as I looked up from that abyss, the images I beheld around, here, pushed me back into the everyday frenzy of exhibition openings, brochures, pretentiousness, amateurism, degradation, stupid perversion, pathetic montage, and beginner’s daubs that today take pride in notions like painting and avant-garde... I am also thinking about how beautiful this epoch is, how man in it reveals the secrets of the endlessly tiny, plunges into the dimension of the boundless, how he can escape from his planet and start influencing life. I am thinking of the pitiless severity of research, about the raving self-torture of specialists, and about the modesty of scholars. No, it is not out of the

longing for the past that I react to past times! We could, actually, reflect on Art and Science entirely in the same way and admire their balanced, honest, complementary proceedings. How can we accept this kind of equilibrium today?"

"I am bored", he answered the question directly and added: "Once immersed, one penetrates a different world: we should tell them not to work on the surface anymore, because endless depths await them, where everything remains to be found; what corresponds to the oncoming civilization are not embittered, desperate, and narrow-minded gestures. After the first divers and small devices that would enable them to breathe, we will have to evolve and develop gills! The evolution is clearly, character by character, written in the Gospel, together with that unrelenting sentence 'let the dead bury their dead'". This darker, reasonably sceptical, but also prophetic tone can, of course, be encountered in a more refined orchestration, however with some more robust dissonances, in his discussions and encounters at congresses and symposiums during the later Biennales (63, 65 and 69). But already here not only nodal points are outlined (the purpose of encounters of different cultures, of great traditions, of contemporary music; to explore or – how and if – to compose), but also the most important protagonists: the carriers of ideas and movements, authorial personalities who are also the impersonation of music from the second part of the 20th century, Nono, Stockhausen, and Cage.

Conquering freedom "for something" before freedom "from something", the circle of artists and intellectuals around the Music Biennale also seeks and additionally examines the mainstays for their convictions and hopes and at the same time it tries to cultivate and not to suppress doubts. The energy of liberation, used for a breakthrough, is soon consumed and exhausted. Along with the distinguished historical avant-garde, the variegated musical reality of the East and the West is systematically presented as well (Shostakovich, Messiaen, Britten, Stravinsky, and Petrossi), in all contemporary forms, not only out of precaution and consideration because of the public judgement and as a compensation for the debt emerging from the politics of closed borders, but also as an attempt of catching balance through the choice of pluralistic attitude towards the world of creation. The resultant of such choice seems to have announced and even represented the contours of the process that would gradually and imperceptibly lead the entire Croatian modern art into post-modernism.

In the quest for decisive contemporary questions, and not only answers, authors, theoreticians, and researchers from all over the world were invited, the ones who represented focal points or investigated the previously unexplored margins of disciplines and the ones inspired by scientific methods aware of the consequences of the usage of technology that presents or reveals itself as a second nature. The new momentum of evolution, also mentioned by Schaeffer in his diary, also has the inspiring and poetic dimension, the impact of a driving force, but drama can be sensed as well. Moreover, as the final date of the ten crucial years during which Croatian art had been – thanks to its individual talent and effort showing a considerable cohesion force – part of the European high voltage and creative force circle, we can take Schaeffer's lecture *For and against the Civilization of the Image* held in December of 1970. It already spoke of the consequences

and it was held following the invitation of Zagreb University and the Zagreb Radio and Television (Professor Vera Horvat-Pintarić and Ivo Bojanić, General Manager), which was also his last visit and active participation in the Zagreb-centred spiritual adventure. This was a decade of feverish movement and gathering, perpetuated by the desire and need to feel, recognize, develop, verify, and in the end try out and publish new ideas. A kind of mobile and fluid laboratory was constructed, which at a certain moment of strong local concentration and collected activities was held and put into operation in Zagreb in 1961.

“Travels”, wrote Schaeffer in 1965, “are still our vital interest: we almost need an accidental encounter in South America, Tokyo, Moscow, Zagreb or Montreal to make personal contacts that would solely ensure later exchange of documents and ideas, which means of researchers... For an institution like Service de la Recherche, whose preoccupations, methods, and organization essentially differ from the one of other private or public organizations, universities or industrial plants, each relation with foreign countries requires additional effort... And it is always very instructive to personally present one’s theories and works before strangers who have a different education, different information, and different thinking patterns; we are sometimes pleasantly surprised, but too often we discover weaknesses that are only self-deception, theoretical problem-dodging, difficulties in one’s work avoided with reason. And finally, the change allows us to sometimes notice the sense of our enterprises otherwise obscured by daily problems”.

On a small and cheerful example, this could also be observed at the presentation of the G.R.I. (Groupe de la Recherche d’Image) films that he presented (and left) in Zagreb: the selected audience liked Kamler’s films *Story* and *The Flight of Icarus* most. “I understood finally, wrote Schaeffer, the most novelistic of all stories that Patrice wanted to tell through these abstractions“. Of the Zagreb School films, he liked V. Mimica’s *Loner* most, already awarded at the festival in Tours, “it should be awarded at every festival“, he said, as well as, according to him “ingenious“ Vukotić’s *Concerto for a Machine Gun*. He objected to the “music charged with ancient heavy effects and electronic sounds“ in Croatian films, and was amused by the question if the film *Square Drawings* appealed to the painter Vasarely as well; he also made a remark on Xenakis’s music in the film, describing it as “dated“.

This encounter was mutually beneficial recognition of assets created by independent movements, which did not intertwine or meet in reality; it was, however, an indirect and spontaneous corroboration of the ideas, opinions, and working methods that still struggled for survival in Croatia. In the dark of the screening hall in that year 1961, as if they were piped-in with naive questions, sat the ones who could not, maybe even wished not or considered improper to show Srnec’s film *A Man and His Shadow* from 1960, but who knew his authorial importance, innovation value and consequential approach, so they respected him with unease, at the same time fearing his status of the uncompromising avant-garde author. Vukotić and Mimica are great artists, but it was helpful, indirectly also for the authors linked with the Zagreb School of Animated

Film, that they were not only artists but also highly positioned persons in the social and political hierarchy, which provided them with additional courage and more pronounced personal independence. (However, Mimica also took his film to Cannes clandestinely). In his study about the films by the artist A. Srnec, who already at that time planned works and built models comprising the ideas that would later be developed by Nicholas Schaeffer, film and media historian Hrvoje Turković, who also in his latest papers refers to Pierre Schaeffer's experiences and texts, mentions these aspects as well:

"With Srnec, things were completely different. He belonged to the avant-garde wing of that time's Croatian and Yugoslav art scene, which was one of the important avant-garde inspirational models for Pansini and his anti-film idea. As a member and co-signatory of the EXAT 51 Manifesto, as well as a participant at the first exhibition of geometrically oriented abstract painting in the socialist environment (the exhibition *Kristl – Picelj – Rašica – Srnec*, 1953), Srnec was personally and vitally drawn into the world of abstraction variables. Already during the early 50s, he passed from two-dimensional images to three-dimensional (*Spatial Modulator*, 1953), and by the end of the 50s he developed an interest in visual art dynamized in a filmic way. He articulated the cartoon *A Man and His Shadow* (1960) with visual art dynamism and conceived an entirely abstract animated film ($=\infty$, *Equals Infinite*, 1960). We can only speculate why this film has fallen into underestimating oblivion and *Don Quixote* has not, although *A Man and His Shadow* is more radical in the measure and structure of abstraction and about equal to *Don Quixote* in the lack of narrative clarity.

...Neither Vunak nor Srnec were personalities who would militantly and "scandalously" defend their films, like Kristl did a year later, demonstratively leaving Croatia after the ideological disapproval his film encountered at the "inspection" screening in Zagreb Film... The bombastic qualities of Kristl's theme ensured him a high priority consideration and even the emergence of certain "dissident" legends in film circles, inspired by ideological proscription (and personal animosity towards Kristl)¹, while Srnec's *A Man and His Shadow*, lacking the alibi of a "great topic", narrative elaboration, ban, and scandal simply had no chance to be recognized and remembered." At the next, second Biennale in 1963, as well as at the fifth in 1967, films by the authors and composers gathered around the Research Service were screened at special sessions, almost leaving the impression of its insistence on the necessity of collective work and creation, which was especially visible in the Collective Concert at the Biennale of 1963 under its artistic management.

However, these screenings (for example *Experiences 62* at the Biennale of 1963) were now watched not only by a circle of selected intellectuals, artists and representatives of the "commission for culture", as noted by Schaeffer, but along with the musical audience also by the audience interested in a true festival movement – GEFF, while the Zagreb School of Animated Film had already attained the status of a classic. We must also say that at the beginning both the Music Biennale and the New Tendencies had the dimensions and the mobilization force of a movement and joint venture of all disciplines – they were not just thematically progressive festivals or fair-like platforms for new music, i.e. art provided by the City of Zagreb. To a lesser or larger extent this is also true

of some other festivals and events that presented contemporary achievements in art. In the juxtapositions of thus set reality, forces lost their impact, extreme or consequential investigative positions of all intellectual activities vanished or were subdued, lucid ideas that would open or seek different, more radical paths or behaviours were avoided. They remained at the level of a gesture or a signal.

Not only because of its radio past and Schaeffer's well-founded experience, it seems to me worthy to illustrate that period also with the example of drama at the Zagreb Radio. It is characterized by the traditional cultivation of creative, not only literary potentials, along with a strong tradition and virulence of new systems, so that although meticulously monitored and supervised, the Croatian radio-drama attained its freedoms and European public awards, just like the animated film; however, it also faced its boundaries, so that like Srnec's "shadow", some works disappeared quietly. Apart from that, on the one hand, irrespective of the musical quality of particular works, specific sound "materializations of poetic imagination that dissolve the traditional dramaturgy", meaning the entire aural material, was tried and tested in the labyrinth of the ear with its ability to feel the finest reverberations of truth and provide ideas and space with corporality, in accordance with the imminent development of art disciplines and techniques. As one critic (Z. Mrkonjić) said, the "truth of the recording tape" will be shown in the broader sense as well. On the other hand, existential problems and philosophical ideas of the period that appeal to hearing with memory and listening to beats will be posed and considered in an intensive, but intimate form. In the introductory part of his diary, Schaeffer states that during the first day, at the reception with the mayor, he "had the opportunity to talk with the intelligentsia, one poet, one critic, and one painter. For them, future is wide open and they expect a lot from Paris", he remarks, while he is "still concerned with the question whether it is beneficial to introduce experimental music to Yugoslavia?"

On the example of radio-drama and a truly charismatic author like Vlado Gotovac, it can be clearly read what was expected from Paris. It is not just about the influence of the post-war Paris drama and A. Artaud, after the interest for and involvement with Ionesco, Beckett, and Sartre. Camus's *Myth of Sisyphus* was translated in 1961, while the brilliant essayist and poet Vlado Gotovac wrote *Waking up in the End* for the radio, a philosophical drama that critics compared to Ionesco's *The New Tenant* (here I would like to remind that at that time Kelemen was already preparing his opera based on this text, and there would also be A. Camus's *The Plague*). Although, says Nikola Vončina in the third book on Croatian radio-drama, *The 'Krugovaši' Era*, "unlike Ionesco's hero, unaware of his drama, Gotovac's protagonist carries a clear tragic image." In 1971, Gotovac wrote *Jason's Nave* for the radio, a story comparable to Camus's *The Just Assassins*, which has not only remained unperformed, but is also lost. The tragic destiny of the artist who disturbs and endangers the stability of the political sphere was also chosen by its author. Thus another line of a decade has closed a circle. After the breakdown in 1971, a new decade started, in which art and music gained strength and spread over the conquered territory without new, fierce initiatives, but still under challenging question marks. Schaeffer has been invited to Zagreb not only as the originator of concrete music and the promoter of the doctrine, but primarily as the author and thinker of unique experience, as

a personality that cultivated freedom through the power of contradictory truthfulness of the civilisationally unburdened approach to things and ideas, as a researcher, organizer, originator and conductor of exploration, a theoretician of music and media, but also a composer, and lastly the initiator of collective works. *Operabus*, for which he also wrote the libretto, was performed in 1965, when he, same as in 1963 and 1969, took part in the discussions organized at the festival. We should not forget that this was also the time of manifestos that enabled art groups and their theoreticians to express the need to change the direction of thinking by a strong gesture, to open or defend a new field, to establish an intention, like in Restany's Manifesto of New Realists from 1961. It is used (and can be useful) as a mainstay for different movements, although it clearly proposes "passion ante aventure du reel" "...after exhaustion and sclerosis of all established dictionaries, all languages and styles. In the material world, Schaeffer seeks the Baconian truth of nature; visual artists, but also musicians, will add a portion of sociological ideas, meanings, and mechanics of social functioning.

Answering the question what he thought about the then current theme – integration of art – in 1961, at the Gallery of Contemporary Art, Schaeffer remarked that music, unlike painting, "strongly adhered to the framework of its conventions; symbols of its notation, the general form of its works, instrumental means (are) all conventional. Concrete music is coming on the scene, but much earlier its predecessors like Varese, then the Italian masters of artificial reconstruction of natural sounds and a Russian by the name of Dziga Vertov have applied this method even without a defined intention; moreover, Andre Breton drew up a manifesto, together with Trotsky as it seems, which expresses the determination to stick to the formula of *everything is allowed* in art... What form has this liberation assumed? The form of a common standpoint, but in seemingly different domains, because the eye and the ear function in a different way and only here we encounter a true parallelism. Figurative painting and conventional music had no mutual relations except the literary ones, but if you break the form, content will appear that brings them in literal relations... and while it seems that recent painting enjoys this forceful, more and more exaggerated degradation of material, Concrete Music has found the reason of its existence by only re-integrating itself in the world of forms... We should also point out that the doctrine of musical objects has made a progress thanks to concrete music. Thus here I could not speak except in the name of a very few musicians, who in Paris acknowledge the necessity of experimental music, while at the same time the leaders of the New Wave express their opinions *ex cathedra* (a few days before me, Stockhausen elaborated the doctrine of creation in its pure form for two hours)."

In 1965, under the participation of Nono, Lutoslawski, and neutral and calm Gunther Schuller and Stuckenschmidt, the juxtaposition of standpoints and positions of Schaeffer and Stockhausen developed into open conflict without a real desire for dialogue. The demand for time for experiment not limited by compulsive measuring of results-works (10 years) was used by these authors to doubt the logic, the foundations of scholarly inspiration, and morality, in whose name Schaeffer had put forward his demands; in an almost romantic manner, they defended their unrestrained understanding of the creator's right to freedom. These few musicians mentioned by Schaeffer developed into a group

that was getting increasingly stronger and richer in experience and was producing works that nevertheless reveal specific individual talents, inclinations, and profiles. Reunited in 1965, in Pierre Schaeffer's concept-project *Operabus*, created for the Music Biennale, in the eyes of critics and public they remained entirely overshadowed by the analyses of intentions and assessments of Schaeffer's responsibility, as if he were their father as well, and not just the father of concrete music. The recording of the performance, directed with sincere engagement by Vlado Habunek, with Božidar Rašica's set design (Radovan Ivšić was the translator of the text) and great enthusiasm and confidence shown by the young singers and actors (thus also Sanda Langerholz in a successful role of a chanteuse, who still remembers it well), does not exist in Zagreb.

Creating a chaotic world of worn-out models, in accordance with Ionesco's assertion that on the stage everything becomes something, so that even nothing becomes something, Schaeffer has realized the nothingness of general musical situation on the stage, which requires reaction. "To draw the musicians out of the orchestra pit, to give them a functional role in the performance, to make an experiment for the eye and maybe for the ear – although everything in the opera is unintelligible – this is, in short, the intention of *Operabus*, a monster half way between a work of art and omnibus", wrote Schaeffer. In doing so, he disappointed some, like Pavle Stefanović, because until then he had been "the beautiful idol of melancholy, scepticism, modest searching, and noble human depression"; he was blamed for "calculated scepticism" (Silvio Foretić) and some thought that they had invented nothing new altogether (Zija Kučukalić); some carefully listened to the ideas of this "unusual work that thematized the dilemmas of the current musical crisis and the postulate of going back to the roots (Petar Selem), while foreign critics wrote about pleasant entertainment. Branislav Delijanis wrote that the public "laughed while watching that first part of the organized chaos, but it was perfectly disciplined, almost enchanted while listening to the second, actual part of the composition, showing the ability of the human spirit to absorb an entirely new world of sounds after breaking through the dead end of tradition." Schaeffer's last visit followed in December 1970 after the invitation of the Department of Visual Design of the Zagreb Faculty of Humanities and Social Sciences, in collaboration with the Zagreb Radio and Television, whose general manager was Ivo Bojanić. As agreed with Professor Vera Horvat-Pintarić, Schaeffer held two lectures: *For and against a Civilisation of Image* and *From Musical to Human Experience*. The text that speaks of a dramatically problematic civilisation of the image, in which he wanted "to express his testimony through intuition and not through intellectual or technological disputes", was published as the introductory text to a double issue of the *BIT international* journal, entitled "Television Today", featuring texts by A. Moles, G. Dorfles, U. Eco, S. Gibbon, M. Meštrović, V. Horvat-Pintarić, I. Škarić and other authors, together with the texts from his book *Machines a communiquer* (Machines for Communicating). Because of the emerging social and political difficulties, this last issue of BIT international, which was launched in 1968 as a theoretical effort and also a summary of the international event New Tendencies, could be published as late as 1972.

It is worth mentioning that the invitation to Schaeffer followed after the same circle of people around the Gallery of Contemporary Art in May 1969 (at the time Schaeffer participated in the congress at the Music Biennale) had organized a symposium about computers and visual research, together with the exhibition on the same topic. This initiative of the organizer was greeted from London, where a Society for Computer Art had been founded with the Manifesto Zagreb, by Gordon Byde, Jonathan Benthall, and Gustav Mezger. I shall quote only a few sentences from the Manifesto Zagreb, which directly reason with Schaeffer's convictions and research: "We concede that the next twenty years could be spent by artists in exploring and assimilating the potential of existing computers and their peripherals.....The aesthetic demands of artists necessary lead them to seek the alliance with the most advanced research in natural and artificial intelligence...There are creative people in science who feel that the man/machine problem lies at the heart of making the computer the servant of man and nature. Such people welcome the insight of the artist in this context, lest we lose sight in humanity and beauty."

Schaeffer's visits, his trips through and via Zagreb could be considered the points of interpretation and critique of that time's tendencies rich in content, which makes him a constitutive element in the development of the Croatian cultural environment of that period. Apart from that, by moving from the search for music and creating music to research into the nature of communication, he confirmed and developed his idea, expressed in Jacques Chancel's broadcast *Radioscopie*: "The mystery of music is the introduction to the mystery of communication."

In the meantime, one premonition has become reality, not only in Zagreb, of course, so that in spite of all insights and warnings there remains only the bitter realization about the relation of an intellectual environment and mass media (as recently formulated by the philosopher Dean Duda): "We know everything about literature as it was defined during the last century, outside of the media and pop culture, but within these spheres we know nothing about it. The academic community is inert and autistic, the media elite cynical... But because of all that, our humanities, adhering to the principle of distance that allegedly makes them analytical and objective, are completely irrelevant in social terms."

Translated from Croatian into English by Andy Jelčić

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Pierre Schaeffer's Project of Symphony of Noises as a Founding Moment of *musique concrète*

by Marc Battier

As discussed in his journal, Pierre Schaeffer started his early musical experiments in order to prepare the composition of the Symphony of Noises. Although this work was never realized in the form intended, it certainly led him to look for suitable ways of incorporating noises in music. In fact, the piece realized with Pierre Henry, *Symphonie pour un homme seul*, albeit quite different from the original idea, retains to some extent the format of a classical composition. However, I would like to focus on the question of the origins of this seminal idea of Symphony of noises by looking at the artistic and intellectual environments surrounding Schaeffer.

The development of the stylistic features of a particular school or studio relies heavily on premises and the initial hypotheses. Indeed, there is sometimes a change of direction, such as happened in Cologne under the influence of Stockhausen who rejected some of the founders' premises and created his own set of stylistic features. Often, however, the initial conditions remain the limiting factors, at least for a while. Pierre Schaeffer invented the first form of electro-acoustic music. The year was 1948. Through many experiments, his first trials led to a structured genre, which was successively called, in France, *musique concrète*, "experimental music", "electro-acoustic music" and "acousmatic music". Meanwhile, elsewhere, other musicians were dreaming of putting technology to use for the creation of a new form of music. They were living in Canada, Germany, Japan, the United Kingdom, the United States... Those dreams led to different forms of electro-acoustic music (electronic music, music for magnetic tape, tape music, live electronic music, computer music...). Pierre Schaeffer was the first to experiment with this new form of music. He did it in a systematic manner, with the goal of creating a real methodology. Where did his ideas come from? Or, rather, what was the ground from which *musique concrète* emerged? In this chapter, I would like to suggest several sources of inspiration from which Schaeffer's ideas were formed and which seem relevant within the context of *musique concrète*. Beyond, it is a whole intellectual and artistic context, some of it not necessarily known to Schaeffer, that is presented. The convergence of ideas is probably more important than the consideration of straight influences.

Capturing Sounds: the Poetic Function of the Phonograph

When *musique concrète* appeared in 1948, it was under the impulse of creating a new form of music. The quest of Pierre Schaeffer was to compose a symphony in which an orchestra would converse with various noises, which would be prepared from and presented on recordings. He called it a "Symphony of Noises" (*Symphonie de bruits*). The predecessors to this musical endeavor can be traced back to Guillaume Apollinaire who, at the beginning of the 20th century, came up with the idea of *Symphonie du Monde* (symphony of the world) in which sounds and noises captured all over the world would instantaneously be mixed in harmonious ways. Several years later, but twenty years before the advent of *musique concrète*, French composer Carol-Bérard discussed in an article published in 1929 in *Modern Music* how extraneous noises, from nature as well as from the industrial world, could be orchestrated in order to compose a Symphony of

Noises. Carol-Bérard imagined to use the phonograph recordings of natural and industrial sounds to create what he christened *Symphonie de bruits*. In the meantime, the Italian Futurists had tried to systematise the use of non-musical noises, and Varèse had devised a theory that noises “were sounds being formed” (*le bruit est un son en formation*), while extraneous noises were used in Eric Satie's *Parade* (1917) and George Antheil's *Ballet mécanique* (1924). Schaeffer had not been the first to imagine a large musical work based on the use of non-musical sounds and particularly on noises. Others before him used the word “Symphony” in conjunction with noises. Probably the first to do so was French poet Guillaume Apollinaire who, at the beginning of the twentieth century, described accurately the means to produce a “Symphony of the world” in which sounds taken at once in various parts of the world would be gathered and mixed through the use of cleverly placed microphones linked to a keyboard, in his novel “*Moon King*”. At the beginning of the century, Apollinaire wrote a poem called *La Victoire* in which this verse appears: “ We want new sounds new sounds new sounds.”¹ The evocation of new sounds did not refer to music, however: Apollinaire was in search of the ways of founding a new poetry, one which would reflect the New Spirit. However, he went very far in this quest, which even involved the use of phonographs. In a new approach to poetry, Apollinaire called for an artistic blend of voices and sounds of the world: “ ...A poem or a symphony composed with a phonograph could very well consist of noises artistically chosen and lyrically mixed or superimposed...”²

Despite the fact that he was not able to realize such works, it appears that he was the first artist to deliberately transform the phonograph into a tool for creation. More than thirty years later, this creative use of the phonograph became a founding element of *musique concrète*.

The Phonograph and the Poetic Use of Noises of the World

The second industrial revolution became the ground from which many new artistic movements emerged. Most were radically against tradition and the established forms of art. Among all of these, unanimism and simultaneism have a special significance in relation to the subject of this chapter, which, in many ways, has to do with

“The most beautiful simultaneist poem would be: hearing life. The noise of words, of crickets;

of a train rolling on the tracks of India;

of stars, of machines in Liverpool...

Everything!

But in this vast photograph lies the art of selecting; and adding; and adding all the human soul and the voice of thoughts.”³

Carol-Bérard is a composer who, in 1908, wrote quite a visionary piece. It was called “Symphony of Mechanical Forces”. Unfortunately, it seems to have been lost. However, he continued advocating the use of noise in music. In the very avant-garde American

¹ Guillaume Apollinaire (1918), “La Victoire”.

² Guillaume Apollinaire (1917), *L'Esprit nouveau et les poètes*.

³ Fernand Divoire (1923), “Le Simultané EST”.

journal *Modern Music*, here is what Carol-Bérard wrote in 1929.⁴ “If noises were registered [recorded], they could be grouped, associated and carefully combined as are the timbres of various instruments in the routine orchestra, although with a different technique. We could then create symphonies of noise that would be grateful to the ear.” A bit later, but twenty years before the advent of *musique concrète*, Carol-Bérard, discussed in an article published in 1929 in *Modern Music* how extraneous noises, those from nature as well as those from the industrial world, could be orchestrated in order to compose a “Symphony of Noise”, a term used in his article.

Radio and the Role of the Microphone

So, using noises to create music was not really a novel idea. What Schaeffer brought with him were the ideas on sounds which were informed by several other sources of inspiration. In this paper, I will extricate these from Schaeffer's own writings dating back from several years before the advent of *musique concrète*. Three areas appear to have had a strong influence on him during the maturation period which led to the 1948 invention. The one which had a very strong influence was his work in theatre and the radio and the recording of voices, which led him to come up with acute remarks on the role of the microphone, a phenomenon which had not earlier escaped the attention of another theoretician, Rudolf Arnheim. This was to have a very deep impact on the formative years of Schaeffer and later on the development of *musique concrète*.

Rudolf Arnheim, a German author known for his studies of visual arts, wrote a book on the radio and its techniques. It was first published in an English translation in London in 1936. Several acute observations tended to emphasize the unique position of radio in the creative process. Arnheim also observed that selecting and handling microphones can be very critical in the resulting auditory scene. In the chapter entitled “In Praise of Blindness: Emancipation from the Body”, Arnheim discussed the role of the microphone in radio interviews and radio plays. First, he observed that, during interviews or live broadcasts (which he called “relays”), the microphone transformed the audio scene it is supposed to capture: “and if the microphone visits a fish market or a factory, the listener will be repaid by fragments of the purest local colour occasionally breaking through the amorphous and incomprehensible noise. But this will seldom result in a full, undisturbed impression, even when the reporter, the blind man's dog accompanying the helpless listener, does his best.”⁵ But this uneven quality of capture can somehow be seen as an advantage because of the very technique of segmenting the soundscape. “It is true that it hardly makes an entirely satisfactory impression, but at least it conveys distant happenings to the listener by the most direct method conceivable today, that is to say, it artificially cuts out slices of reality, by this isolation making them the objects of special attention, sharpening acoustic powers of observation and drawing the listener's attention to the expression and content of much that he ordinarily passed by with deaf ears.” The microphone purges the materiality of its source, according to Arnheim.⁶

⁴ Carol-Bérard, “Recorded noises — Tomorrow's instrumentation”, *Modern Music*, 6(2), 1929.

⁵ Rudolf Arnheim, *Radio*, London, Faber & Faber, 1936. Reprint, New York, Arno Press and the New York Times, 1971, p. 139.

⁶ *Ibidem*, p. 142.

“The listener rather restricts himself to the reception of pure sound, which comes to him through the loudspeaker, purged of the materiality of its source.”

Another aspect of the radio is to emphasize a “Music without musicians” [Arnheim, 133]. Goethe calls for a true acousmatic situation.⁷ “‘True music’, says Goethe in *Wilhelm Meister*, ‘is for the ear alone. I want to see anyone I am talking to. On the other hand, who sings to me must sing unseen; his form must neither attract nor distract me’.”

Schaeffer may not have read Arnheim (in all probability, he did not), but he reached similar conclusions through his own radiophonic experiences, and built upon these. He may, perhaps, have heard of the expatriate American poet Ezra Pound's BBC experiments, but this is also highly unlikely (see Margaret Fisher on this).

Schaeffer and Theatre

During the Second World War, Schaeffer worked with the well-known theatre director and playwright Jacques Copeau. Together, they created plays for the radio.

This gave Schaeffer the opportunity to sharpen his ears: listening to sounds through the microphone, he had the same reactions as Rudolf Arnheim. So did Copeau himself, who declared in 1943: “The microphone, as does the microscope and the camera, enlarges and exaggerates anything it captures!”

It is this very observation which will help Schaeffer become aware of a reality which lies in sound objects but which cannot be perceived by the naked ear. (cf. Marinetti's *La Radia*, 1933). In order to penetrate the inner self of sounds, the microphone is the necessary tool. This will become one of the foundations of *musique concrète*.

Music for the New Sound Technologies?

“Can we compose special music for the phonograph and the radio and thus create a new art? [...] It is no longer a question of giving the illusion of reality but of writing for the phonograph and radio as one writes for the piano or the violin.”⁸ The position of the new technologies as a medium to create music is the focus of debate during the late 1920s and the 1930s.

German critic Hans Heinz Stuckenschmidt, in an eloquent manner, discusses that very theme:⁹ “The problem now is to find an adequate system for instruments of the phonograph type. Here the tone is not transformed into the easily recognizable graphic signs, but into short, wavy lines so minute as to be extremely difficult to study. This obstacle, however, might be overcome with a microscope; the lines could be divided into definite rubrics and a fixed scheme established embracing all shades of tone-color, pitch and dynamic intensity. With this new script definite sounds could be transcribed. But the advantages of such authentic records are immediately apparent. The composer can make use of any tone-color he chooses, even those non-existent in our modern orchestra.”

⁷ *Ibid.*

⁸ Boris de Schloezer (1931), *Modern Music*.

⁹ Hans Heinz Stuckenschmidt, “Machines – A vision of the future”, *Modern Music* IV(3), 1927.

Poetry and Philosophy

Another influence, albeit Schaeffer did keep his distance from it, can be picked out in his writings: the role of poetry and more specifically André Breton's Surrealist movement. Not only early *musique concrète*, over its first decade, was often labeled "surrealist music", but more deeply Schaeffer himself introduces the concept of interplay between sounds objects in reference to the way Breton obtains collisions of meanings through the surrealist collage of words. In the early years of *musique concrète*, these collages of noises can be seen as a musical transposition of the collage of words as practiced by the Surrealists. Interestingly enough, the term "Surrealism" had been coined by Apollinaire, the very one who invented the concept of symphony of the world's noises. Indeed, on various occasions, Schaeffer mentioned Surrealism. It was Guillaume Apollinaire who invented the term "Surrealism" in 1917 for a theatre play he wrote. For him, it meant something specific:¹⁰

"I thought it necessary to come back to nature itself, but without copying it photographically. When Man wanted to imitate walking, he created the wheel, which does not resemble a leg. Thus, he did surrealism without knowing it. [...] After all, the stage is no more the life it represents than the wheel is a leg."

While Schaeffer refers directly to a poetic effect which is rooted in Surrealism when he wrote:¹¹

"I had read in a Metro station this odd inscription:

SÈVRES (Babylone)

...I realized that the only worthwhile Marvelous is concealed among the familiar collections of things whose meaning is hidden from us by Reality".

Sèvres is a city on the outskirts of Paris, renown for its chinaware, here strangely linked to the name of an ancient city. The superimposition of the two realities, so distant in nature and time, strikes as odd and yet familiar, because, after all, it is the name of a metro station in Paris. It is as if Sèvres, as a city, uncovered the past. The surge of Babylon is made possible by the association of the two names. There is a sort of epiphany in the uncovering of a hidden city.

Schaeffer chose this example before the advent of *musique concrète* in an inspired moment fed by surrealism. As soon as *musique concrète* began, Schaeffer was led to search the hidden meaning of recorded sounds, to throw away the appearance and discover the musical content of mundane sounds. In this quest, he was helped by his readings of the French poet and thinker Paul Valéry (1871-1945), an author he often cited and whose writings are still very popular today. Indeed, the main link of Schaeffer to philosophy can be found in his reading of Valéry, as Schaeffer does indeed refer to Valéry on various occasions. A theme discussed by Valéry is the dilemma of sound and meaning. A passage has a strong resonance with the *musique concrète* approach,

¹⁰ Guillaume Apollinaire (1917), *Les mamelles de Tirésias*.

¹¹ Pierre Schaeffer (1946), *Propos sur la coquille*, Editions Phonurgia nova, p. 60.

as Valéry discusses how sound and meaning diverge under certain circumstances. In 1939, he wrote:¹²

“Understanding consists of the more or less swift substitution of a system of sounds, durations and symbols by something else altogether. In the practical or abstract uses of language, the shape, which is the physical and sensory act of speaking, is not kept. It does not survive understanding. It dissolves itself in clarity, it has done its job, it has lived. However, as soon as this sensory shape, because of the effect it may cause, takes up an importance such as it becomes imposing and, in a way, respected, but also desired, something new occurs:

...We are led into a poetic universe.”

Schaeffer cited this passage of Valéry in a fundamental text of 1946 and he commented on it at length. He declares not to have been surprised to uncover the metaphors hidden in the recorded sounds. On this occasion, he calls them “the noise of the world”. To find the metaphors among those sounds, the microphone is the tool by which the musician is able to explore. The microphone, at the same time, “produces details, contrasts, depth” which could not otherwise be perceived, just as a telescope does for our vision. It isolates a portion of the sky and eliminates the brightness which prevented us to see the stars in the middle of the day. As does the telescope for our vision, “the microphone transforms our aural perception without transforming the sounds”.

The Noise of the World and the Question of Classification

Another source of inspiration can be found in the considerations of Paul Valéry on the dichotomy between the conceived (the “poietic”) and the perceived (the “esthesis”), Valéry having himself forged these terms of poietic and esthesis roughly ten years before *musique concrète* (1937). The remarks of Valéry on musical sounds and noises might also have had an impact on an avid reader such as Schaeffer, probably as much as the separation of the conceived and the perceived, the two conceptual tools which make clearly their way in the first pages of his 1952 journal (*A la recherche d'une musique concrète*) when he distinguishes his work, based on perception and located in the control room, from what Pierre Henry was doing with the manipulation of the actual sound objects in the recording studio. For Valéry, “The universe of sounds and all the sounds of the universe cannot be ordered; rather, one may be considering them as a virtual ensemble of all possible orders, which, in fact, cannot be conceived. Music is facing a universe of choices – the sounds selected from all possible noises, which are classified and sorted out. Thus, the universe of sounds is well-defined and organized.”¹³

For Schaeffer, the act of listening is manifold. It includes:

- an attention to the acoustic sound object (preliminary listening),
- a discovery of what the microphone recreates or releases [*restituer*].

The methodology invented by Schaeffer is rooted into the act of listening. It is, in fact, its very foundation. Using the microphone as a tool became the fulcrum of his theory.

¹² Paul Valéry, “Poetry and Abstract Thought” (Poésie et pensée abstraite), (1939), a conference given at Oxford University and published under the title, *The Zaharoff Lecture for 1939*, reprint in *Variétés V*, 1944.

¹³ Paul Valéry, *Esthetical Invention (L'invention esthétique)*, 1938.

Musique concrète is above all based on the quest for the *thing in itself* (the *noumenon* of Emmanuel Kant, "Ding an sich"). The thing in itself is clearly distinct from the *perceived object* (*phenomenon*, "Erscheinung"). The *phenomenon* is related to what we perceive. It is an object of our senses. However, our senses infer different interpretations of the same object. Thus, it is a question of changing the context in which the object is perceived. Precisely, the radiophonic experience of Schaeffer has had a lot to do with this path of thoughts.

Schaeffer and Gurdjieff

Schaeffer was a pupil of George Gurdjieff, a mystic and spiritual teacher. He followed the sessions given by Gurdjieff and commented that he had been much influenced by him regarding the conduct of personal matters. From the letters and testimonies left by Schaeffer, there does not seem to be any direct influence on *musique concrète*, but it may explain to some degree who Schaeffer was and why he doubted so many of his own discoveries. However, how much he was influenced in his musical thoughts by Gurdjieff, who composed music as well, remains to be studied. This is currently under scrutiny thanks to the research done by the Australian scholar and composer Judith Crispin.

Schaeffer and *musique concrète*

To conclude this evocation of Schaeffer's intellectual and artistic environment, let us go back to the initial reference to a novel sort of work. *Musique concrète* per se began as a pure project: a "Symphony of Noise", which was never realised. Here is how Schaeffer described it in an unpublished internal report:

- I -

OBJET DES RECHERCHES ENTREPRISES AU CLUB D'ESSAI
en avril, mai, et juin 1948
en vue d'une production intitulée :
" SYMPHONIE DE BRUITS "

Mon premier propos était, en collaboration avec un musicien, de réaliser une "Symphonie de bruits" c'est-à-dire une composition où un grand orchestre eût donné la réplique à une suite de bruits concertants. En réalité, ce propos a été progressivement abandonné et remplacé par une suite de recherches moins directement efficaces qui peuvent être classées sous plusieurs rubriques :

- a) production de bruits musicaux ou non,
- b) composition de ces bruits en vue d'œuvres musicales ou non

The report written by Schaeffer and sent to the radio executives begins with the reference to this project. Here is a translation: "My first project was to realise a "Symphony of Noises" in collaboration with a musician. It would be a composition in which a large orchestra would converse with a set of noises as in a concerto.

Actually, this project gave way to a series of experiments, not all efficient, which can be categorized under several classes:

a) production of noises considered musical or not,

b) composition of these noises towards the works considered musical or not.“

Schaeffer abandoned the project of creating a symphony of noises because he discovered the enormous potential of using recorded noises and sounds. Very quickly, later in 1948, he submitted a patent for *musique concrète*, which he titled “Processes and devices for the realisation of noise or musical sounds“. Thus, *musique concrète* was born. It was given a name and a status. It was ready to change music forever.

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Sound, Image, Index

by Brian Willems

This paper examines Pierre Schaeffer's thought on the separation of sound from image, thus arriving at an index rather than a sign, in a number of contexts: experimental musicians Reiko and Tori Kudo trace the roles of interruption and error in the way some birds develop a song they will sing together; Gilles Deleuze and Félix Guattari's thought of "The Refrain" and the deterritorialization of rhythm; and the traditional reading of the 13th-century poem *The Owl and the Nightingale* is more than reversed – it is not that the Owl's dark and discordant dirges are merely more "musical" than the Nightingale's romantic melodies, but rather that the Nightingale's songs themselves begin to function as an index. All these examples are used to argue that the separation of sound from the visual image is not about the conflict between nature and culture, but rather an example of how nature can only find its deepest fulfillment in art.

Even the song of birds, which we can bring under no musical rule, seems to have more freedom, and therefore more taste, than a song of a human being which is produced in accordance with all the rules of music.

Immanuel Kant, *Critique of Judgment*

1. Pierre Schaeffer

For Schaeffer, there is a very literal separation of image and sound. An important instance of this separation takes place when hearing music through the radio or a phonograph: "Listening to live orchestral music is essentially deductive listening, it is strongly deduced from vision, whereas listening to the radio or a phonograph is inductive or acousmatic listening" (Malina and Schaeffer, 1972: 256). The *acousmatic* is important because it "marks the perceptive reality of sound as such, as distinguished from the modes of its production and transmission" (Schaeffer, 2006: 77). Film theorist Michel Chion has made much of this term. In *The Voice and Cinema* he argues that an infant's experience of his/her mother is closer and more intense when it happens through smell, touch and sound, not vision. When the mother is actually seen there is "at least some distance and separation" implied (Chion, 1999: 17). Locating instances of this separation is important for Schaeffer because once the clear visual source for a sound has been removed, more attention can actually be paid to hearing that sound: "Vision can, indeed, be a distraction" he says (Malina and Schaeffer, 1972: 256).

Separation, therefore, can make the act of hearing more vital. At the same time the act of hearing becomes more difficult, because one is less distracted: such a "reduced listening" (*écoute réduite*) can "give back to the ear alone the entire responsibility of a perception that ordinarily rests on other sensible witnesses" (Schaeffer, 2006: 77). In other words, when the separation of sound and source takes place, one begins to wonder; when the image is absent, attention is redirected by the sound object. This shift can be strengthened through Schaeffer's techniques of the closed groove (*sillon fermé*, or skipping needle) or the cut bell. As Chion argues in his *Guide to Sound Objects*, "if the

curiosity about causes remains in acousmatic listening (and it can even be aroused by the situation), the repetition of the recorded signal can perhaps 'exhaust' this curiosity" (Chion, 2009: 12). In *Audio Vision* Chion argues that when this exhaustion happens "Acousmatic sound draws our attention to the sound traits normally hidden from us by the simultaneous sight of the causes – hidden because this sight reinforces the perception of certain elements of the sound and obscures the others. The acousmatic truly allows sound to reveal itself in all its dimensions" (Chion, 1994: 32).

What can arise out of this renewed attention is the index. The relation between the sign and the index is a part of Schaeffer's development of the complex temporal circuit of listening (*écouter*), comprehending (*comprendre*) and hearing (*entendre*), perceiving (*ouïr*). When a word is taken for a sign, it is not the sound of its pronunciation which first takes precedence, but rather the meaning (or image) to which it becomes attached. This takes place simply because we are trained to extract the meaning from an utterance to which we are listening. In contradistinction, as an index it is precisely the acoustic qualities of the utterance which are interpreted. These qualities point somewhere else, although this beyond is importantly located within the auditory experience itself. The ability to perceive the index is enacted through acousmatic separation, for it is in such moments that we actually begin hearing. As Schaeffer argues: "The term 'sign' was introduced by Saussure in linguistics to bring out the fact that words refer to something and, thus, have meaning. A sign is supported by meaning. When I speak, you can analyse my words for their sound but, actually, you listen to them for their meaning. On the other hand, if you listen to my words to learn whether I have a cold, you do not pay attention to their meaning. Here a word serves as an 'index.' (Malina and Schaeffer, 1972: 256)

The effect of being open to the index is that your attention moves from interpreting the meaning to interpreting the process of the generation of meaning. This is the effect of acousmatic listening, for "in listening to sonorous objects (*objects sonores*) whose instrumental causes are hidden, we are led to forget the latter and to take an interest in these objects for themselves" (Schaeffer, 2006: 78). This "is no longer a question of knowing how a subjective listening interprets or deforms 'reality,' of studying reactions to stimuli. It is the listening itself that becomes the origin of the phenomenon to be studied" (77). So, the question arises at what moments is the separation of sound and image really possible? Listening to the radio is no longer shocking. Our images jump over the separation in most cases. The pull of the origin of the sound is too strong, and such a mode of separation is too familiar. However, this is why the temporality of Schaeffer's matrix revolving around listening and hearing is so important. There needs to be separation *within* the matrix of the interpretation of the image, not without. There need to be indices within the signs. In order to delineate this mode of separation, a number of examples will be used. Experimental Japanese pop musicians Reiko and Tori Kudo take a kind of "naïve" part in this discussion by locating moments of indexing within the signs of their music. They do this through thinking, in part, about the birdsong. Then an analysis of their work will be carried out through Deleuze and Guattari's writing on the refrain, which will find a counterpart in the struggle between the songs of two animals in the medieval poem *The Owl and the Nightingale*. What all of these varied examples will

help us to do is to bring forth the operations for developing indices within the everyday world of signs: in fact, everyday signs are already indices themselves. The trouble is how to hear them.

2. Reiko Kudo

The three recent albums of Reiko Kudo work hard to shift attention to an index, in their case the processes of the creation of the music itself. The mechanism for this foregrounding takes place in how the songs preserve and actually *are* the “errors” and backtrackings which are a part of their generation, and which would usually be ironed out in rehearsal, recording or production. My argument is that the inclusion of errors within these songs reschedules attention, which is usually given to producing meaning, from sound onto the process of listening. Reiko performs with her husband Tori, who is a trained jazz pianist. Their trilogy of albums, *Hito* (2005), *Husa* (2006) and *Licking Up Dust* (2007) tells the story of struggling to write an apparently simple pop song: it seems to take the length of all the three albums of “trial and error” to get to the last song on the last album, when all seems to fall apart again in a paroxysm of guest screaming from Keiji Haino.¹

However, “screaming” is not the mechanism behind this shift of focus for the listener. Instead it is the incorporation of “mistakes” in many form. Tori Kudo has picked up the moniker of “the king of error” for the ways in which he shelters imperfections in his work. For example, in concert he would make members of the fluid line-up of his band Maher Shalal Hash Baz wait to be shown, mid-song, “where to put their fingers” for each chord change. He has also given the music he has wrote to local children to play for his recordings, perhaps in order to forge a kind of naïve unprofessionalism (Kudo, 1995). Tori has indicated that this incorporation of error into music has a natural basis, namely birdsong: “There is even one species of tropical bird that is able to compose by itself and then sing in a duet like XXXX [*sic*]. Like XXXX the two birds get together and hold a rehearsal where they try singing together and in a call and response style. They try out various different styles before they arrive at a composed song. The way they sing is very precise, just like XXXX, and to the untrained ear it sounds like just one bird singing one song” (ibid.). The trial-and-error of this call-and-response system opens up a way for attention to be paid to the sounds being produced rather than the meaning they entail. This happens because what is being offered is a kind of rehearsal rather than a finished product. In a rehearsal, attention is paid to the way sound is produced, in order to improve it. However, if the improvement is removed, only the attention remains. In addition, error that is incorporated into a song does not only foreground the production of those errors, but also the unstable nature of the other, more harmonious sounds which surround such interruptions. This is nothing new to the world of music, of course. It is a part of basic musicology. However, the simplistic paring down of the music of Reiko Kudo foregrounds these moment, so that they become the focus of their work.

¹ While at first it may seem that the second album, *Husa*, would not fit this argument because the songs approach more “standard” jazz pieces, the insertion of the sound of a vacuum cleaner in the middle of the album turns it into a mirror image of the other two.

Perhaps the best way to begin looking at how this change of focus occurs is to take a look at the last album of the “trilogy,” *Licking Up Dust*. The album opens with the track “Faraway Mountains,” which seems to be constructed around the Kudos’ idea of birds coming together to play. There are three elements to the song: organ, guitar, and voice. All seem to be going in different directions, the rhythm of the guitar racing ahead or falling behind, the voice and the organ only at times meeting each other, and when they do, it is note-for-note. This negotiation creates increased attention on the relation of elements themselves, which, although contained in a rather simple pop song, can still have an effect of disenchantment. This is also reflected in the lyrics (sung in Japanese), which are about losing oneself: “snow left on faraway mountain/forgetting myself at blooming flowers.” It is the object of the flowers that demands all the attention of one’s self, taking it away from listening and returning it back to hearing.

Other tracks on the album take alternative approaches to separation, thus attempting to avoid creating a formula. This variation calls attention to operations rather than form. The song “Chestnut” features only organ and voice. However, instead of enacting any kind of dissonance, they both seem to be in too close a contact for any harmony to develop; they are in sync with almost no counterpoint. The fight between them takes place at too near a range, which then adds strength to the few moments they are able to separate. What a number of songs on the album do in their play between separation and conjoining is to foreground the manner in which those moments are actually produced.

The last track contains full chords, which are strummed, in tune. It sounds like the most traditional pop-ish song. However, it is the only song to bring in another vocalist, Keiji Haino. He screams and the song falls apart. It is as if the Kudos have slowly lost the strength to hold attention on hearing over the course of the albums, and now they need someone else to do it. The guitar then increases in tempo, is overtaken by the voice. The voice is much louder in the mix than the others. Then the voice stops, and the guitar goes back to its pop progression, and Reiko continues singing; we are back in harmony, but with a difference. We are now unsure, scared, not sure when it will fall apart. We cannot live in the realm of the screaming vocals, it would drive us crazy. But now, we cannot go back either. Reiko’s voice drops off at the end of this last track, and then the guitar explodes on its own without the screaming as if becoming too fast to play, and the story ends. The guitar can do it on its own again without the intervening voice to help it along.

3. Deleuze and Guattari, the Owl and the Nightingale

In order to begin to define the strategy they put into play, Tori Kudo draws on the birdsong. Such reference to the “natural” sound plays a huge part in *musique concrète*. The focus of this section of the essay is to develop the coordinates which allow for hearing the sound objects in their always-already existing state of separation. To do so, a look at the position of Oliver Messiaen in Deleuze and Guattari’s chapter on “The Refrain” in *A Thousand Plateaus* will be used to develop the thought of the emergence of separation. In order to begin understanding this mechanism, it is important to know why such separation is difficult in the first place. This is not only because order is somehow attractive, that it is easier to comprehend as it fits into the analogue pattern recognition

of our brains, but also because the order is protective. Music can create boundaries, a home, walls which protect us and follow us throughout our lives, which are filled with so much fear of separation. As Deleuze and Guattari argue, "A child hums to summon the strength for the schoolwork he/she has to hand in. A housewife sings to herself, or listens to the radio, as she marshals the antichaos forces of her work. Radios and television sets are like sound walls around every household and mark territories (the neighbour complains when it gets too loud)" (Deleuze and Guattari, 2005: 311). This is one of the main functions that song has for birds. It is used for marking territory, for creating boundaries which thus create safety: "The role of the refrain has often been emphasized: it is territorial, a territorial assemblage. The birdsongs: the bird sings to mark its territory" (312). The main engine for this territorialization is rhythm, not metre. Rhythm is suture; "it ties together critical moments" (ibid.). However, territorialization is not rhythm per se, but rather it is rhythm as a sign expressing meaning: "Territorialization is an act of rhythm that has become expressive, or of the milieu components that have become qualitative. The marking of a territory is dimensional, but it is not a metre, it is a rhythm. It retains the most general characteristic of rhythm, which is to be inscribed on a different plane than that of its actions" (315). The engine behind territorialization is found in "the becoming-expressive of rhythm or melody, in other words, in the emergence of proper qualities (colour, odour, sound, silhouette...)" (316).

One way to experience separation, or deterritorialization, is to experience something other than the sign. Hence the power of the index, which points towards something else, points beyond, to the properties of the medium of expression. One medium of expression which results in territorialization is rhythm, and so foregrounding of rhythm becomes one way of separating, of separating rhythm from its expression. However, this ability of separation is not to be found from the outside of expression but from within it. This is the self-generating movement of Schaeffer's matrix of listening and hearing, and the project of the Reiko Kudo albums. In fact, a discussion of the Kudos' music in the context of Deleuze is not as strange as it might seem at first. A recent double-album from the Kudos' group Maher Shalal Hash Baz, entitled *C'est La Dernière Chanson* (2009), contains two direct references to Deleuze on the first album: "Machinations in Your Days" and "Gilles Deleuze 1977." Most of the ninety-nine songs on the first album are under a minute long. They sound a bit like the first measures of a 1970s procedural TV show. Each song is not particularly "jarring" in itself, although when listened together they begin to sound as if a song had been ripped apart and then put back together again. When I asked Tori what he felt his relationship to Deleuze's thought was on this album, he said "My short songs have not ever been evaluated so far, but I dared to record those short ones as one rhizome in my plateau. I intended to make it a re-re-territorialization of pop music." In this sense the re-re-territorialization is an indication that the index is not to be found outside the sign, but rather within it.

The argument that the index is to be found in the sign is not a new one. Schaeffer himself based his thought on acousmatic listening on the stories surrounding Pythagoras. Another historical example can be found in the 13th-century Latin debate poem *The Owl and the Nightingale*. The debate between the Owl and the Nightingale in this poem

revolves around the question who sings better. The Nightingale is the plaintiff, who has charged the Owl with being non-harmonious. The Owl has chosen to evoke the right of *exception*, meaning it endeavors “to show cause why the action should proceed no further” (Grattan and Sykes, 1935: liii). The case eventually degenerates into bickering. One of the Nightingale’s main points is that the Owl is somehow “unnatural” in its song: “Owl!” she said, “tell me truly: why behavest thou in unnatural fashion? Thou singest at night and not by day: and thy whole song is a lament, with which thou dost terrify all who hear thy poise. Thou shriekest and hootest to thy mate in a way that is awful to hear: so that to men, both wise and foolish, it seems not that thou singest but that thou dost weep. Then, too, thou fliest, at night and not by day: at this I wonder, and well I may. For everything that shuns what is right loves the darkness and hates the light. And everything that inclines to evil likes the darkness for its deed.” (155-6)

The Owl’s song is disruptive in that it is sad, sung at night, and not very melodious. However, the reason that this poem is being used here is not to simply reverse the argument in a dialectical moment and to say that it is the Owl’s more disruptive song that should be privileged. Instead, the generation of a disruption of listening is actually already a part of the Nightingale’s song. The Owl argues that the Nightingale’s song is itself unclean, for it is greater during times of mating, meaning the summer, during which time the Owl is more restrained and subdued. The Owl argues: “thou sayest that I cannot sing, that my one theme is lamentation and that it is awful to hear. This is not true: I sing smoothly, with full melody and in loud tones. [...] Be the song ever so merry, it shall become quite distasteful if it lasts beyond the proper time” (157). The pleasure of the Nightingale’s song will flip into vulgarity if sung at the wrong time, in the wrong manner. A change in context, in duration, is enough to shift attention. As Chion observes, “a reversed piano sound will appear longer than the original because the reversed version is more unusual and engages the ear more actively” (Chion, 2009: 19). What is disturbing about the Nightingale’s song is that the producer of the song becomes visible; the song itself has not changed, but the inappropriateness of the singer comes forth. In one sense this is not a separation of sound and producer as Schaeffer developed it, but a separation of song and its traditional context. The song-producing body, actually in its sexuality, becomes visible, in the body that is already there. The “beyond the proper time” of the song means that the song strays into the realm of the visceral, for when the Nightingale sings in lust-filled summer: “No beast is there that restrains itself, but each doth ride upon the other: even the horses in the stud are filled with a wild longing for the mares. And thou thyself art much the same: for of wantonness is all thy song: and just before the breeding season thou art most passionate and excited. When thou hast thy will performed, then canst thou utter not a word: thou dost twitter like the titmouse, chucking with a husky voice. Thy note becomes worse than that of the hedge sparrow that flies near the ground amongst the trees: for when thy love-longing is over, then is thy singing over as well. In the summer season peasants rage and ramp and corrupt themselves – but all the same, not for love. It is rather a mad impulse with the peasant [...] as soon as thou dost sit a-brooding, thou dost lose all thy tune [...] when thou hast performed thy pleasure, thy note at once becomes discordant.” (Grattan and Sykes, 1935: 160)

The location of the separation of sound from sign in the Nightingale's song is mirrored by the structure of the poem as a whole. The poem is actually about the law. It was "Written in an age of great legal activities, when the debate was a characteristic literary form, when fables and proverbs were acceptable reading, and when the romance of love came as a revolution to men, there is much in the poem that belongs to its age, and reflects its surroundings" (xxi). What is important about the law here is that the poem does not offer a judgment at the end, which is typical of the debate poems of the time: "To provide a solution, however, was no part of his method. In fact, it was essential that no solution should be given. The main objects of the method were said to be, firstly, to encourage beginners to search for truth; secondly, to put them in a position to acquire truth for themselves" (xlvi). However, the poem is often interpreted to be a winner for the nightingale, who is seen to represent the Romantic song, versus the more didactic and sober melodies of the owl's evening laments: "The dispute has been said to stand for the old conflict between pleasure and aestheticism, between crabbed age and youth, between gravity and gaiety: or again, it has been described as Art against Philosophy" (ibid.). In the framework of our discussion here the poem may be described as a dispute between the song and the index, or between the metre and the rhythm.

Rhythm contains both distance and closeness. It is used to mark the territory which separates, but also to conjoin in the form of the interval. Deleuze and Guattari argue that "rhythm, precisely, is caught up in becoming that sweeps up the distances between characters, making them rhythmic characters that are themselves more or less distant, more or less combinable (intervals)" (Deleuze and Guattari, 2005: 320). This is why someone like Messiaen is so important for their discussion. A work like the *Chronochromie* both foregrounds different rhythmic experiences of time by "colouring" them and joins them together in a combined expression (ibid.). While rhythm in one sense is much more a part of an atonal or serial approach to music, and much of Schaeffer's work is instead constructed around the sound object, what this discussion of rhythm foregrounds is an ability to generate something new, or anew.

However, the question still remains as to what it is about rhythm that allows for generation, for going somewhere else, for the index rising out of the sign. This question can be approached through the difference between the intensive and extensive properties, which is so important for the backdrop to Deleuze and Guattari's thought here. Extensive properties are those which can be divided, such as quantity or length (cut a metre stick in half and you have two 50-centimetre-long sticks), while intensive properties cannot (be divide a litre of 50°C water in half, and while you get two half-litres, each is still 50°C; the temperature is not divided in half, hence temperature is an intensive property). The reason intensive properties are central is because they are generative (as can be seen in the role of pressure in weather, which makes even daily forecasts so difficult) (DeLanda, 2004: 24-5). This is the importance of rhythm over metre in their thought on the refrain: metre can be divided, multiplied, while rhythm cannot be. Thus the role of error in Reiko and Tori's music becomes more apparent: error inserts the intensive properties of rhythm into the otherwise mainly extensive properties of the pop song.

What all of these diverse strains of thought have in common is searching for a way to experience the world that lies beyond human meaning by using that world itself. One strategy for this permanently failed task is the incorporation of intensive properties within the extensive work. Schaeffer developed an initial means for this through the separation induced by reduced listening, a technique which gains immanence in the incorporation of rhythmic error.

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Thinking Concretely about Pierre Schaeffer

by Leigh Landy

We know of Schaeffer as an author, scientist, artist and facilitator of many sorts of activities and will all have personal views about his achievements and heritage. The conference announcement linking Schaeffer to sampling is fascinating as it is a celebration of his vision as well as a condemnation of the major aspect of his philosophy. This tension is not unfamiliar to me. In wondering how he would be thinking at the age of 100, this paper will suggest that some of the more extreme Schaefferian views related to *musique concrète*, such as *l'écoute réduite* might have been re-investigated in light of the dynamic evolution of the art of sounds. In other words, this paper will celebrate today's diversity in sonic art whilst emphasising Schaeffer's revolutionary position but also diplomatically querying some of his views that limited the potential of his own newly invented art form.

Getting Started

I believe I might alienate a few listeners by commencing with the following remark: I have often heard the view that Pierre Schaeffer's earliest works of *musique concrète* were his most accessible. A similar remark has been used in terms of John Cage's pre-indeterminate works as well. Why might this be so? The casserole cover, the train, the piano sounds, the coughing, the loops, etc. form part of the response in Schaeffer's case. The innovative approach with familiar materials such as the prepared piano with the resulting pleasant sound is relevant when discussing Cage.

In both cases, the composers were making links with lived experience and that is why, in particular, new listeners find those works accessible and often engaging as well. With this in mind, the notion of *making connections* whilst creating innovative art will act as an important focus of the following presentation.

A Conversation with Pierre Schaeffer at the age of 100 (*en anglais pour ce symposium*)

I unfortunately never met Schaeffer. When I arrived at the GRM as a doctoral student, it was François Bayle who greeted me on behalf of the organisation along with the charming Croatian composer who invited me, Ivo Malec. I was not to return there until after Schaeffer's death. Therefore the following conversation is entirely a projection of the interviewer. Nonetheless, I have to admit that the title I've given this talk was wrong! It really is: "Thinking Concretely with Pierre Schaeffer". Please note that I feel completely at ease in having this conversation, for I am aware of Schaeffer's with Mozart that was televised in 1979. (Bayle 1990, 120)

LL Sir, I have been informed that I have only 18 minutes to hold this interview given my 20 minute slot. Let's jump in right away then. Can you please tell me why many people find your early etudes and the collaborative *Symphonie pour un homme seul* most accessible amongst your works?

PS Frankly, no I can't. Those early pieces were what you might expect: first attempts at something that needed years of development before it reached maturity, like a good

French wine. They were challenging to make due to the state of the technology that we had on offer, but were they not, perhaps, a bit unsophisticated?

LL I think it might have to do with the fact that you included so many familiar items in the pieces like one might when considering a potential new musical genre for the radio: repetitive rhythms, familiar sounds such as instruments, trains and the like. Your departure was hugely radical, yet perhaps less distant from lived experience than the music that was about to be made at Darmstadt or the NWDR studio in Cologne.

PS I see your point, but believe that this reading of history is somewhat superficial. *Musique concrète* came of age when the theory I put together in the *Traité* and elsewhere was first published. In other words, there was *musique concrète* before I had formalised my ideas regarding Tartyp and Tarsom (Schaeffer 1977: 459, 584-587), although the seeds were already planted in my "A la recherche..." (Schaeffer 1952), and that which came after it and, I believe, the real *musique concrète*, that which I consider more mature, was of the second type.

LL I understand – one of the biggest misunderstandings about the term you created, *musique concrète*, had to do with the fact that most people thought your goal was to present concrete material, but this was only a phase on the way to its being abstracted (Schaeffer 1952:35 and 1973: 16-17). Tartyp, Tarsom and reduced listening were all elements relating to that process. Isn't that true?

PS Absolutely so.

LL Please allow me to take this one step further. In your borrowing and modernising the term, acousmatic, you were focusing on receiving the aural information without any visual aids.

PS Again, you are right.

LL But it would seem to me that the acousmatic process was one of sharpening our listening to focus on and identify the aural information better. Abstracting sounds so that their source and cause are either inaudible or of less importance than the perception of sonic – as opposed to contextual – details is, in my view, a step away from Pythagoras's view of the acousmatic.

PS Monsieur, I shall not be forced into a corner about this major aspect of my thinking related to *musique concrète*, in particular at an event celebrating my 100th birthday. Look at the difference between, say, the fine works of *musique concrète* made around the appearance of my *Traité* and that awful anecdotal music of Luc Ferrari, the *phonographies* of François-Bernard Mâche and those horrid soundscape compositions, mainly coming from Canada. Is it not patently obvious that such works are risible?

LL I would admit to their being more difficult to be received as musical works in traditional terms, but then again many *musique concrète* pieces caused the same issues to inexperienced listeners and they must have been important to you, too, I would imagine, thinking of the types of radio public you were used to.

Let me try looking at this from another angle. Wasn't the invention of this music, one based on the combination of Varèse's famous words, 'organised sound', the history of the application of sound on the radio and rapidly developing technology that could be found useful towards musical production, intended for a fairly broad public based on a potentially huge area of musical approaches?

PS Young man – and you are only slightly more than half as old as I am – you are putting words into my mouth and heaven knows I wrote enough explaining my ideas and my ideals to have them rewritten at this point. Yes, of course, I saw *musique concrète* as a vast space, but if you make the space too vast, how might things ever fit together? I rejected Ferrari's anecdotal outings due to the fact that they were not really serious; furthermore, those pieces were more Dadaist in nature than anything I ever wanted to be called *musique concrète*.

LL In other words, one should be careful with humour. Did you therefore want to create a new form of art music for the learned public?

PS For better or worse, what you say is true.

LL But you must have known that contemporary music after the war was of little relevance to society.

PS I was in Paris and the public was large at the time, in particular when it came to music for the radio. The young Stockhausen and Boulez, whatever I thought of their music and their personalities, were both to become big celebrities, weren't they?

LL Oh my dear, it is I who is now being asked questions. I would suggest that what you say is true, but less so than it was for Stravinsky or for Brahms. More importantly, I would suggest that they were the last living composers seeking immortality.

PS Fascinating, but I doubt you are right and we have moved far from your original questions, I believe.

LL Perhaps you're right. I am primarily interested in how you intended *musique concrète* to allow listeners to make connections and find access to the music. What is your view to the following: *musique concrète* was the invention of a visionary, but one who was rather dogmatic about certain things.

PS Such as ...

LL We know about your distrust regarding digital composition – or as it was called at the time – computer music; yet computer music, dated as the concept is, was simply historically inevitable. Someone had to invent the music of sounds sooner or later. Marinetti and Russolo gave it a good try, but it was you who really understood a major portion of music's future and we are all highly grateful to you for that. Similarly, digital music was inevitable. Returning to dogma, your solfège and associated music theory for *musique concrète* may not be as methodical or formulaic as was Schoenberg's and Webern's serialism or Darmstadt's post-serial composition, but it was still modernist in terms of its do's and don'ts.

PS I opened doors with this music.

LL Indeed, and Pierre Henry closed quite a few of them early on – tee hee, until he was told that we weren't supposed to hear the door anymore given your strong view concerning *l'écoute réduite*.

PS But no one really hears doors in that piece; it's an early reduced-listening piece.

LL With the title, *Variations pour une porte en un soupir*, I would suggest that this indicates the opposite! I would have thought that *musique concrète*'s invitation to use any sort of sound or musical object would place it more in the postmodern camp.

PS Please let's not waste my centennial on yet another debate about those two horrible words, modern and postmodern.

LL I accept. I'll try to put it in another way. Dogma in modernist music was one of the key reasons it lost a good percentage of its public.

PS We will run out of time if we discuss that subject, but you may have a point there. Let's look at the brighter side of things. You kindly published an issue of your journal, *Organised Sound* celebrating 60 years of *musique concrète* and 50 years of the GRM. Those anniversaries represented quite a feat, didn't they?

LL Absolutely and much of that success is due to your vision. However, are you aware of the works that are created and performed at the GRM and at Radio France these days? Are you also aware of when such music is played on France Musique?

PS I may be 100 years old, but I really like the 'listen again' function on the internet, so who cares about the starting time of Christian Zanési's and his colleagues' broadcast in the middle of the night once every week or so?

LL Once a week is a strange fate for such an important type of music, I would have thought, but then again the BBC only has one scheduled weekly programme of *any* sort of contemporary music weekly, so marginalisation is alive and well ... except on the internet.

PS You also asked about the music being made, performed and broadcast at the GRM these days. There seem to be fewer people saying *musique concrète* currently and even Michel Chion's 'musique des sons fixés'. Nonetheless, apparently acousmatic music is alive and well.

LL This is all true, but an increasing amount is being performed live due to the rising speeds of our technology and the content of many new GRM works includes identifiable sound objects.

PS Please don't use my terminology when stepping outside of my theory, young man! Those are sounds, not sound objects or even musical objects of which you speak.

LL Still a bit dogmatic, eh, but it was your theory after all. Your music has permeated popular music, what the French call *électro*, and a good deal of other forms of music as well. I suppose you know that I, too, added a term as I felt that current terminology inadequately described my own music. I have coined the term sound-based music (called 'la musique des sons' in French) and defined it as follows: "sound-based music typically designates the art form in which the sound, that is, not the musical note, is its basic unit" (Landy 2007, 17). I have even suggested that a sound-based music paradigm coexists alongside what I call a note-based paradigm having been influenced by the writings of your former colleague, GRM musicologist, François Delalande. For me, all of this music, including what you consider to be dreadful anecdotal music, belongs together. Much of it is not related to art music or pop music regardless of whether they have roots in one or both. It is a vast space in which almost all *musique concrète* fits.

PS Why in heaven's name would you ever split up *musique concrète*?

LL I haven't really, but some have opted for a note-based approach in electro-acoustic music, the more common term, over the years and I simply listen to that type of music based on my note-based experiences more than my sound-based ones.

PS I never admitted it, but some of those mixed music pieces we performed did appear a bit confused in terms of what they were attempting to achieve.

LL Fortunately a number of composers have been highly successful with their mixed works. Sound-based music is a means of celebrating your vision and that is why it was

invented. It is, despite those exceptions I mentioned, and there are only a few, intended to be more inclusive. You do realise that many people, including artists with roots in popular music, who know nothing of Tarty, Tarsom and reduced listening cite you and some of your colleagues such as Henry, Bayle and Parmegiani as a major influence. Musicians supporting what is known today as sampling culture often make sound-based music. The number of such musicians continues to grow as more and more people are introduced to it on the internet, in schools, in clubs, in computer games and so on. So the establishment, by that I mean the broadcasters, print media and educators, don't really know what to do with your vision, but it has been completely integrated into today's world of shared sounds and remixes.

PS I believe it is you who often speaks of music history working in three phases: thesis (the known), antithesis (the reaction) and synthesis. Perhaps I presented one antithesis, be it a very important one, and what you describe is the synthesis. In your introduction, you mentioned John Cage. He was another antithesis composer as was Webern I would think.

LL Indeed! And it is due to all of your radical, revolutionary views that music in the last century was entirely transformed, be it also with the help of technology and the development of the electronic media.

PS So what do you think of my Tarty and Tarsom then?

LL They were part of the first major writing that focused on listening as opposed to construction. A new sonic listening was added to the more natural, contextual one in terms of the reception of sounds treated artistically. It led to the GRM and thousands of musicians around the globe making acousmatic works in honour of your ideas and others to extend your theoretical concepts such as Denis Smalley. You provided me, as an educator, with a system to assist people in hearing things different ways. In short, it was part of your taking the concrete to the abstract and thus was part of the antithesis you presented. As someone embracing Hegelian synthesis, I can't live without it, but will also not allow myself to be restricted by it. My view is: long live l'écoute réduite et l'écoute intensifiée.

I wonder, therefore, if you had been able to look into a crystal ball to see how developed and diverse today's sound-based music would become, would you still have stood by your strong, yet restricting theoretical ideas.

PS Naturally. I wasn't narrow, but knew that one needed to have something to support or reject as this vast tsunami of new musical activities erupted. I could not predict the enormous impact of what is known as sound art, nor would I ever imagine the cult surrounding some noise musicians. I set up a new art form for the radio with its related concert practice and all of the debates that evolved from that. I may be seen to be dogmatic today, but all of those reactions to my work might have drowned in anonymity in a vast new arts space had not one area, namely *musique concrète*, been demarcated.

LL You sound like the knowledgeable Zen masters of whom Cage spoke, seeing the future without forcing it to happen. I am ever so envious. Let's go back a moment and return to this issue of whom you wanted to address with this music. On the one hand, there was that potentially massive radio public and, on the other, the rather modest art music public.

PS This is an important question and I indeed felt that through experimentation with sounds on the radio, something new could evolve. Ironically, the land of the greatest impact for radiophonic experimentation was that of our neighbour, Germany, the land of that elektronische Musik I so detested. They evolved the Hörspiel so magnificently, although I am not certain how big that audience ever became. Frankly, I am of the view that had I attempted to create a new public ex nihilo, I would have been doomed to fail, so the contemporary music public was the one I chose. You with your synthesis speak of something beyond art and pop music: this was not achievable in the early years. Again, time was needed for that musical evolution to take place.

LL And thank goodness it has. One last question, be it a difficult one. One of your last interviews before this one (with Tim Hogkinson in 1986) could have been named, *je regrette* in which you speak highly negatively of the past. You said in this interview: "There is no progress". Can you please explain this to us?

PS My daughter was playing pop music 24/7 and I felt that the music of sounds had failed and that the music of do-re-mi was to succeed inevitably. Now we have coexistence, so my life was by no means wasted as I confessed in that interview. Whether people will call it sound-based music or sound-based art will be clarified in the future. Sound-based whatever it is exists and is alive and well.

LL And it is you whom we all thank for that. Today, the music of sounds can make loads of connections, not least by way of *musique concrète* as you envisioned it. There is no question about that. Many thanks for this conversation, maître Schaeffer.

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Reassessment of Acoulogy for the Cultivation of Sound Practices

by Cédric Maridet

The extension of Schaeffer's concept of acoulogy to the whole sonorous domain proves to be a very valuable contemporary framework to explain the heterogeneity of listening intentions to map the stakes of the various practices of sound-based art today. Dealing with a common acousmatic situation, Stiegler (2009) asserts by his expression "the machinistic change of sensitivity",¹ that at a certain moment in history, technical and technological apparatus have destroyed certain practices rooted in the sensitive experiences of the world. With a developed concept of acoulogy Schaeffer's idea can prove to be essential to reconnect the experience of sound to the sensitivity of the listener. Through the use of technology, listeners can grow into amateurs, as they can develop appreciation of sound through a rediscovered practice of sound in the musical or extra-musical contexts. The cultivation of listening, as acoulogy promotes, is then essential for an attempt to rediscover a sensitive practice of sound in the midst of a technological mediation of experience.

Reassessment of Acoulogy for the Cultivation of Sound Practices

The mediated listening situation resulting from the invention of recording and broadcasting technology, did not only lead to the invention of new aesthetic such as concrete music and acousmatic music, but also opened up a whole new range of sound practices. Not only did the range of sound extend to non-musical sounds, but also the situation of sound practices changed drastically. Indeed, the experience of sound used to be closely linked to its practice through instrument playing for instance. This is what Bernard Stiegler (2009) asserts by his expression "the machinistic change of sensitivity",² that at a certain moment in history, technical and technological apparatus have destroyed certain practices rooted in the sensitive experiences of the world. Béla Bartók talked about the possible destruction of music because of the advent of radio and phonograph, as the experience of music no longer involved the knowledge and practice of reading the score, or instrument playing. In *Musica Practica*, Barthes (1977) also points out the different listening activities according to the knowledge of music theory. Facing such statements, I shall present a holistic perceptual account for listening by reasserting the importance of Pierre Schaeffer's notion of acoulogy, as it provides a framework that fosters a reconnection to a sensitive practice to sound through listening. With the concept of listening intention as the core concept, I aim first at reestablishing the fundamentals of the activity of listening that Schaeffer stated in order to develop the idea of the heterogeneity of listening intentions. Acoulogy can then prove to be essential in the development of knowledge acquired through a sensitive practice of sound that can convert listeners into amateurs.

Definition of Acoulogy

It is towards the end of the *Treatise* that Schaeffer sharpens his idea of acoulogy in relation to the different steps required for musical meaning to emerge.³ Later on, Michel

¹ My translation of "le tournant machinistique de la sensibilité" (Stiegler, 2009:115)

² My translation of "le tournant machinistique de la sensibilité" (Stiegler, 2009:115)

³ The *Treatise* is a short form that I will use along the essay to mention Schaeffer's *Treatise of Musical Objects*, 1966, Paris: Seuil.

Chion explains the neologism as being “the study of the potential in perceived sounds for producing distinctive characteristics which can be made into music“ (Chion, 1983:94, in Dack, 2007:7). Drawing on the parallel between the pair phonetics/phonology in language, Schaeffer defines the pair acoulogy/acoustics in musical language. As acoustics deal with the physical production of sounds, acoulogy would be the study of their functioning from the listener’s perspective.

Acoulogy also refers to different levels of articulation in relation to the listening as being located in the lower levels before the possibility of the emergence of meaning as Schaeffer stated: One should acknowledge the domain of music theory: the domain of acoulogy, which does not assimilate itself with neither the study of the physical object, nor with the pertinent features related to the conventional musical structures. (Schaeffer, 1966:502, my translation).⁴ This is also what Chion concludes on that notion when stating that acoulogy is “the study of the hypothetical logic of the material at the most elementary level; a logic which we assume to be potentially rich enough to dictate the laws of a structure without a code.“(Chion, 1983:96, Dack, North:105)

While Schaeffer intends his acoulogy to refer to sound object, Michel Chion (1993 and 2006) proposes several years later to enlarge the notion to all kinds of listening as Marc Battier underlines. Thus detached from the contingency of artistic production, acoulogy would come to enlighten ‘all our listening’ (Battier, 2007:198). Its object is now turned towards the acquisition of a particular knowledge regarding the listening activity. This enquiry opened to the whole sound repertoire requires to start “from the bottom“ as Chion puts it. Certain features in the sound should create a framework remaining at a low cognitive level first, prior to any attempt for meaning. This elementary level or what is sometimes referred to as the “raw object“ is the basis of all higher-level cognitive processing. The framework for acoulogy starts with the stipulation of a raw object as a basic pre-requisite along with a basic formal organization, linked to an idea of an aural Gestalt.

Starting from Weithermer’s study of a qualitative perceptual account of grouping and segregation explored through experimental conditions, a similar questioning is to be found in Bregman’s auditory scene analysis study (1990), in Schaeffer’s selection criteria for sound objects, Katz’s experiments (1950) and Tenney’s theoretical research on a phenomenological account of music (1964). To parallel Tenney’s investigation to Schaeffer’s *ouïr*, it is clear that for both approaches the concern is towards the reception of sound, and the perceptual outline of objects. Both Tenney and Schaeffer recognize that there is a qualitative listening intention, which manifests itself in the grouping of elements (units versus whole), bringing out a meaningful experience and allowing the distinction between the figure and the ground for example. However, it is important to clarify the fact

⁴ All translations of Schaeffer, as well as all other resources in French are mine, unless the name of translator is mentioned. I will therefore not mention each time that translations are mine for quotes of Schaeffer. On a discussion about the great difficulty to translate Pierre Schaeffer, refer to Dack’s article (2006). The translations of Michel Chion are by John Dack and Christine North each when it is mentioned.

that the whole is experienced as imposing itself to the perceiver. It is a passive reception; however, it is not unintentional. In that sense, we can say that the process is automatic.

Following Schaeffer's argument that an intention is to aim at something, there is an intention in every listening activity. An intention manifests itself in the act of identifying or isolating an object as a distinct form. I hear a "sound" as an object, segregated from a ground. Objectifications that listeners commonly perform are thus the fruit of intentions, even if we are not aware of them, as they usually seem to impose themselves on us. Michel Chion states that the perceived object is no longer the cause of my perception but its "correlate" (Chion, 1983:30). From this basic raw object, other intentions can be applied in order to articulate different ways to attend to sound. This raw object is never given and is usually bound up with higher cognitive process. These higher perceptual levels are the common basis for the different listening theories. The power of acoulogy is then to provide a meaningful framework that allows to deal with the different models through the concept of intentionality.

Heterogeneity of Listening Intentions

In ordinary listening, Schaeffer states that sound can be heard as an index (the origin of sound, its causality) or a symbol (its values according to a particular code resulting in a meaning). In ordinary listening, context and extra-sonorous knowledge might direct interpretations. Indeed I lay the ground here for other theories like acoustic ecology for instance, in this ordinary way to attend to sound. From this ordinary listening, an expert listening can be put forward in which the interaction between the environment and the listener is a focus. Sound events are thus found as a correlation of a particular attentive listening intention. The act of listening is here composed of various intentions with the intertwined natural and cultural aspect, and can become the focus of both soundscape studies and compositions. The idea of sound event is at the core of Murray Schafer's acoustic ecology (1977) and I can also call upon Steve Feld's acoustemology (1993).

In addition to ordinary listening and based upon the acousmatic situation, Schaeffer proposes a new expert listening based on particular abilities to move away from the normal listening circuit: the reduced listening. Through a particular attention, the sound should be attended for its own sake. Using this phenomenological method of the *Époché*, or of the bracketing of the world applied to listening, Schaeffer contributes to the liberation of certain potential of sound usually masked or hidden by ordinary listening. The idea of listening better to the sound is here put forward. The sound object, which is the perceptual unit found in reduced listening, results also from the immanence and transcendence of the raw object. From this discovery of the sound object, Schaeffer quickly turns towards a typo-morphology of musical sound object. It is interesting to note how post-Schaefferian model alternates between the idea of intrinsic and extrinsic qualities of sound. This can be found in acousmatic music for instance, where intentions oscillate along the axe of reduced listening and an idea of the environment, real or imagined.⁵ There is thus a play between the sound object and the sound event through

⁵ I can refer to the discussion of Wishart, Trevor and Emmerson, Simon (1996), Bayle (1993) as examples.

the shift of listening intentions, and the artwork may be found in the composition of the heterogeneous listening intentions.

Acoulogy can be confronted with several main theories in a coherent manner bringing out the heterogeneity of listening intentions and an idea of the potential development of an expert listening.⁶ The idea of heterogeneity of listening intention also proves to be extremely relevant for both listening and art making. For example, the act of recording can be considered as an act of composing, as recording can be composed by my own listening as developed by Hildegard Westerkamp for instance. More generally to compose a soundwork might be to direct the listening intentions towards the certain qualities of sound.

In the end, acoulogy defines the axis that can frame composed works and the listening practices in general such as the recognition or not of the source, contextualization or decontextualization of sound, the axis of found sound versus processed sounds, and the degree of fiction for instance. Each of these axes of composition can be treated in various ways, relayed and enhanced by clear choices on the compositional strategies to be adopted. For instance, to use a Fourier transform with the environmental sound as a way to compose a soundscape reveals a particular intention within the composed listening.

Acoulogy can be confronted with several main theories in a coherent manner by bringing out the concept of heterogeneity of listening intentions and an idea of the potential development of expert listening, in which the notion of knowledge becomes crucial. Following Adorno's thought, it is meaningful to differentiate listeners according to the nature and the expanse of their knowledge, and some might become amateurs.

The Listener as Amateur

From the many historical meanings of the term amateur, I will focus on its qualifying definition according to Jacqueline Lichtenstein's typology of the term.⁷ With the common pejorative meaning put aside, it becomes a positive evaluative term and the essential idea of care stands out from the Latin root "amore", the one who loves. An amateur of sound is thus a person who would devote a particular attention to sound without any necessary artistic practice involved, but as an aesthetic experiences, as a person who experience a particular sensitivity towards sound. What matters here is not a single object, but the common properties of all the objects constituting a class of objects, sound in this case. They constitute the founding elements of the subject-object relationship. Their appreciation is based on knowledge, in order to first distinguish and identify the particular qualities that are appreciable, and then to discriminate the objects into a hierarchical system. These operations are realised through the collection of the different experiences of the object that become the source of both knowledge and pleasure, and suppose a reflective attitude upon one's own experience. The subject-object relationship is a "composed activity supported by numerous heterogeneous elements" as Antoine

⁶ Referring to my PhD dissertation *Acoulogy as a Framework for Environmental Sound* (2009)

⁷ Lichtenstein, Jacqueline, during the series of seminars on "the figures of the amateur" organized by the IRI (Institute of Research and Innovation). "Introduction to the seminar: essay on the ontology of the amateur", Centre Pompidou, 22.01.08. Available: <http://web.iri.centrepompidou.fr/fonds/seminaires/seminaire/detail/1>, accessed January 2009.

Hennion (2005) underlines. In the end, the object itself and its effects are being discovered in a performative meaning. With its assessment of listening intentions, acoulogy is thus crucial in this process of discovery. Following Antoine Hennion's idea that the amateur is a "virtuoso of aesthetic, technical, mental and corporal experimentation", the amateur of sound constantly recreates, challenges and invents his or her relation to the world through various listening practices. Bernard Stiegler (2009) stresses the importance of this transformative aspect for the trans-individuation process: "by transforming myself, I transform the others and thus transform the environment in which I live with the other" (Stiegler, 2009: 111). To turn towards phenomenology helps to reconnect the experience of sound to the sensitivity of the listener. Through the use of technology, listeners can grow into amateurs, in the sense that they can develop appreciation of sound through a rediscovered practice of sound. This practice can equally correspond to a musical practice in the common sense of the term (instrument playing), but also simply to a listening practice.

As a conclusion, I would like to assert that according to me, the contemporaneity of Pierre Schaeffer's theory lies in this notion of acoulogy when it is extended to all kinds of sounds, as it promotes cultivation of sound through a theory of care. The phenomenological roots of the notion of the amateur prove to be highly relevant for this matter. Sound as being an object of desire is not longer consumed, and moreover, the listening activity clearly fosters the production of an ear as an important element for noetic organology. This long-term investment seems essential to me as an active answer to the destruction of attention voluntarily caused by the cultural industries. The cultivation of listening, as acoulogy promotes, is then essential for an attempt to rediscover a sensitive practice of sound in the midst of a technological mediation of experience.

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Lost & Found

by Hans Peter Kuhn

In a multimedia presentation containing the visuals of a dance work and of sound and light installations as well as their audio elements played back over four loudspeakers in the room corners, combined with a live lecture, the artist illustrated his method of working, specifying the reasons and necessities to use the found sounds rather than the ones produced in a synthetic manner or musical instruments in his works.

This lecture is going to have a rather personal approach. I am going to talk about my artistic practice while you can hear some of my works through the four loudspeakers in the corners of the room and see some images of my work displayed behind me. I am aware that some or maybe even most of the issues I going to touch upon, might be well-known to most of you, so please excuse me, but in order to explain myself I need to mention these.

Before I start I have to make some definitions. Knowing that most of you are experts in the field, I assume that it is common sense, that the German language has three different words for the English word "sound". These distinctions in German make it a lot easier to talk about the issues, so please allow a little excursion into German. The three words are *Ton*, *Klang*, *Geräusch*. A *Ton* is a single sine wave, not available in nature, only possible through sound generators. Unfortunately, the word is also used to describe the specific quality of a sound. *Klang* is a multilayered *Ton*, a basic wave with harmonics. Again, unfortunately the word *Klang* is also used in qualifying an aural event and as in the word *Klangkunst* in a much broader sense as sound in general. *Geräusch* is a sound with an irregular waveform. One could translate it with noise, but then another problem appears, since noise also has at least two different meanings, one is *Geräusch*, OK - but then there is also the German equivalent *Rauschen* as in "white noise". I hope I successfully managed to eliminate the final bits of clarity with these explanations. So I shall be using sound, but I am going to use its German equivalent connected to it if you would allow me. Where it is necessary to make the distinction, I am going to say *Geräusch* sound or *Klang* sound. Thanks.

I have often been asked about what makes me work with *Klang* sound in general and with *Geräusch* sound - found sounds - specifically? Why do I compose music, sound installations, radio plays or other events of time and space using found sounds rather than musical instruments or electronically generated sounds. The answer is twofold, simple and complex at the same time.

Let me start with the first question which is also simpler:
I like to hear.

The sensation of hearing always has been and is still a fascinating experience for me. The simple fact to hear all the diversity of sounds that we are confronted with in our every-day-life is very exciting. From the squeaks of a train in a curve to the bass drum of

a thunder storm, the aural world is at least as colourful, dynamic, surprising and exciting as anything visual. Our ability of spatial hearing, the precision with which we can locate and experience a sound source in space, recognize its movement in space - where it goes and how fast it moves - just by hearing, and with closed eyes. And this works not only if we are concentrated on listening, like at a concert, no: at all time and under all circumstances. We can distinguish the size and character of a space only by hearing. Be it a large cathedral style space or a tiny chamber, a space with hard surfaces - like a bathroom - or with very soft surfaces like a lounge with carpets, sofas and curtains. The dynamics of what we can perceive from the softest whisper to the powerful explosion at the limits of our capacities is of the extraordinary range of 1:10 million. Realizing these abilities, makes me humble and energized at once. Humble at the recognition of nature's grand design and energized through the expectation to play and work with these features and properties.

Hearing is very direct, it hits the emotions unfiltered, it triggers our unconsciousness much more direct by than seeing does. Maybe that happens, because hearing is together with balance the first sense the embryo develops and thus our first experience of the world outside of ourselves. The voice of another person can give us a chill or pleasure. A small melody, the sound of a squeaking door in an apartment we lived in for years, stays stuck somewhere hidden in the brain. And once we hear it again, a whole bunch of memories pops up that seemed long forgotten and everything gets very emotional. Hearing is certainly comparable to smelling with its deep emotional connection.

On the other hand, it is quite difficult to memorize what we have heard, the voice of a person that died, some childhood sounds that disappeared. Sounds disappear somewhere deep in the memory until they get heard again and trigger the above mentioned reaction. But then again we can remember sounds in the - let us say - an abstract sense. When we are reading a text, our mind is making the words we can hear out of what we read. Every letter has a sound that is triggered in our inner ear, and we make sense of a text by "listening" to ourselves quietly and internally speaking. You can prove this yourself quite easily. If you are a Westerner, please take a Chinese or Japanese text and read it to us. You cannot make sense out of the signs or words since you cannot even produce the sound they represent, because you have not learned the equivalent sounds, and thus cannot remember them.

To memorize a sound is one thing, but to reproduce or explain it is another. To describe a sound is pretty impossible. While we can make a drawing of a tree with our finger in the sand that everybody will easily recognize as a tree, our ability to reproduce the sound of the wind in the leaves is only very limited, to describe a sound is even more difficult and the margins are narrow. Of course, each language has the words that are connected to the sound of an event, but they are so imprecise that the information is almost zero. However, we can still record sounds on tape or today, of course, rather on a flash card and get a relatively good documentation, only it usually misses some parameters, specifically if the sound is somehow spatially diverse.

Maybe all of this makes sounds a bit mysterious. Sounds are difficult to grasp, not easy to explain or describe and are emotionally challenging. On the other hand, the sounds that come from our voices show our emotional state very direct by and show our internal condition wide open to the public. These direct influences of the sound on our being is another exciting issue when working with sounds. So far the more simple reasons why I use the sound at all.

Now, let me come to the second and more complex question:

Why do I use found sounds?

Sounds are unpredictable.

The Austrian philosopher Heinz von Foerster speaks of non-trivial machines or events when he describes the elements of our world.¹ They are non-trivial because it is not possible to say that they will function in the future the same way as they did in the past. That is certainly true for man-made instruments, but also for natural entities or events, otherwise the evolution would not have been possible. As a result of this non-triviality, we experience unpredictability. One cannot anticipate or predict, what will happen next. And of course sound is exactly that: non-trivial. If we look at the microstructure of a sound, like through a magnifying glass at the waveform, we see that these waveforms are changing all the time. This is true for every sound, except for the synthetically generated *Ton* sound.

Musical instruments are of course built to be recognizable and therefore have a recognizable waveform and their very specific attack and release characteristics. One can generate any sound with a synthesizer to be also different at any moment in time, but this can only be done by programming the machine to make the sound complex. The programmer has to programme the unpredictability. Otherwise it would play a single permanently repeating *Ton* sound. Sounds - *Geräusche* - do not follow this scheme. Every sound - *Geräusch* - is unique. Sure, if you slam the door of this room a thousand times, you will recognize the same sound too, but the waveforms of each slam will still look different. And of course, unlike a musical instrument, a door is not made to play with it in this way and indeed is not very often used as a musical instrument, but unfortunately as Vilem Flusser puts it: the door is there to allow you to leave your house and to publish and to inform yourself of the agora and to keep the police outside.²

This feature of *Geräusche* sounds - never repeating the exact same pattern - is something that I really love. We can create all kinds of noise: loud, soft, ugly, beautiful, but we cannot determine their appearance. Yes, we can recognize their origin, but still each single event is unique. That is a wonderful part of nature. With most *Geräusche* sounds that we willingly or unwillingly create, we cannot or only within can limitations the control their level, duration, pitch, attack and release, it is given by the object that is generating the sound. The only thing we probably can control is the trigger. But once it is triggered, it goes its own way. It simply happens. Every little moment of the sound is unique and not repeatable, no move is predictable, one step from situation to situation and when

¹ von Foerster, Heinz (2002)

² Flusser, Vilem (1999) (pp.160-163)

the last situation is completed, the *Klang* is complete. It is a permanent process with no static moment in it.

For me it is extremely pleasant to play with this kind of natural processes, to catch them with the help of complex technology, manipulate them a little bit, like editing, time-stretching or squeezing and transposing. This eliminates or suppresses the origin of the *Geräusch* sound. Deliberating it from its semantic meaning, its narrative disappears and it becomes abstract. Having lost its direct original meaning, it becomes a pure *Geräusch* sound, but unlike a pure *Ton* sound it still has a complex structure. In the composition of the sounds I also involve random processes for the decision when to play a sound and from which source to add another nature-like behaviour. So in the end, the *Geräusche* sounds always keep their unpredictable character in sound as in time and space. This allows me to create something highly artificial, but with a rather natural appearance and what is finally performed sounds not so much like some kind of electronic music, but rather like a strange natural event.

In my installations I do not work only with sound, I also use lights and in some rare cases objects. But lights are certainly the most important media that I connect with my sound compositions. It happened in the beginning that I wanted to make people aware of my sounds that came through hidden or unattractive loudspeakers and were not very loud. So I tried to get their visual attention as a bridge to get their aural attention as well. But by working with light I myself got attracted to the medium as well. I am sure this is not only due to the fact that I spent so many years working in theatre, where light plays a major role.

The similar physical properties of the specifically electric light and specifically electro acoustic sound appeared to be a good base for a combination of the two. I know that from a the physical point of view my explanation is not totally correct, but one can say, that both media are distributed in waves, whose various frequency displays are perceived in both cases as different colours. They have similar dynamic behavior as we know from the way lights are very often used in clubs or at pop concerts. But the most important concurrence lies in the fact that they both disappear when the plug is pulled from the socket. Both electric lights and electroacoustic sounds are temporary, ephemeral event carriers without the claim of eternal existence.

These mostly site-specific installations of mine are not only composed of lights and sounds that are put on, they also include the architecture and spacial relations and the climate of the site. Still, they are not a simple collection of the diverse media at an unusual place, but rather a multi-layered self-contained work that allows a different view of the site by lifting it to another level of multi-sensory perception.

I told you now why I use sound and light and I guess I should say a few words about the way I use them. In most of my works the lights are static - like a stage set. They can be large or small, colourful or only white, the light sources can differ, neon or halogen spots, their common feature is that they are static. The reasons for that are actually very simple.

Firstly, I believe that we already have too many flickering lights around us, I do not need to add more. Secondly, and more importantly I want to set the stage for my sounds. By keeping the lights static, people have a chance to rest their eyes and relax and - if they like - to open their ears and hear. My sounds, on the other hand, are quite active, moving around in space, until now I have used the systems with up to 64 sound sources and 64 loudspeakers to distribute the sound in space. But to avoid misunderstandings, this is by no means to be compared to the concepts like wavefront synthesis. My concept is very down-to-earth, one speaker has one channel of audio and each speaker has a separate position in space. Sounds can travel from one speaker to another or each sound is distinguishably different from any other. In many pieces the flow of the sounds is interrupted by the pauses of silence. The sounds themselves are, as I have described before, recorded sounds that I alter a bit, but due to the distribution of the sounds they become unrecognizable and abstract.

From my experience, in many of my installations I have the impression that this combination of static lights and quite vivid - but not necessarily loud - moving sounds with pauses of silences has a strange effect on the audience. It seems like it calms people down. On several occasions people would come and stay for three or more hours. Some lay down and meditate others actually fall asleep. To say it immediately: no problem for me, it tells me that they are feeling well. Then again, others come back after some time. It is strange to me, because the tempo of my moving sounds for example is very often quite high, so it is not totally relaxing. But I do have a theory why this is so. I think it has to do with the different tempi, the different time-experiences that people get confronted with. There is the static light, I call this Tempo 0, no movement. Then there are quite fast movements of the sounds. These sounds are interrupted by silences and the time pattern of sound and silence has a much slower tempo than the speed of the sound movements. So there are three different tempi happening in parallel, and then there is the tempo that a person feels. So you end up with four different tempi simultaneously. Maybe that is the reason. I do not know.

Now if these installations - as most of my works - existed only for a relatively short time, the disadvantage is of course that not so many people would experience them. On the other hand, they are not supposed to be worn out and torn. This is true for both technical damage as well as for the fact of accustoming. And works with a lot of technology involved do both easily, they break or get old and cannot be replaced anymore due to technical development or people get used to them and do not take care anymore. I myself find it very often that if an artist uses state-of-the-art equipment, it easily gets banal due to the speed of technological development which makes it look "out-of-time" before it gets old.

Being out there for only a relative by short time, keeps these works actually longer alive, since they stay in the memory of those people who experienced them. And there they always stay as fresh as they were on the first day. Like James Dean, they never get old. Anyhow - despite all technical complexity, this no-museum-approach allows more freedom regarding the future. A work does not have to exist for a hundred years.

To document these kind of works is merely impossible. Whatever you get, be it a well-done photograph, or a carefully mastered sound recording or a high resolution video, it only shows an excerpt from a complex situation. All the information that the space itself adds to the piece, the real size, its temperature and humidity, its own sound and its smell, in one word, its "weather" cannot be transported in any of the mentioned media. But this "weather" influences our subconsciousness and is an important part in the perception of a work of this kind, since it is connected to the space.

It is a bit like in a performance, it is possible to photograph or video a performance, but the energy between the performer and audience, the excitement can only be transferred rudimentary. So maybe these installations are - although without a human performer - something in between are performance an exhibition, alive and static at the same time. And they are gone or maybe "lost" again, once they are dismantled.

So in the end, the title for my little lecture should have been rather "Found and Lost", but I thought that would sound too negative. And I did want you to come. I hope you can forgive me and that I did not disappoint you too much. Thank you for coming and for your attention.

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Process Vol 2
<Punkt und Linie Berlin>, 2003
Author: Junko Wada
Music: Hans Peter Kuhn
Type: Dance and Performances
Venue: Berlin
Photo: www.kassnerfoto.de

A Light and Sound Transit, 2009

Author: Hans Peter Kuhn
Type: Light and Sound Installation
Venue: Neville Street, Leeds (UK)
Photo: Hans Peter Kuhn



The Pier, 1996

Author: Hans Peter Kuhn
Type: Light and Sound Installation
Venue: Pier 32, New York, N.Y.
Photo: www.kassnerfoto.de



A Vertical Lightfield, 2009

Author: Hans Peter Kuhn
Type: Light and Sound Installation
Venue: Orchard Central, Singapore
Photo: Hans Peter Kuhn



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The Concreteness of Abstraction Reading Schaeffer in his Context and Beyond

by Tatjana Böhme-Mehner

Presenting selections from the author's research project on the relationship of *musique concrète* and its social context, the paper proposes an interpretation of Pierre Schaeffer's art and media theory as one of the pioneer approaches of communication theory, understanding art (here music) as communication. Fruitful branches of the approach will be discussed by analysing two examples of music, one by the composer-researcher Schaeffer himself and one from the beginning of the twenty-first century. Thus, we begin by showing the Schaefferian cosmos as an important result of its time and also as interlinked with theoretical approaches up to the present day, and in the other arts and beyond. The existing interpretations will be critically discussed, focusing especially on their approach to concreteness and abstraction.

A little more than seven years ago, during the examination of my doctorate in musicology, I was asked what the analogies of Pierre Schaeffer's concrete music approach in other arts were. Even now I hesitate to give the answer I was expected to – the concept of *objets trouvés*. And indeed I am not much inclined the suggestion of using concrete poetry as a kind of analogy to make *musique concrète* more understandable to the so-called ordinary concert listeners, to classical musicologists, to anybody not familiar with electroacoustic language in general and to everybody committed to the traditional forms of music presentation. Of course, the major part of cultural historians would agree with that because of the social and general aesthetic – thus, somehow ideological – context bearing those arts and the first access the arts take to their material, they were of course absolutely comparable. Taking a closer look at the possible analogies, however, we notice that these comparisons are always lopsided – not only because of the temporal difference of the appearance of the artistic approaches, but also because of the form of access to the material and accordingly their access to the sphere of communication, to the formation of a (somehow artistic) expression.

While Marcel Duchamps' *Fountain*¹ as an example from the visual arts deals with a kind of concrete concreteness and thus keeps the pre-existing social sense as a central part of the artwork, as the name "ready-made"² expresses much better, Reinhard Döhl's poem "Apfel" (The Apple)³ – aims to dissolve the referential character of language from reality, reintroducing it afterwards at another artificial level – in some ways concretizing

¹ Marcel Duchamp (1887–1968), *Fountain*, 1917: Duchamp took a commonplace urinal, the type everybody can find in a sanitary fittings store, signed it and exhibited it in an artistic context, and thus made it an artwork just by these actions. Today it is regarded as a central *oeuvre* of modern art. Although the original was destroyed, it was reproduced all over the world. Its non-exhibition in New York in 1917 has engaged one of the major debates on the character of the artwork during the twentieth century.

² "Ready-made" is another term sometimes used in art theory for that kind of work and focuses much more than the term *objet trouvé* on the artistic use of the detected object, thus, on the formation of an expression.

³ Reinhard Döhl (1934–2004), *Apfel*, 1965: The poem is today seen as one of the central works of concrete (visual) poetry. The word *Apfel* is innumerable copied, and the copies form the silhouette of an apple. Later, in 1971, Döhl further developed his work by producing "Apfel mit Wurm" (Apple with Worm), introducing at one point the word *Wurm* in the already known apple.

the abstract. And finally what about those very well-known railway sounds?⁴ What does their appearance have in common with the fruit and the bowl? What about concreteness and abstraction in *concrete music*?

It is not only the fleetingness of sound in general which has inspired lots of discussions and theories ascribing music a kind of exceptional position among the other arts, but also its character as a performance art. Even Walther Wiora (1983), featuring Roman Ingarden's phenomenological approach (Ingarden, 1962) and William E. Webster (Webster, 1974) ask in a quite provocative way: Where is the musical artwork (really) if it is performed at the same moment in several places around the world?

The point that – independently from the Benjaminian crux (Benjamin, 1963) of technical reproduction – the idea of the one and only original has always been a paradox is a central problem of music theory; because every reception of the musical artwork demands a new sort of concretization of the abstract. And we have to outline, at this point, that this concretization of the abstract (text) by performance does not depend for its existence on the form of storage of this text. We know today about the differences between the performances of even a single acousmatic work. The way of concretization may differ between the interpreted notes and diffused sounds from a tape – but not the general procedure of forming for the very moment.

Thus, nevertheless, in its reception music – because of its temporality or fleetingness – cannot be anything other than concrete. It is played and listened to in a here and now, which will not ever be the same afterwards. Thus, paradoxical as it is, every reaction to the sound artwork as a whole, as having a form, a dramaturgy and so on, demands a kind of abstraction of the concrete. Going back to the question of what was concreteness in concrete music, that would say: We could presume that concrete music gained its concreteness from the loss of the first intermediation mentioned, that between the abstract (notation) and the concrete (sound). Still, it can only be received by listening to a (somehow released) performance. In every sort of soundbased music – the term is used in the broad sense according to Leigh Landy's paradigm (Landy, 2007) – we can rediscover the named intermediation on another level.

As we probably all feel, recording and storing sound also means a kind of abstraction, demanding later the concretization by a per-form-ance, which, as the name implies, forms an expression just for this very moment. It would not be necessary to consider also the fact that even the earliest works of concrete music already employ the manipulation of the recorded sounds to notice finally that already the dissolving of the sound from its context and visual representation – in some ways from its origin – has to mean an abstraction. Maybe the *Étude aux chemins de fer* is not the ideal example for this abstractness – primarily because of its reception and by that of a certain symbolic significance. We will come back to this phenomenon later.

⁴ At this point of the talk an extract from Pierre Schaeffer, *Étude aux chemins de fer*, (1948) was played.

This paradox of the coexistence of abstraction and concreteness – which led the reception of the Schaefferian theory as well as of the master's music into a lot of misunderstandings or extreme reactions and interpretations – is an important step for our reading of the Schaefferian theory as a communication theory, in some parts a very modern one (see also Böhme-Mehner, 2006). Of course, as we know quite well today, the notion of concrete music – also a sign of its time – initially had a provocative character, criticizing the tendencies in contemporary music of that era.⁵ But as it is often the case in music and cultural history, artistic or theoretic provocation especially says a lot about the general socio-aesthetic situation. Just the mentioned ambivalence of its object – the sound – makes the Schaefferian theoretical approach not only unique, but also interesting for other arts and cultural studies. Reading Schaeffer carefully is not only surprising and new each time because of the richness of aspects and ideas, but primarily because of his pioneering spirit when compared with others. Of course, as we – I think – all know, hitherto there have been many theorists thinking ahead and developing the Schaefferian concept as, for example, the *Portraits polychromes* (Ina-GRM, 2008) dedicated to the master show in the manner of a rich overview.

Nevertheless – as proven by the study of some other scholars comparable to Schaeffer in their productivity or their scientific claims, from Hugo Riemann (see, for example, Böhme-Mehner and Mehner, 2001) to Heinrich Schenker (see, for example, Beach, 1983) or to George Spencer Brown (see, for example, Baecker, 1993) and so on – it can always be fruitful to re-read the author himself from another historical perspective.

Nevertheless the Schaefferian approach – understanding here the master's complete works as a kind of universal theory – of course is quite a sign of its times. And it is on this point, where it appears in some parts to be surprising, that until today no serious study has really observed parallels between the ideas of Schaeffer and Werner Meyer-Eppler.⁶ Within the limits of a talk like this we, too, are not able to remedy this.

Nevertheless, we point out that the approach Meyer-Eppler proposes to music theory and culture comes from a different but comparable context to Schaeffer's. Meyer-Eppler too was led by a research interest as well as by a creative one (even if he never published productions as artworks, he had a strong aesthetic consciousness), setting out to do applied as well as basic research and with a kind of pretension to find the universal principles of sound and related communication. Perhaps it is because of the different structure of culture and the unequal aesthetic traditions behind the developing arts that the one results in the Schaefferian cosmos well-known to us, with concrete

⁵ "Lorsqu'en 1948 j'ai proposé le terme de 'musique concrète', j'entendais, par cet adjectif, marquer une inversion dans le sens du travail musical. Au lieu de noter des idées musicales par le symbole du solfège, et de confier leur réalisation concrète à des instruments connus, il s'agissait de recueillir le *concret sonore*, d'où qu'il vienne, et *d'en abstraire les valeurs musicales sonores* qu'il contenait en puissance" (Schaeffer, 1966, 23).

⁶ Werner Meyer-Eppler (1913–1960) can be – in some ways more than anybody else (see Ungeheuer, 1992) – seen as the inventor of German "electronic music", as "the" precursor or father of the "Colonian school". Commencing his sound research as a kind of communication research at the phonological institute at the University of Bonn, Meyer-Eppler intended to do a kind of basic research, but from the very beginning he was interested in the application of his concepts in music.

music as an aesthetic product within it, and the other in a kind of utopia implying that the result of using electronics in music could somehow create an “authentic music“ (*authentische Musik*) (used first in Meyer-Eppler, 1949). “Authentic music“ here implies the ideal type of a music transmitting nothing but the spirit of the creating genius, thus not being manipulated by the understanding or misunderstanding of the interpreters. Perhaps that could be understood as the other way round in matters of the transmission from the concrete to the abstract and back. Nevertheless, in some ways it is not very surprising, even if music historiography often neglects the fact, that Meyer-Eppler, the so called “inventor of electronic music“, already years before his death – he died in 1960 – had lost the interest in the production of electronic music and his influence on its development had waned. Since the foundation of the WDR-Studio, in West Germany creation and research have developed separately.

Nevertheless, observing these approaches, we may find some analogies in the impulses leading to them. What is important for the re-reading of the Schaefferian theory is to take into account his background, with all the facets of his creative work for different media, and especially to see him as a “polytechnicien“. Of particular importance is Schaeffer’s experience and research in radio, which was compared to the standard of his time very intensively reflecting questions in matters of what we call today the media impact studies. At this point the CDs released by the GRM with the *Portraits polychromes* demonstrating “Les paroles d’homme“ (Ina-GRM, 2008), especially at the moment of the liberation of Paris, is a fantastic bonanza for further research.

What appears regrettable, from an international point of view, is the fact that this approach has not really been registered by the communication and media theory beyond the French speaking world. Consequently the very impressive contraposition Schaeffer takes to the MacLuhan galaxy has never been discussed as such. Here the concept and pretension of a kind of universal theory with its special neutrality could have had a certain chance to develop profound positions. It is true that there may be points – and not only from a modern perspective – that are a bit blurred or diffuse; but this can be seen as a certain feature of universal theories, based on their specific pretension to balance the concrete and the abstract as the general.

As Pierre Schaeffer takes Lalande’s philosophical understanding of the “abstract“ and the “concrete“ (Lalande, 1962) as a base of his concept, the two discussed forms of representation appear for him as “deux isotopes du réel“ – to some extent as two representations of the same thing, defining this thing by the unity of their difference. The parallels to George Spencer-Brown’s (1969) idea of a two-sided form, published three years after Schaeffer’s *Traité* (1966), is obvious. Perhaps – being also a sign of the times and the base of most of the following difference theories – the development of that kind of model follows a general social impulse, filling some kinds of gaps in theory in different fields of culture and believing in almost mathematical correctness and validity. What appears as interesting, too – compared with other approaches, especially those mentioned – is the fact that Schaeffer’s theory obviously accepts the independence of the participants in every audio communication process. Compared with the development

of social and especially communication theory, this also appears in some aspects to be revolutionary or at least modern. Centralizing the sound and the listening means, on the other side, also leaving behind concepts or ideas which centralize certain individuals, subjects transmitting a message in an auditory way, understood as the one and only message. The action of listening is a renewable one and consists of a four-step process, as it is ideally represented in the tableau given by Michel Chion (Chion, 1995: 26). Each of these steps demands another kind of selectivity proceeding with the background of this two-sided form. But just the ability to proceed like this makes it possible to deal with – to understand, finally – sound being dissolved from its somehow “natural” origin.

We shall now return, on another level, to the question posed at the beginning of this talk: Why do people have the impression of needing analogies at all? Even a kind of quick and spontaneous answer can bring us into the very centre of the Schaefferian cosmos: “The necessity to organise our lives, to position ourselves in a complex world“. In its central parts one can understand the Schaefferian idea of typo-morphology, (Chion, 1995, 113)⁷ which, like every method or action dealing with categories or typologies is based on the concept of finding analogies consciously or unconsciously, as a kind of explanation or theory cultivating some kind of indigenous impulse or necessity to organize and describe a most disperse and complex world – not only on an aural level. Listening thus appears to be a kind of pre-social action in some respects being a precondition of the social. By using this as a kind of assumption also applying to the arts – and thus, in the case of music from the twentieth century onwards, also with the forms beyond the traditional concerto and so on – we have the possibility to find a kind of the lowest common denominator and thus to go ahead by communication.

Let us close with a very brief look at two sound art examples – more to illustrate and to evoke further questions than to demonstrate a somehow closed analysis based on our re-reading. For this I would like to outline that for me it is a kind of premise that art is communication made to provoke somehow another communication. First a kind of paradox: As you may remember, I declared that the extract from the *Étude aux chemins de fer* was not the best example to demonstrate the balancing between the concrete and the abstract, thus, between the four forms of listening. Why? The answer is very simple for anyone who has ever tried to make students (born say after 1980) analyze this work.

⁷ 58. Typo-morphology:

1) Typo-morphology is the initial phase of the programme of musical research which groups together as complementary the two procedures of typology and morphology: these indeed constitute a stage of exploring, listing and describing sound; whereas the two procedures of analysis and synthesis involve the analysis and implementation of the *musical* capacities of the sound object. Thus, typo-morphology is a *descriptive inventory which precedes musical activity*.

2) The three tasks of typo-morphology are therefore: *identification, classification, description*.

· identifying sound objects, i.e. isolating them, cutting them up into sound units

· then, classifying them into rough characteristic types

· finally, describing their characteristics in detail.

Typology takes care of the first two; morphology, of the third.

Naturally, our approach is through *reduced listening*, so that in theory, to identify, classify and describe objects we make no reference to their cause, their origin, what they evoke... etc. (Chion, 1995, 113 – English translation by John Dack and Christine North, 2009)

The concrete is only concrete relative to a context. And thus, it is not surprising that the prominent steam engine from the *Étude* has better chances to become the *tertium comparationis* for other railway sounds in music themselves. The more this kind of railway sound develops a kind of artistic life of its own, the more it develops a new typological or even typo-morphological character defining the limits of art and non-art. With the loss of steam engines in the real world, however, people have lost the real world association. The relation between the concrete and the abstract has to be balanced anew.

For example, the listener at a sound installation such as Matthias von Hintzenstern's *U-Bahn-Linie 1* (Underground Number One) has, consciously or unconsciously, this reception in mind.⁸ While looking at this example of a sound installation being part of a kind of exhibition in the "underworld" of the small German town of Gera (population approximately 130,000), we find a very significant case of something one could call a typo-morphological behaviour. Artist Matthias von Hintzenstern in his *U-Bahn-Linie 1* deals with the megalomania of a provincial town. Gera does not have an underground railway and will never have one, but in the year after the installation it hosted the *Bundesgartenschau* (National Gardens Exhibition), and thus felt a bit ascendant. Nevertheless, this underground goes to the existing places often contrasted by an unreal soundscape. To understand it, it is necessary to balance the concrete and the abstract.

As is always the case with the reception of sound installations, it is impossible to predict at which moment the listener enters and leaves the room and how long he or she participates in the sound ritual. Thus, every sound can function as initial to the reception process and thus guide the further reception. This is the point where an intense typo-morphological orientation may be helpful for the analysis, also because we have to be sure that the special reception is dominated by it. Thus, even now there are lots of situations – especially within forms of musical presentation beyond the traditional form of the concert – where it is quite fruitful, in order to develop finally analysis relevant to research, to use concepts based on the Schaefferian typo-morphology: at least, because it is just guided by a continuous balancing between concretization of the abstract and abstraction of the concrete.

⁸ At this point of the talk were presented some extracts from: Matthias von Hintzenstern (1953), *U-Bahn-Linie 1* (Subway Number One) – Sound installation, Gera, Höhler-Biennale, 2006.

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Acousmatic Voice and Singing Body

by Jelena Novak

Taken for granted, the singing body of opera appears as a blind spot, as invisible within visible and inaudible within audible. I dissect the singing body as an object of what Slavoj Žižek calls “the naïve ideological consciousness”, congregation of rules, protocols, effects, strategies that are embedded in reality in which they intervene. That dissection pulls out the singing body from the invisible/inaudible status, and shows how the singing body acts within the world of opera, which interventions it makes, and how it constitutes opera’s meanings. Theorizing the voice, Mladen Dolar arrives at the concept of acousmatic voice, the concept that refers to Pierre Schaeffer’s notion of acousmatic sound, and that has later been developed by Michel Chion. The quote –There is no voice without a body - shows, according to Dolar, that the relation is full of pitfalls: “it seems that the voice pertains to the wrong body, or doesn’t fit the body at all, or disjoins the body from which it emanates”. Paying particular attention to dissociation between the body and the voice I shall bring the concept of acousmatic voice into opera studies. I shall observe it in parallel to the theory of vocalic body by Steve Connor, and shall use a theoretical object postopera *One* by the Dutch composer Michel van der Aa.

Opera is usually intended to be viewed performed, but there is something about its ‘live’ quality that provokes the analytical interest. The singing body performs a role. That role, however, appears as though ‘deaf’ to the music in which it is drowned, and which remains unaware of its singing:

In opera, the characters pacing the stage often suffer from deafness; they do not *hear* the music that is the ambient fluid of their music-drowned world. This is one of the genre’s most fundamental illusions: we see before us something whose fantastic aspect is obvious, since the scenes we witness pass to music. At the same time, however, opera stages the recognizably human situations, and these possess an inherent ‘realism’ that demands special and complex understanding of the music we hear. We must generally assume, in short, that this music is not produced by or within the stage-world, but emanates from other loci as the secret commentaries for our ears alone, and that characters are generally unaware that they are singing.¹

Opera makes division between the ‘live’ quality of the singing body and its awareness of ‘being’ sung. The voice comes from the ‘real’ live body, but that live singer, unlike a ventriloquist, does not exist in the symbolical order of the spectacle’s represented fiction. In ventriloquism one has a ventriloquist and a dummy. In opera, these two functions – the emitter of the voice and the transmitter of the voice – are explicitly divided, while coinciding in the same singing body. The singing body is *of* opera and *in* opera at the same time. Although this division needs to be discussed in light of how the body is involved in the meanings produced on the operatic stage, the singing body mostly stays shadowed by the voice, ‘pretending’ it’s not there.

¹ Carolyn Abbate, *Unsung Voices Opera and Musical Narrative in the 19th Century*, Princeton, New Jersey, Princeton University Press, 1991, p. 119.

Unlike the relationship between music and text, and despite discursive potentiality of the link between the body singing and sung voice, this link was mostly taken for granted both in the opera theory and performing practice. The singing body was an object for analysis and theorization of opera primarily in the context of obtaining the vocal technique. Even the figure of the castrato singer, with its obvious 'fleshy' intervention upon the body for the sake of the singing voice, involved gender theorizations in the operatic body-voice relation only in recent texts.² Within the last quarter of the 20th century, the electronic and digital media and technologies significantly influenced opera in two ways. Firstly digital reproduction made operatic recordings an increasingly constitutive part of the opera world. That opened the possibilities for reconsideration of the need for opera to be witnessed and brought a change in its spectatorship. The problematizing³ of a 'live' quality became incorporated into the concept of some operas. For example, when Philip Glass' opera *La Belle et la Bête* (1994) is performed live, a silenced film is being live synchronized with singers and musicians performing on stage. With a DVD of this opera previously live audio synchronization is captured on recording. The impossibility to synchronize the singing voice with the gestures of the speaking body of the film constantly deconstructs the film, but only as an opera's constitutive part. Therefore the DVD could be considered to be even the only necessary media for this piece. Secondly the impact of the new media on operatic texts, redefining both materiality and methodology of their languages, is significant and it has made the body-voice relation in opera increasingly problematic.⁴ The leading contemporary opera directors have come to opera from other fields, such as film (Peter Greenaway, Hal Hartley), architecture and visual arts (Robert Wilson), video (Beryl Korot), and theatre (Peter Sellars). For the first time in opera they share an equal authority with the composer, import representational procedures and technology that hitherto had not been common to the opera. All these changes have significantly increased an awareness of the role of singing body in the construction of meaning on the operatic stage.

Theorizing Voice

Michelle Duncan gives a brief summary of how the concepts of body and voice are treated in opera studies:

While the fields outside of musicology have begun to take a keen interest in the materiality and audibility of voice, opera studies have given the idea scant attention, as though the voice were only a minor feature of the art form. Despite the central role of the singer's body in the production of opera and the production of voice, opera studies persists in thinking of

² For example: Joke Dame, "Unveiled Voices: Sexual Difference and the Castrato" in: Philip Brett, Elisabeth Wood, Gary C. Thomas (eds.), *Queering the Pitch, The New Guy and Lesbian Musicology*, 2nd edition, New York, Routledge, 2006, 139-154; Naomi André, *Voicing Gender: Castrati, Travesti and the Second Woman in Early- Nineteenth-Century Italian Opera*, Bloomington, Indiana University Press, 2006. Thomas A. King, "The Castrato's Castration", *The Gendering of Men, 1600-1750, Queer Articulations*, Madison, The University of Wisconsin Press, 2008, 344-400.

³ Under the term 'problematize' I consider questioning, deconstructing, stretching the borders, considering status and function.

⁴ Under the notion of 'text' I understand "A group of entities used as signs, which are selected, arranged, and intended by an author in a certain context to convey a specific meaning to an audience." Jorge J.E. Gracia, *Texts, Ontological Status, Identity, Author, Audience* (Albany, State University of NY Press, 1996), p.9.

voice as extra-corporeal. (...) As for the body of the singer, opera studies have tended to ignore it altogether unless it possesses currency as the object of desire or of a fetish. And when this happens, both the body and voice of the singer become secondary to the affect or erotic desire of the spectator.⁵

Aside from both the opera practice and theory, there has been a growing interest in theorizing voice during the past decade or more. There is a growing number of attempts to theorize the voice in its materiality and its performative aspects. At the same time, theorizations of the body are also multiplying. However, the intersection of these two fields is not often considered in critical theory in general, and even more rarely in the context of theorizing opera.⁶ I see the potentiality of opera studies benefitting from the developments in critical theory, and especially in the critical theories relating to the voice and body.

One

My theoretical interest in the gap between the body and the voice in opera was stimulated in 2003 when I attended a performance of Michel van der Aa's opera *One* (2002) with only one singer on stage. Soprano Barbara Hannigan looking identical to her life-size two dimensional video, 'competing' with the projected image and her own pre-recorded voice throughout the piece. Despite the mimetic relation between the performing body and its video double, the live and projected image were always clearly distinguishable. However, in this sphere of sound/music it was sometimes impossible to detect what was live singing and what was the prerecorded sound on stage. Impossibility of clearly distinguishing the prerecorded and live voice blurs the relation between the two, but also between the voice and the body. The 'surplus' of the voice appears – extremely virtuous singing, a kind of vocal 'alloy' consisted of the live and prerecorded components. Such vocal result 'outgrows' the live performing body. A specific perception of the singing body is provoked, the one that Connor designates as vocalic body: "(...) a surrogate or secondary body, a projection of a new way of having or being a body, formed and sustained out of the autonomous operations of the voice".⁷

One induces the split between the body and the voice, and I use the ways Connor perceives disembodied voice in ventriloquism as one of the models for understanding opera. "When animated by the ventriloquist's voice, the dummy, like the cartoon character given voice, appears to have much wider range of gestures, facial expressions, and tonalities than it does when it is silent. The same is true of any object given a voice; the doll, the glove

⁵ Michelle Duncan, "The Operatic Scandal of the Singing Body: Voice, Presence, Performativity", *Cambridge Opera Journal* 16, 3, 2004, 283-306, p. 285.

⁶ Some of the texts that deal with the body-voice relation in opera are: "The Operatic Scandal of the Singing Body: Voice, Presence, Performativity" by Michelle Duncan, *Cambridge Opera Journal* 16, 3, 2004, 283-306; Peter Brooks, "Body and Voice in Melodrama and Opera" in: Marry Ann Smart (ed.), *Siren Songs, Representation of Gender and Sexuality in Opera*, Princeton and Oxford, Princeton University Press, 2000, p. 118-135. There is a study on this subject by Joke Dame, *Het zingend lichaam, betekenissen van de stem in westerse vocale muziek*, Kok Agora, 1994, available only in Dutch.

⁷ Steven Connor, *Dumbstruck, A Cultural History of Ventriloquism*, Oxford, New York, Oxford University Press, 2000, p.35.

puppet, the sock draped over the hand (...),⁸ and the opera character, I would add. The fact that the opera character, normally originating from the spoken world, is given singing voice is a specific feature of opera that maintains the body-voice split. That split is always two-folded, and its actors are both represented and 'real' operatic bodies, as Linda and Michael Hutcheon designate the difference between operatic bodies.⁹

One insists on two types of gap at once: the gap between the singing body and its voice, and the gap between the live performer and its projected double. The singer's body produces a voice on stage, but the singing body is also produced by the voice in the virtuous overlapping of the projected and live performed sounds and images. The individual, expressive, self-reflexive body performs, while at the same time it is performed by the voice: Hannigan's live singing is partly doubled by her prerecorded voice and the presence of the singing body that those two voices of the same person together evoke goes beyond singer's physical body. The principle of the vocalic body works like a kind of vocal mirror: the voice is projected (like the image on the mirror) but that voice affects the identity and the presence of the body that produced it. I listen to Hannigan's voices, but the extreme virtuosity of vocal result reinvents the identity of the singer's body that stands behind those voices, and I start to wonder whom actually I am listening to, and whose voice that is. With the help of technology, the singing appears more virtuous and more expressive than those possibilities allowed by the physical body. The voice is constantly embodied and disembodied, like a kind of prosthesis that extends body, but also goes beyond it. If Connor's statement that "articulate beings share their lives with a surrogate self, a sonorous twin who lives on the tip of the tongue"¹⁰ is true, then Hannigan in *One* would be a faithful embodiment of the surrogate-self-sonorous-twin concept.

One made me very interested in the mutual agency between the body and the voice in opera. It invited me for a reading of singing body that presents a decoding of opera's status and function. However, *One* also redefines the operatic world by revealing and transfiguring the discourses encoded in the singing body, resonating with the contemporary critical theories and becoming the place through which society reflects upon itself.¹¹

⁸ Steven Connor, *Dumbstruck, A Cultural History of Ventriloquism*, Oxford, New York, Oxford University Press, 2000, p.36.

⁹ Linda Hutcheon and Michael Hutcheon, *Bodily Charm: Living Opera*, Lincoln and London, University of Nebraska Press, 2000.

¹⁰ Steven Connor, *Vox Pox*, Bookforum, April/May 2006, p.30.

¹¹ I use the term 'opera world' in analogy with the term 'artworld' as introduced by Arthur Danto. According to Danto's Institutional theory of art, the term 'artworld' designates institutional framework that gives legitimacy to the work of art. That framework includes art theory, the art market, educational system, artists, works of art, art collectors, art professionals, directors of artistic institutions, audience, etc. (see: Arthur C. Danto, *The Transfiguration of the Commonplace: a Philosophy of Art* (Harvard, Harvard University Press, 1983), p.5). In analogy with the term art world, the term opera world that I use designates the institutional framework that gives legitimacy to the work of opera, and it includes the theory of opera, opera houses, opera administration, educational system for musicians, dancers, librettists, directors, theorists, audience, production networks, score publishers industry of opera recordings, etc.

Richard Leppert designates the connection between the music and the body throughout Western history as “highly problematic and contradictory, the product of deep socio-cultural anxieties and antagonisms”.¹² He points to a contradiction that in his opinion makes the music-body connection troublesome, emphasizing the role of human sight in it: “(...) the slippage between the physical activity to produce musical sound and the abstract nature of what is produced creates a semiotic contradiction that is ultimately “resolved” to a significant degree via the agency of human sight”.¹³

Leppert insists on a corporeal dimension of music: “Music despite its phenomenological sonic ethereality is an embodied practice, like dance and theater. That its visual – performative aspect is no less central to its meanings than are the visual components of those other performing arts is obvious in musical theater – opera, masque, and so forth (though this linkage is little discussed in musicological literature) – but the connection between sight and sound in other sorts of art music remains untheorized”.¹⁴ I agree that the corporeal aspect of music is no less central to its meaning than the sound, and I argue for it. However, I wonder how obvious music as an theatre embodied practice in musical theatre, since the lack of theoretical interest in the singing body of opera rather confirms that the singing body was mainly considered as a passive mediator than an active material agent in the process of producing meaning. I believe that the theory of vocalic body and theory of acousmatic voice could bring light to this question when ‘imported’ to opera studies.

The Paradox of Ventriloquism and the Vocalic Body

“My voice comes and goes. For you, it comes from me. For me, it goes out from me. Between this coming from and going towards lie all the problems and astonishments of the dissociated voice”.

Steven Connor¹⁵

I found one of the basic theoretical impulses for this study in ventriloquism – in the “practice of making voices appear to issue from elsewhere than their source”.¹⁶ It might seem that the vocal manipulation of ventriloquist doesn’t have much in common with the operatic voice. According to Connor “(...) The disturbing effect of ventriloquism may derive from its transcendence or disruption of seen space”.¹⁷ However, the effect of the ecstatic operatic voice to me was precisely the one that disrupts the seen space containing the mortified body of a singer. “The ventriloquial voice asks in particular to be understood in terms of the relations between vision and hearing, relation which it

¹² Richard Leppert, *The Site of Sound, Music, Representation, and the History of the Body*, University of California Press, Berkeley, Los Angeles, London, 1993. p. xx.

¹³ *Ibid.*, p. xxi.

¹⁴ *Ibid.*, p. xxi.

¹⁵ Steven Connor, *Dumbstruck*, p. 3.

¹⁶ *Ibid.*, p.13-14.

¹⁷ *Ibid.*, p. 15.

itself helps to disclose“, writes Connor.¹⁸ I believe that the same principle stands for the operatic voice, too.

In connection to the issues of the real, body and voice, Slavoj Žižek raised the problem of belonging and elaborated it by proposing a mechanism similar to the one that Connor later develops as the vocalic body: “The voice acquires a spectral autonomy, it never quite belongs to body we see, so that even when we see a living person talking, there is always some degree of ventriloquism at work: it is as if the speaker’s own voice hollows him out and in a sense speaks “by itself“, through him“.¹⁹

In both ventriloquism and opera we know where the voice comes from, but most often are implicitly asked to agree that we don’t. In both cases, hiding the origin of the voice takes place. The act of ventriloquist is usually based on the procedure of borrowing a human voice to dummy or a puppet. In conventional operas, there is a similar procedure: we know where the voice comes from, and still it seems like the singer lends the voice to his/her own body. The concept of vocalic body proposed by Connor initiates an interrogation of the understanding of the body-voice relations. As is usually understood, the body produces the voice. The concept of a vocalic body emphasizes that the other way round is not only possible, but happens all the time. This concept underlines the reversibility of the mutual influences between the body and the voice: “The principle of the vocalic body is simple. Voices are produced by bodies, but can also themselves produce bodies. The vocalic body is the idea (...) of a surrogate or secondary body, a projection of a new way of having or being a body, formed and sustained out of the autonomous operations of the voice. (...) The leading characteristic of the vocalic body is to be a body in invention, an impossible, imaginary body in the course of being found and formed“.²⁰

Ventriloquism and Acousmatic Voice

Acousmatic voice is “a voice in search of an origin, in search of a body“,²¹ the voice for one can’t see what is causing it. The term acousmatic was first introduced by Pierre Schaeffer, and later used by composer and theorist Michel Chion. Underlining that Chion “compares the disacousmatization to striptease“,²² Dolar comes to the important conclusion that “there is no such thing as disacousmatization“²³ because “the source of the voice can never be seen, it stems from an undisclosed and structurally concealed interior, it cannot possibly match that we can see“.²⁴

¹⁸ Ibid., p. 14.

¹⁹ Slavoj Žižek, “I Hear You with My Eyes“ in: Renata Salecl and Slavoj Žižek, *Gaze and Voice as Love Objects*, Durham and London, Duke University Press, 1996, p. 92.

²⁰ Steven Connor, “Violence, Ventriloquism and the Vocalic Body“ in: ed. Patrick Campbell and Adrian Kear, *Psychoanalysis and Performance*, London and New York, Routledge, 2001, p. 80.

²¹ Mladen Dolar, *A Voice and Nothing More*, Cambridge, Massachusetts, London, England, MIT Press, 2006, p. 60.

²² Mladen Dolar, op.cit., p. 68.

²³ Mladen Dolar, op.cit., p. 70.

²⁴ Mladen Dolar, op.cit., p. 70.

The situation created by Aa in *One* produces an unusual 'visible' acousmetre.²⁵ Besides that, the opera is based on reinventing asymmetry between the singing body and the sung voice. Writing on the implications of the voice in film, Chion uses the term acousmatic specified as 'is said of a sound that is heard without its cause or source being seen'.²⁶ Chion also claims that '(...) it turns out that the mute, *the body without a voice*, displays many attributes of his counterpart, *the voice without body*, the acousmatic voice, the voice of one we do not see.'²⁷ Although the process of synchronisation is stressed in for example, Philip Glass' opera *La Belle et la Bête*, especially with loose synchronisation, the position of the voice insists on 'becoming acousmatic'. In this case, when considering the Cocteau film characters, acousmatic voice becomes paradoxally, to paraphrase Chion, 'the voice of one we do not hear'.

In the case of *One*, the voice appears as embodied and disembodied at the same time. Division of both the singing body and the sung voice between the live and reproduced media makes the vocalic body of *One* rather complex. Due to technology, the voice appears beyond the body that produces it. The virtuosity of the voice, enabled by mimetic procedures of the recorded voice, reconfigures the ontology of the singing body. The projected voice enhances the instrumentality of the body while intruding its identity at the same time. But that enhancement does not dissolve the 'natural' connection between the body and the voice, it only upgrades it. In other words, all the vocal sounds we hear in *One* do not suggest a posthuman body, only the extension of the human in the form of prosthesis. The body-voice relation implying multitude, virtuosity, extension, and mobility brings to life a new type of opera. Chion's theory of acousmatic voice in that context shows how estrangement of the voice that appears to come from elsewhere than its source produces meaning and questions opera's ability to use other media and their mechanisms of representation.

²⁵ According to Chion, acousmetre is the one that produces acousmatic sound, the sound whose origin is unknown.

²⁶ Michel Chion, *The Voice in Cinema*, New York, Columbia University Press, 1999, p. 18.

²⁷ Chion, op. cit., p. 97.

Pierre Schaeffer Today.

Preliminary Steps toward a Renaissance of the Schaefferian Approach to Music

by Martin Laliberté

This paper, in celebration of Pierre Schaeffer's hundredth birthday, examines the difficulties hindering a complete diffusion of the ideas of this French electro-acoustic music inventor and theorist. In particular, Schaeffer's tabular and graphical thinking are analysed and critiqued in order to pave the way for a renewed understanding of his theory. In the second and third parts of the paper, the work still to be done and a few musical cases are discussed.

Introduction

One hundred years after the birth of Pierre Schaeffer, one can study in great detail the impact the thinker and musician has had on contemporary music. Paradoxically, however, his influence is still limited to the conceptual and esthetical fields. Indeed, for most people outside of France and probably Great Britain, Schaeffer's theories — not his practices — belong to the 'prehistory' of technological music. Schaeffer seems to have become a closed case. A closer look at the current situation has brought me to another more personal proposal today — three generations after 1948, after many years of composing electro-acoustic music, and after studying and teaching his ideas. The relative standardisation of digital sound techniques since 2000, the plain normality of electronic sound since 1970 and the increase of acousmatic or partly acousmatic situations — all these have, in my opinion, prepared a new cycle of impact in Schaeffer's approach.

Nonetheless, several important steps are still necessary before this impact can reach its peak. This paper analyses the current difficulties and problems that must be solved for a complete international understanding of Schaeffer and begins a study of the current musical situation in this light. This is undertaken in three parts: the first concentrates on the barriers to an expanded diffusion of Schaeffer's proposals; the second points out the key areas of work remaining to be accomplished to fulfil this end; and the last illustrates briefly the influence of Schaefferian sensitivity in several music styles.

I. Barriers and complexities

If one studies in detail the reasons for the limited impact of Pierre Schaeffer's ideas on the musical world outside of France, several important barriers can be ascertained:

1. The French language and cultural references in his writings and, until recently, the lack of a complete translation in English of the major works;¹
2. Schaeffer's particular use of vocabulary with its philosophical and technological positioning, as well as his partial refusal to use visuals;
3. The compression of Schaeffer's truly multidimensional thinking into 2D graphics;

¹ As will be discussed below, a good translation is currently being prepared. In the meantime, no attempt has been made here to translate the Schaefferian vocabulary. The original French is retained in *italics*.

4. The paradoxical impact of intervening evolution in sound technology;²
5. More simply and disturbingly, 'lazy habits' and a too linear view of history.³

The present section addresses these central problems in detail.

I.1. Vocabulary and Visual Difficulties

I.1.1. Vocabulary Problems

Not taking into account for the moment important philosophical matters or cultural background questions, there are problematic words in Schaeffer's writings, even for French speakers. Some Schaefferian terms have lost the technological war. Words like *projecteurs*,⁴ *profils*, *noeuds*, *frange* are now more widely understood as 'speakers', 'envelopes' or 'noise-bands', 'white noise', and so on. Here, Schaeffer pays the price of having worked very early, well before the synthesizer standardisation of the 1960s and 1970s. Those words can be easily 'updated', as there is little sense to fight such well-established use. Once given the 'Rosetta' stone, most musicians and students understand quickly. However, many electro-acousticians retain Schaeffer's vocabulary, for it has its own specific and poetic quality to it, once understood. This presents no problem.

Other significant words need some explanation to be really grasped: *concret*, *écoute réduite*, *epokhe*, *facture*, *poids* or even *instrument*. These call for rigorous pedagogy and proper translation of Schaeffer's writings. They require quite an effort, but Simon Emerson, John Dack, Marc Battier and others have already taken many important steps to reduce this barrier. Thirdly, other words are really the original Schaeffer and contribute much to a detailed discourse, in the opinion of several (Castanet 1995: 170-249). These special words need full discussion: *masse*, *allure*, *grain*, *son cannelé*, *site* and others. Since they are quite original, adding useful nuances to the usual English electro-acoustic vocabulary, these terms should be put forward. However, this vocabulary aspect may not be the worst type of problem.

I.1.2. The Visualisation Problem

Indeed, in our inescapable visual and digital world, the complex relationship of Schaeffer with images and graphics causes many difficulties that must be addressed and resolved independently.

The causes of Schaeffer's graphical choices reside at two principal levels:

1. A technological limitation in the 1950s and 1960s. At the time, there was very little to see in the poor quality analogue sonographs or bathygrams, and such. Musical notation also had clearly revealed its limitations for describing

² Digital music, with its loss of analogue continuity and physical interfaces, can sometimes be seen as a 'false improvement'. Debates on 'too-clear hi-fi' vs. 'poetical lo-fi' come to mind. I wonder if Schaeffer would have found so many resemblances between apparently different sounds if he had heard them in a high fidelity environment.

³ We note a frequent misunderstanding of the word *concrète*, even among good researchers (Dack and North 2006: 10) or, even worse, clichés along the lines of 'those disturbing French people don't do things like everyone else'.

⁴ All the vocabulary discussed is taken from Schaeffer 1966 and Chion 1982.

the “real-world complex sounds” rather than the “simplified notes”. Schaeffer was very aware of this as early as the 1940s (1952).⁵

2. Even more strongly, there was a militant position by Schaeffer and his colleagues towards better listening to sound and a great disinclination, iconoclastic perhaps, to images and ‘false’ visual understanding of the sonic phenomenon.⁶ He was also very dissatisfied with oversimplifications made by acousticians and physicists of sound (cf. the Moles Schaeffer debates, 1952 vs. 1966). This led perhaps to a confusing rejection of a 3D representation of the three main analytical dimensions of sound.

To study these difficulties in detail, let us turn to a few interesting and problematic cases.

False Simplicity

Schaeffer is often deceptively simple. If we consider the seven steps progressing from the sine tone to white noise Schaeffer proposes for his category *masse*, this seems quite logical (ex. 1):

1. Son pur
2. Tonique
3. Groupe tonique
4. Cannelé
5. Groupe nodal
6. Nœud (son nodal)
7. Frange
- 8.

Ex. 1 Seven genres of *masse*

However, it is often presented in another way, revealing other symmetries (ex. 2):

1. <i>Son pur</i>	7. <i>Frange</i>
2. <i>Tonique</i>	6. <i>Nœud</i>
3. <i>Groupe tonique</i>	5. <i>Groupe nodal</i>
4. <i>Cannelé</i>	

Ex. 2 A ‘U’ shaped symmetry

⁵ Note that his first impulse was to put together an ace-team of music notators to try to put complex sounds in traditional notes. In fact, Schaeffer had a rather paradoxical neo-classical bend, see Laliberté (2003a and 2011b).

⁶ I had several most interesting discussions on this subject with the ‘veteran’ electro-acoustic composer Beatriz Ferreyra. She often asks students to simply turn off the computer screen for a time.

This double symmetry creates a curious bending of the extremes, the sine tone and noise being interestingly related. Also note the similarity of the *son tonique* and *noeud*, being almost interchangeable in the typo-morphology discussed below. This is key for an enlargement of musical sounds, as we shall see. The ‘U’ shaped presentation used in ex. 2 also gives a dynamic movement to the categories. We shall see another most interesting case below. The figure also brings to our attention to the unfamiliarity of such words as *groupe tonique* rather than the common ‘chord’, *noeud* rather than ‘noise band’, *frange* rather than ‘white noise’. In this case, quite convincingly, Schaeffer attempts to enlarge our conception of musical notes into a much broader and general sound object, at times partly or completely inharmonic or noisy. For instance, the complex sonic mixture of noises and recognisable pitches that is a *son cannelé* cannot be simply described by the usual vocabulary. A new word was necessary. In this case and several others, Schaeffer’s poetic sense found interesting solutions.⁷ Also note that he refrains from the acoustical vocabulary for good reasons. A *masse tonique* is a sound object having a pitched quality and some richness but perceived as a whole, not as a decomposable fundamental with harmonics. The global musical perception is chosen instead of the quantitative analytic paradigm. Many of Schaeffer’s choices depend on similar argumentation (1966).

We see that we can already understand much in such a small example. Let us consider a more complex one.

The Tableau récapitulatif de la typologie

The much-studied *Tartyp* is an apparent by simple table (ex. 3):

		Durée démesurée (macro-objects)		Durée mesurée (Unité temporelle)			Durée démesurée (macro-objects)	
		Facture imprévisible	Facture nulle	Durée réduite (macro-objects)			Facture nulle	Facture imprévisible
				Enchantillos	Homogène continu	Tenue formée		
masse fixe	Hauteur définie	(En)	Hn	N	N'	N''	Zn	(An)
	Hauteur complexe	(Ex)	Hx	X	X'	X''	Zx	(Ax)
masse peu variable		(Ey)	Tx Tn	Y	Y'	Y''	Zy	(Ay)
Variation de masse imprévisible		E (Echantillon) cas général	T (Trame) cas général	W (grosse note)	F (fragment)	K (cellule)	P (pédale) Cas général	A (accumulation) Cas général
-----				Sons tenus		Micro-sons	Sons Itératifs-----	

Ex. 3 Tableau récapitulatif de la typologie

In fact, this table hides a more complex organisation. It appears to have two dimensions, but is that really the case (ex. 4)?

⁷ It must be remembered that Schaeffer considered literature his main art.

		Durée démesurée (macro-objects)		Durée mesurée Unité temporelle			Durée démesurée (macro-objects)	
		Facture imprévisible	Facture nulle	Durée réduite (macro-objects)			Facture nulle	Facture imprévisible
		Enchantillos	Homogène continu	Tenue formée	Impulsion	Itération formée	Homogène itéatif	Accumulations
masse fixe	Hauteur définie Hauteur complexe	(En)	Hn	N	N'	N''	Zn	(An)
		(Ex)	Hx	X	X'	X''	Zx	(Ax)
masse peu variable		(Ey)	Tx Tn	Y	Y'	Y''	Zy	(Ay)
Variation de masse imprévisible		E (Echantillon) cas général	T (Trame) cas général	W (grosse note)	F (fragment)	K (cellule)	P (pédale) Cas général	A (accumulation) Cas général
-----				Sons tenus	Micro-sons	Sons itératifs-----		-----

Ex. 4 Two main axes?

The simplest reading uses indeed two dimensions. The vertical axis is a variation of the *masse* (spectral complexity): a pure sine tone goes to the top, a complex and ever moving noise to the bottom. The horizontal axis is a variation of time.

However, this is already slightly misleading. Actually, time is divided into two halves rather than going from left to right. This depends on the *factures*: time has its shortest value in the centre of the table (*impulsions*) and becomes longer towards the edges. The *facture* goes on both sides of the table from a short *durée réduite (formée)* to a slightly too long *facture nulle* to a much too long *facture imprévisible*.⁸ The left side is for homogeneous sounds, such as continuous singing, the right is for 'grainy' or iterative sounds, such as a drum roll. This makes three dimensions: *masse* complexity, duration and *facture*.

The second organisation is also perceptible. This table contains a clear centre: the *objets équilibrés* (ex. 5):

⁸ The 'overly long' quality refers to the attention span of the ear. According to Schaeffer (1966), a sound lasting 'too long' disinterests the musical ear. Note the normative judgement implicit here. More on this paradoxical aspect below.

		Durée démesurée (macro-objects)		Durée mesurée Unité temporelle			Durée démesurée (macro-objects)	
		Facture imprévisible	Facture nulle	Durée réduite (macro-objects)			Facture nulle	Facture imprévisible
		Enchantillos	Homogène continu	Tenue formée	Impulsion	Itération formée	Homogène itératif	Accumulations
masse fixe	Hauteur définie Hauteur complexe	(En)	Hn	N	N'	N''	Zn	(An)
		(Ex)	Hx	X	X'	X''	Zx	(Ax)
masse peu variable		(Ey)	Tx Tn	Y	Y'	Y''	Zy	(Ay)
Variation de masse imprévisible		E (Echantillon) cas général	T (Trame) cas général	W (grosse note)	F (fragment)	K (cellule)	P (pédale) Cas général	A (accumulation) Cas général
-----		-----	----- Sons tenus	Micro-sons	Sons Itératifs-----			-----

Ex. 5 A table with a centre

And the centre impulses are the centre of the centre. However the table also contains a middle level: the *objets homogènes* (long held or iterative sound objects), particular *trames* (textures) and pedals (ex. 6):

		Durée démesurée (macro-objects)		Durée mesurée Unité temporelle			Durée démesurée (macro-objects)	
		Facture imprévisible	Facture nulle	Durée réduite (macro-objects)			Facture nulle	Facture imprévisible
		Enchantillos	Homogène continu	Tenue formée	Impulsion	Itération formée	Homogène itératif	Accumulations
masse fixe	Hauteur définie Hauteur complexe	(En)	Hn	N	N'	N''	Zn	(An)
		(Ex)	Hx	X	X'	X''	Zx	(Ax)
masse peu variable		(Ey)	Tx Tn	Y	Y'	Y''	Zy	(Ay)
Variation de masse imprévisible		E (Echantillon) cas général	T (Trame) cas général	W (grosse note)	F (fragment)	K (cellule)	P (pédale) Cas général	A (accumulation) Cas général
-----		-----	----- Sons tenus	Micro-sons	Sons Itératifs-----			-----

Ex. 6 Middle levels

Finally, it also has the extremes: the *objets excentriques* and the general cases (ex. 7):

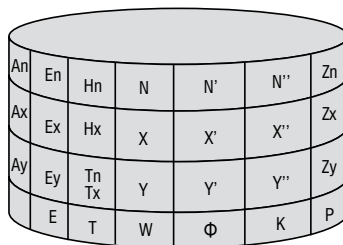
		Durée démesurée (macro-objets)		Durée mesurée Unité temporelle			Durée démesurée (macro-objets)	
		Facture imprévisible	Facture nulle	Durée réduite (macro-objets)			Facture nulle	Facture imprévisible
				Tenue formée	Impulsion	Itération formée		
		Enchantillos	Homogène continu				Homogène itératif	Accumulations
masse fixe	Hauteur définie Hauteur complexe	(En)	Hn	N	N'	N''	Zn	(An)
		(Ex)	Hx	X	X'	X''	Zx	(Ax)
masse peu variable		(Ey)	Tx Tn	Y	Y'	Y''	Zy	(Ay)
Variation de masse imprévisible		E (Echantillon) cas général	T (Trame) cas général	W (grosse note)	F (fragment)	K (cellule)	P (pédale) Cas général	A (accumulation) Cas général
		-----	-----	----- Sons tenus	Micro-sons	Sons Itératifs-----		

Ex. 7 Extremes

This second organisation gives another dimension or even two (extreme sides and extreme low). Is this table in four dimensions or more?

N-dimensions

As shown, the *Tartyp* is really a multidimensional and dynamic analysis compressed into a 2D shape. In fact, it is even slightly more complex. If we listen to Schaeffer's commentaries (1967), there is a merging of the extremes *Echantillons* and *Accumulations*. The compressed 2D becomes a complex shape, a kind of cylinder within timbre-space (ex. 8).



Ex. 8 A cylinder in timbre-space?

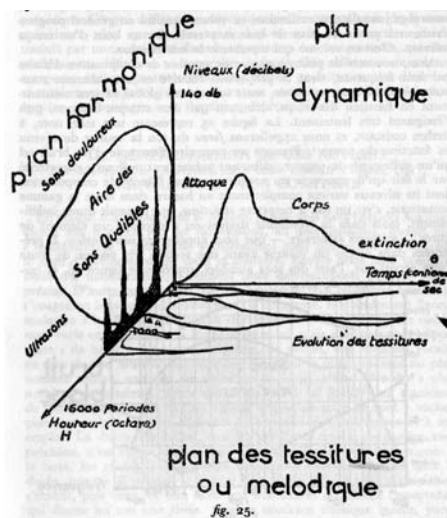
Why such a compression, so taxing to the reader? The communication technologies of 1966, mostly in the paper form, and Schaeffer's thinking of the time excluded such topological complexities of n-dimensional shapes as being "useless amusing physics" (1966:416).⁹ But time has passed and n-dimensional topologies are used daily in the

⁹ I will discuss another possible reason, paradoxical conservatism, below.

general community and studied in high schools. The complex topologies are becoming more and more familiar. Logically, the multi-dimensional representations of Schaeffer's ideas are emerging: cf. Adrea Valle's proposal of 2007. I am also working on a different type of presentation of the typo-morphology. It will be published in the next few months.

A Semi-hidden 3D Sensitivity

It is well-known that Schaeffer was tempted at first to use the science of his time to analyse sound objects, as can be read in the joint chapter by Moles and Schaeffer in Schaeffer (1952). In that chapter, a 3D diagram is most revealing (ex. 9):



Ex. 9 The three dimensions of sound

This key representation unites the sound analyses in a single view. In a significant way, note that instead of the common acoustic axes 'frequency', 'time' and 'level', here we find *hauteur* (pitch), 'time' and 'level'. That is the result of Schaeffer's desire to base his analysis on the perceptive musical qualities rather than on the acoustic ones. Also note that in this version, the level is in decibels: the refusal of acoustics is not yet complete. After a time, however, the tools and methods of acoustics left Schaeffer quite dissatisfied. The Moles Schaeffer controversy led him to abandon this 3D representation (1966: 415-416):

"Quant à cette représentation à trois dimensions de l'objet physique, elle n'a guère qu'un intérêt de curiosité. Passé la satisfaction de voir ainsi l'accord parfait, ou le coup de

gong, sous forme de sculpture abstraite, on ne peut que regretter ce coûteux passe-temps. L'auteur, qui s'y attarda naguère [...], ne saurait trop conseiller au lecteur de fuir cette physique amusante qui ne peut servir en rien la musique. Revenons à la cabine de prise de son : quelles sont les manipulations qui se présentent à notre portée ?¹⁰

And yet, this paradigm, *le trièdre de référence*, permeates all of the ulterior approaches in a semi-conscious way, further complicating the situation by not being clearly integrated, in my opinion.

Dynamic Processes

As we have seen in example 2, Schaeffer's thinking is dynamic, even in the temporal sense. Let us look at this familiar table, the four steps of listening (ex. 10):

Je vous ai ouï malgré moi, bien que je n'ai pas écouté à la porte, mais je n'ai pas compris ce que j'ai entendu

<p>4. Comprendre</p> <ul style="list-style-type: none"> - pour moi : signes - devant moi : valeurs (sens-langage) <p>Emergence d'un contenu du son et référence, confrontation à des notions extra-sonores</p>	<p>1. Ecouter</p> <ul style="list-style-type: none"> - pour moi : indices - devant moi : événements extérieurs (agent-instrument) <p>Emission du son</p>	<p>1 et 4 : objectif</p>
<p>3. Entendre</p> <ul style="list-style-type: none"> - pour moi : perceptions qualifiées - Devant moi : objet sonore qualifié <p>Sélection de certains aspects du son</p>	<p>2. Ouïr</p> <ul style="list-style-type: none"> - pour moi : perceptions brutes, esquisses de l'objet - Devant moi : objet sonore brut - Réception du son 	
<p>3 et 4 : abstrait 1 et 2 : concret</p>		

Ex. 10 The four steps of listening

The apparent 2D grid is really a cycle in time, as can be gathered by the numbers and the memorisation sentence, as well as from the discussion in Schaeffer (1966). Once again there is a dynamic movement included in the diagrams. This inclusion of time and cycles in a flat page of paper is quite striking: the more we go into the detail of Schaeffer's ideas, the more complexity is revealed. Let us now sketch another study in complexity.

¹⁰ "Regarding this representation in three dimensions of the physical object, it has mostly a curiosity interest. The satisfaction of thus seeing the perfect chord or the gong strike as an abstract sculpture is passed; one can only regret this costly pastime. The author who lingered over it a time ago [...] can only counsel the reader to flee this amusing physics that cannot serve music in any way. Let us go back to the sound booth. What manipulations are available?" (my translation).

Complex Morphologies

If we look at his next important diagram, the morphological summary, we find another multi-dimensional analysis compacted in an apparent 2D. At first, it may appear straightforward: the seven *critères de perception* meet the nine analytical categories (3 *qualifications* and 6 *espèces*):

7 critères de perception musicale :

1. Masse (généralisation de la hauteur)
2. Dynamique (amplitude perçue)
3. Timbre "harmonique" (enveloppe spectrale)
4. "Profil" mélodique (enveloppe)
5. Profil de masse (évolution de la masse)
6. Grain (texture du son)
7. Allure (vibrato généralisé)

9 catégories

Qualification :

1. Type
2. Classe (morphologie musicale)
3. Genre (caractérologie musicale)

Espèces :

1. Site tessiture (hauteurs)
2. Calibre et écarts (hauteur)
3. Site poids (intensité)
4. Calibre relief (intensité)
5. Impact (durée)
6. Module (durée)


Ex. 11 Seven criteria by nine categories

This generates a very dense 7 * 9 table, plus the arrows and interdependent sectors (ex. 12a and b):

		1	2	3
		Qualification		
	Critères	Types	Classes	Genres
		Rappel typo-morphologique	Morphologie musicale	caractérologie musicale
1	Masse	Tonique type N Complexe X Variable Y Quelconque W, K T	1. Son pur 2. Tonique 3. Groupe tonique 4. Cannelé 5. Groupe nodal 6. Nœud (son nodal) 7. Frange (bruit blanc)	Textures caractéristiques de masses
2	Dynamique	Nulle: homogène H Itérative X Faible: trame n, x, t Formée: note N, X N'', X'' Impulsion: N', X' Cyclique: Zk Réitérée: E Accumulée: A	Anamorphoses: Profils Chocs V Résonants Decrescend o > Delta <> Creux >< Mordant ^-- Amorphe: Profil plat	Attaques (timbre dynamique): 1 abrupte 2 raide 3 molle 4 plate (pseudo-mordant) 5 douce 6 appui 7 nulle
3	Timbre harmonique	Soit: timbre global Soit: masses secondaires M1, M2, M3, ... Timbre des masses Th1, th2 th3, ...	(lié aux masses) Nul 1-7 Tonique 2 Complexe 6 Continu 3-4 Cannelé 4-5	Caractère du corps sonore Creux-plein Rond-pointu Cuivré-mat

4	5	6	7	8	9									
		Intensité		Durée Des variations d'émergence										
Site tessiture	Calibre écart	Site poids	Calibre relief	Impact	Module									
7 8ves * 12 = 84 degrés Harmonique ou Couleur Registres -1 surgrave 0 très grave 1 grave 2 mezzo grave 3 diapason 4 mezzo aigu 5 aigu 6 très aigu 7 sur-aigu	Harmonique: Intervalle Couleur: Epaisseur	Poids d'une masse Homogène 1 <i>ppp</i> 2 <i>pp</i> 3 <i>p</i> 4 <i>mf</i> 5 <i>f</i> 6 <i>ff</i> 7 <i>fff</i>	Profil de la texture de masse		(seuil de reconnaissance des masses pour les sons brefs)									
		Poids d'une masse profilée en fonction de son module : 1 <i>ppp</i> 2 <i>pp</i> 3 <i>p</i> 4 <i>mf</i> 5 <i>f</i> 6 <i>ff</i> 7 <i>fff</i>	Module du profil Faible Moyen fort	Variation du profil Modéré Lent Vif <table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>7</td> <td>8</td> <td>9</td> </tr> </table>	1	2	3	4	5	6	7	8	9	Sons brefs Sons mesurés Sons longs
1	2	3												
4	5	6												
7	8	9												
Couleur Sombre Claire	Ampleur Étroit Ample <table border="1"> <tr> <td>1</td> <td>2</td> </tr> <tr> <td>3</td> <td>4</td> </tr> </table>	1	2	3	4	Richesse Timbre pauvre Timbre riche		Variation : d'ampleur, de couleur de richesse no 1 à 9	(seuil de reconnaissance des timbres pour les sons brefs)					
1	2													
3	4													

Ex. 12a Morphologies (the 1st part)

		1	2	3																
			Qualification																	
	Critères	Types Rappel typo-morphologique	Classes Morphologie musicale	Genres caractérologie musicale																
4	Profil Mélo-dique (variations)	<table border="1"> <thead> <tr> <th></th> <th>parcours</th> <th>profil</th> <th>anam.</th> </tr> </thead> <tbody> <tr> <td>fluc.</td> <td>N, X</td> <td>N, X</td> <td>N', X'</td> </tr> <tr> <td>évol.</td> <td>Y, T</td> <td>Y, W</td> <td>Y'</td> </tr> <tr> <td>modul</td> <td>G, P</td> <td>G, M</td> <td>K</td> </tr> </tbody> </table>		parcours	profil	anam.	fluc.	N, X	N, X	N', X'	évol.	Y, T	Y, W	Y'	modul	G, P	G, M	K		Caractère du profil : pizz., mélodique, .., trainage, etc.
	parcours	profil	anam.																	
fluc.	N, X	N, X	N', X'																	
évol.	Y, T	Y, W	Y'																	
modul	G, P	G, M	K																	
5	Profil de masse (variations)	Evolutions typologiques : fluc. N/X ou X/N évol. Y/W ou W/Y modul G/W ou W/G	(épaisseur seulement) dilaté < delta <> aminci > en creux ><	Evolution caractéristique : en masse en timbre harmonique																
6	Grain (entretien)	Pur ou mixte de : résonance, frottement, itération	<table border="1"> <thead> <tr> <th>Frémis.</th> <th>Four mill.</th> <th>Lim pi.</th> </tr> </thead> <tbody> <tr> <td>rugueux</td> <td>mat</td> <td>lisse</td> </tr> <tr> <td>gros</td> <td>net</td> <td>fin</td> </tr> </tbody> </table>	Frémis.	Four mill.	Lim pi.	rugueux	mat	lisse	gros	net	fin	Harmonique Compact-harmonique							
Frémis.	Four mill.	Lim pi.																		
rugueux	mat	lisse																		
gros	net	fin																		
7	Allure (entretien)	Pur ou mixte de : mécanique vivante naturelle	<table border="1"> <thead> <tr> <th>Ordre</th> <th>fluct.</th> <th>désord.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>7</td> <td>8</td> <td>9</td> </tr> </tbody> </table>	Ordre	fluct.	désord.	1	2	3	4	5	6	7	8	9	régulière vibrato cyclique progressive irrégulière chute raide, amortie, incident				
Ordre	fluct.	désord.																		
1	2	3																		
4	5	6																		
7	8	9																		

4	5	6	7	8	9												
		Espèces															
Hauteur		Intensité		Durée des variations	d'émergence												
Site tessiture	Calibre écart	Site poids	Calibre relief	Impact	Module												
ou site du profil (voir masse)	Ecart mélodique: faible moyen fort	Liaison du pro- → → → au profil	fil mélodique dynamique	Modéré Lent Vif <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>7</td><td>8</td><td>9</td></tr></table>	1	2	3	4	5	6	7	8	9	Partiel (voir col. 3) début corps chute ou total			
1	2	3															
4	5	6															
7	8	9															
Incidence sur la tessiture ou sur la couleur (masse et timbre harmonique)	Ecart d'intervalle ou d'épaisseur : faible moyen fort	Liaison du pro- → → → au profil	fil de masse dynamique	Modéré Lent Vif <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>7</td><td>8</td><td>9</td></tr></table>	1	2	3	4	5	6	7	8	9	Partiel (voir col. 3) début corps chute ou total			
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Ex. 12b Morphologies (end)

This table contains a true treasure of ideas, although it is difficult to read.¹¹ The seven “perception criteria” are by themselves quite interesting. The first five are a mature proposal of the useful criteria, despite the sometimes unfamiliar wording. As discussed above, the concept of *masse* does bring an interesting unification of pitch and noises. Dynamics are presented in a straightforward manner. The concept of *profil* applied to *masse*,¹² generalised ‘melody’,¹³ *timbre harmonique* and, more indirectly, to dynamics. As pointed out above, the terms ‘grain’ and ‘allure’ bring interesting tools for studying the more or less stable parts of sounds, while the different elementary profiles proposed for the various classes and genres are full of insight and eminently applicable to real musical situations.

The studies of the *espèces* are also mostly useful. The idea of *site*, of loosely defined scales and of perceptual weight (*calibre*) generalised to inharmonic and noisy sounds, as well as pitches or the other perceptive criteria, are all very relevant. They achieve much of the proposed enlargement of the musical sound by giving the auditory handles by which the composer can ‘grasp’ the sounds and their details. In a similar way, the various ‘local’ tables, uniting the different local scales, are interesting and mostly practical, if a bit hard to decipher at first.

These local tables illustrate once again the richness of Schaeffer’s ideas, another multi-dimensional analysis. Each main cell of the table really is an analytical dimension of its own. And there are several interactions between the cells, as the local tables and arrows show. A strict traditional scientist might complain that this is the result of variables that are not independent enough, but for a musician in the twenty-first century, interested in the complex timbre, fuzzy logic and complex processes, this is not too troublesome. Once again, this multi-dimensional approach begs for another kind of representation, since the original 7*9 table requires perhaps too much discussion. However, I am less convinced by the term *timbre harmonique*, probably used to avoid the usual acoustic ‘spectrum’. The proposed term puts a bit too much emphasis on the ‘proper’ harmonic spectra, as opposed to the ‘improper’ inharmonic spectra. This is in contradiction to the successful enlargement of pitch into *masse*. This element, combined with the centre-to-extremes organisation of the *Tartyp*, leaves me in doubt. Could Schaeffer really have preferred ‘well-equilibrated sounds’, in plain contradiction to his main success, a renewed importance of the non-pitched and complex timbres? The use of a very French and normative word, *sofège*, goes in the same strangely conservative way, as well as his distaste for overly artificial sound treatment and, even worse, his complete about-face in the late 1980s disavowing his musical work.¹⁴ It could also be the case of a man from a certain generation, mostly neoclassical in taste, distrusting the serialist avant-garde, and struggling with an entire new realm of music in a hidden hesitant manner. In

¹¹ The problem is even worse, as the page setting of the original table split it in four pages.

¹² Now better known as an ‘enveloppe’.

¹³ The traditional notion of melody, that is the movement of pitch in time is generalised by Schaeffer, with the concept of *masse*: complex sounds and varying sounds can also be followed melodically, after a fashion.

¹⁴ I personally heard him denouncing all this research as “pointless” and “unmusical” in Quebec City in 1986, describing the digital synthesizer in the studio, our much loved main instrument, as “the atomic bomb of music”. See Laliberté (1994, 2003a and 2008).

my opinion, Schaeffer is a somewhat reluctant messiah, like Arnold Schoenberg was, a fact I will soon document in publication (2011b).

These paradoxical aspects of Schaeffer have been troubling me for some time (1994, 2003a, 2008), but have not at all caused any disinterest. Indeed, despite this criticism, let there be no misunderstanding: I am very strongly convinced by most of Schaeffer's proposals and find them relevant and useful. My criticism seeks to be a healthy one: lively and deep ideas generate debates and dynamism. I intend to spend still more time on my proposals of a renewed graphical presentation.

II. Towards a Renewed Impact of Schaeffer?

After this friendly critique, let us consider a few elements that leave me optimistic concerning a renewed impact of Schaeffer's ideas. One can ascertain several current elements that will probably help it.

The first is an evident normalisation of technology for the composer. There has been no profound change since 2000 (arguably since 1996)¹⁵ in the sound technology, only the improvement of detail (faster and cheaper computers, high sonic definition of 64 bits and 128kHz, multichannel) and the opening of global and local networks. This relative stability allows the musician to go much deeper into the sonic work than ever before.

This relative stabilisation has permitted a consolidation of the habit of the electric sound for the listener. Music has been coming out of speakers for more than seventy years now. It is, for most people, the normal musical situation. Indeed for my students, long used to recorded and processed sounds, say of a drum kit, the normal acoustic sonorities seem strange or even disturbing. An unprocessed 'messy' high-hat cymbal or snare drum can be quite a discovery to them.

This leads to another habit. Music teachers and professors have been using electro-acoustic music of all kinds for quite some time. Perhaps not everywhere or always with the same reverence as the classical instrumental music, but still various types of electric music have been listened to regularly. Three or four whole generations have been exposed to it. Such an exposure prepares the musician and the listener for a natural understanding and use of electro-acoustic music, even in an unconscious way, as will be discussed below.

Another sign of interest and accelerating factor, besides the anniversary celebrations and seminars, is the re-issue of Schaeffer's main music works in French around the 1998 anniversary: *A la recherche de la musique concrète, De la musique concrète à la musique même, Les machines à communiquer...* A new generation of researchers has an easy access to those important works. The multilingual re-issue of *Solfège de l'objet sonore* is also a boon, both because it revives this exceptional work by Schaeffer, Reibel Ferreyra and the others, but also because of its multilingual aspects. Schaeffer

¹⁵ Actually, this can be disturbing as well: most digital developments have been to recreate former analogue equipment and concepts. We could be much more adventurous, as Dahan (2005) argues convincingly.

can be studied outside of the French community, as has been the case for some time in Argentina, Portugal, Italy and Croatia.

Lastly, the normalisation and habit of n-dimensional representations has at last been rendered practical with the help of high-speed computers and interactivity. Several new graphic and multimedia techniques will allow other possibilities.

In my optimistic opinion, therefore, now is the time for Schaeffer to reach a greater level of impact on the musical world.

II.1.1. Further Help

In that case, what is still missing? What can be done now to carry on with this task?

Firstly, the full impact of Schaeffer strongly calls for complete translation into English of the most important book, the *Traité des Objets Musicaux*. A few interesting attempts have been made but they are still incomplete. However, quite recently, the fundamental *A la recherche de la musique concrète* and the companion *Guide des objets sonores* have been very competently translated by John Dack and Christine North of the University of Middlesex. *In Search of a Concrete Music* is soon to be published by the University of California Press, while the *Guide to Sound Objects. Pierre Schaeffer and Musical Research* was published online in 2009. As some may know, the same team is now far advanced in its complete translation of the *TOM*. Further down the road, a critical bilingual edition of the *Traité des Objets Musicaux* would be necessary, taking the personal archives of Pierre Schaeffer now deposited at IMEC, close to the University of Caen, in Normandy as its point of departure. This formidable task necessitates an interdisciplinary/international team and a willing editor; but, if the English translation of the *TOM* achieves its potential success, one can be optimistic.

III. Electro-acoustic Sensitivities. A Few Musical Cases

To finish this paper, a rapid study of a few musical cases shines hope for future developments. Just as Schaeffer proposed, the numerous *Monsieur Jourdain*¹⁶ of electro-acoustic music — often self-thought, art-school thought, practitioners of rock, jazz, techno, hip-hop, film and media music — are actually listening very attentively to sound and now have great tools at their disposal. This goes with the post-modern weakening of the barriers between the so-called popular and high-art music. One can now detect the true electro-acoustic listening of much popular electric music. This is not the first time. The popular music of 1967-1975 with a psychedelic and a certain rock'n roll creativity,¹⁷ composed at the peak of the analogue recording studio, already had an important electro-acoustic side. How could one forget Jimi Hendrix or Pink Floyd and their advanced live-electronics in a rock setting? The same can be argued for much of the Progressive Rock movement (King Crimson, Yes, Genesis, Soft Machine, Gentle Giant, Mike Oldfield...).

¹⁶ Who "wrote prose without knowing it", Molière (1670).

¹⁷ This has not lasted too long, however. The industry came back to power around 1976 with the Disco machine.

We can suggest that this came about for a series of converging reasons:

1. Firstly, a general curiosity and taste for 'something different' in the counter-culture musical world of the late 1960s pushes open-minded musicians towards increasing complexity of all musical dimensions.
2. This is contemporary with rock music's shift from a working class public to a middle or upper class public. The higher classes have larger musical references and better musical preparation; and this culture affects musical projects. The bands Yes or ELP are significant in this sense, after the Beatles started the tendency.
3. The more commercial need for developing a personal sound recognisable on radio and records coupled with the fact that not all pop musicians are instrumental virtuosos leads to important research in studios, starting with Elvis, Jerry Lee Lewis, the Beatles or Beach Boys and not forgetting Motown or Stax Records. Might this be compared to Pierre Bourdieu's *Distinction* (1979): a "new sound" for a sonic "distinction"?
4. By 1970, the commercial studio, financed for the above reasons, becomes a sophisticated tool, truly encouraging experimentation. Again the Beatles, Hendrix and Pink Floyd come to mind. Such studios almost mechanically converge with the sophisticated research electro-acoustic studios. Thus the McLuhanian (1964) effect appears: a common electro-acoustic media brings comparable results in the two former separate fields of popular and art music.
5. Right on the limit between classical music and popular music, the records like W. Carlos' *Switched-On Bach* (1968) or Morton Subotnick's *Silver Apples of the Moon* (1967), are very influential for the diffusion of an electro-acoustic tool that is becoming a popular instrument: the analogue synthesizer.¹⁸ The sound of popular music has become electro-acoustic.

On the high-art side, these pop experiments had an impact as well. The two musical genres are now as two mirrors facing each other. The music not only of the electro-acoustic composers, but also of the mixed music spectralists (Grisey, Murail, Dufourt) cannot be conceived and realised without the electro-acoustic experience combined with the live rock *instrumentarium* of electric guitars, synthesizers and sound treatment (Laliberté 2003b, 2011a), as well as the better known examples of Stockhausen or Subotnick. This 'unlikely' encounter is not unrelated to Schaeffer's opening of music to more popular genres.¹⁹ It also constitutes an interesting side effect of a paradoxical neo-classical attitude. Not an accident at all, the opening of electro-acoustic music to popular music was further developed by Schaeffer's successors: Bayle, Teruggi, and Zanessi.

¹⁸ A curious parallel can be drawn between Carlos and the synthesizer: Walter Carlos was an electro-acoustic student of Ussachevsky and became famous in the popular world for his synthesizer versions of Bach, just before becoming Wendy Carlos and a noted film music composer (*Clockwork Orange*, *Tron*, ...).

¹⁹ And to the most important ethnological music — he had a hand in the famous Ocora recording collection of ethnic music — more than twenty years before the 'world music' fashion of the 1980s until today.

One might also point out that by 1970, the serialist or post-serialist avant-garde was getting “worn” (Laliberté 2006). A new approach, fresher, more open, closer to the 1968 ideals was sought out. In New York City, the repetitive school (Riley, Reich, Glass) succeeded around 1967 in creating a new aesthetics largely dependent on the discovery both of the tape loop and of African or Eastern music. These are two important Schaefferian results, as Chion (1982) points out. In Rome and Paris after 1974, the spectralist school, in an attempt similar to the Philip Glass Ensemble or Steve Reich’s, founded the *Itinéraire* ensemble that included both classical instruments with the most recent avant-garde techniques, and electric instruments quite similar to the progressive rock band. This was for clear reasons. Anyone really listening to rock records at the time could hear some very satisfactory sounds, a true enlargement of the sonic palette, even for the avant-garde composers. Pieces like Dufourt’s *Saturne* (1978-79) or in a lesser degree Murail’s *Treize couleurs du soleil couchant* (1978) are good examples of such a fusion (Laliberté 2011a). Another interesting case is the first success of Mike Oldfield’s *Tubular Bells* (1973). This avant-garde pop piece was composed after the folk guitarist heard a repetitive composition of David Bedford, an English follower of the repetitive school. In turn, because of its important success, both musically as a great new orchestration mixing electric and acoustic instruments, and commercially, this piece influenced Bedford himself and many others towards an electrified repetitive avant-garde music.

The digital revolution did not stop this effect of facing mirrors. The advent of the digital sampler, taking over the imitative synthesis functions of the previous generation of equipment like the Mellotron, further opened the sonic palette of composers and allowed them a second generation *musique concrète*, even unknowingly. In the 1980s and later, the records and compact discs of Peter Gabriel, Kate Bush, The Art of Noise, Brian Eno, David Bowie, and many others display a strong electro-acoustic influence, going further than the mostly “tip of the hat” exhibited by the Beatles and the early 1970s pop musicians.²⁰ For instance, a second generation of King Crimson produced a series of recordings in the early 1980s that made use of an interesting affinity with repetitive music and the finesse of the better electro-acoustic compositions. About ten years later, artists like Björk or Sonic Youth kept up this often-complex fusion of pop music and electro-acoustic sensitivity. The recent artists like BT, Camille, Emilie Simon and others carry on in a comparable manner. In a complementary way, artists like Bobby McFerrin, the Zap Mama or, even more recently, Eluveitie display an interest for the expanded noises and ethnic sounds and contrasting methods of making music quite close to Schaeffer’s expansion.

Conclusion

This paper proceeded in three parts. The first studied in detail the main difficulties in the graphical approaches of Pierre Schaeffer, which cloud an easy understanding of his most important ideas. The unfamiliar vocabulary, multidimensional and dynamic analyses render his tables complex, despite their great usefulness. The second listed the tasks that remain to be accomplished before Schaeffer’s work can reach its full impact. The main

²⁰ Remember the photo of Stockhausen on the cover of Sergeant Pepper’s Lonely Hearts Club Band of 1967.

task remaining is a complete translation of his *Traité des objets musicaux* followed by a critical and bilingual edition of the same. The final brief section presented a few cases of popular and contemporary music in which a clear electro-acoustic sensitivity is perceptible. This sort of half-wild or unconscious electro-acoustic composition fills me with great optimism, for now there is a whole new generation of musicians ready to learn more about Schaeffer.

With this newly found sensitivity to sound and the undeniable quality of today's common studio, there is a great reason for hope — and a lot of work remaining to realize it!

I wish to thank the organizers of the *Pierre Schaeffer: MediArt* symposium for a memorable few days in Rijeka and Ms Joyce Shintani for the help in putting these ideas in a good English language.

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A Critique on Pierre Schaeffer's Phenomenological Approaches: Based on the Acousmatic and Reduced Listening

by Suk-Jun Kim

Aimed at examining the Schaefferian phenomenology from the viewpoint of phenomenology proper, and in particular, critically observing how successfully Schaeffer understood the workings of key phenomenology concepts and applied them to his research on sound objects and listening, this paper conducts a short survey on the relationship between natural and phenomenological attitudes as well as the concept and implications of the phenomenological reduction understood by phenomenology proper as well as by Schaefferian phenomenology. The survey shows that, while Schaefferian phenomenology rightly—and timely—recognized the acousmatic situation, or more accurately, acousmatic attitude, as the phenomenological attitude under which our listening experience can be investigated phenomenologically, it misunderstood the workings of phenomenological reduction and employed only part of it. Consequently, as this essay argues, Schaefferian phenomenology limited the totality of listening phenomena to its part, thus endangering the phenomenological project that it set out to do.

To philosophize, we may now say, is an extra-ordinary inquiry into the extra-ordinary.
Heidegger, An Introduction to Metaphysics

Introduction

In arguing for Schaeffer's subscription to phenomenology, researchers have used the following quote: "For years, we have been doing phenomenology without realizing it.... It is only after the event that we recognized in Edmund Husserl's heroically rigorous definition the concept of the object postulated in our research." (Schaeffer, 1966: 262)¹ Indeed, a brief reading of Schaeffer's work reveals to us many terminologies - epoché, reduction, intentional object, intentionality, and description - that undoubtedly connect his thinking to phenomenology not only because they are central to phenomenology, but more importantly, because Schaeffer employs them in a phenomenological sense in his "doing phenomenology". But what exactly does "doing phenomenology" mean? In his Aquinas lecture given at Marquette University in 2004, Jacques Taminiaux stated that to Husserl, the only method of "doing philosophy that [Husserl] was proposing" was reduction. (Taminiaux, 2004: 8) For the phenomenologist, accordingly, to do phenomenology is to attend to phenomena as they appear to him by reducing the experienced phenomena. Or more specifically, it is to lead away or return from the phenomena experienced with various assumptions in his natural attitude back to phenomena themselves as experienced.² Thus, as Taminiaux asserts, every phenomenologist must exercise this reduction, also called the phenomenological reduction, "as a methodological principle for any descriptive investigation" (Taminiaux, 2004: 9). Viewed in this way, it can be said that Schaeffer realized that he was conducting, without him recognizing it, the phenomenological reduction - as he understood it - to his musical research.

¹ An unpublished translation of *Guides des Objets Sonores* by Michel Chion by John Dack and Christine North in 2009.

² The word "reduce" has its Latin root *re-ducere*, which means lead back, restore, withhold or withdraw (Sokolowski, 2000).

This paper aims at examining the relation between the reduction in phenomenology proper and the reduction Schaeffer may have exercised in his research, and in so doing, discovering possibilities of phenomenological practice in understanding the electro-acoustic music listening. It is of critical importance for us to investigate to what degree and in what respects the phenomenologies of Husserl, Heidegger, Sartre and Merleau-Ponty differ with regard to Schaeffer's adoption of phenomenology, an investigation which we shall attempt to tackle - at least, in part - later in this paper.³ For now, however, it is sufficient to say that all these phenomenologists seemed to understand phenomenology not as a theory or a technique, but either a method (Heidegger, 1982: 20) or as a style of thinking (Merleau-Ponty, 1962: viii). Perhaps, thus, it is no coincidence that Husserl's phenomenological exercise in Logical Investigations preceded his attempts at theorizing it as phenomenology proper (Taminiaux, 2004), and similarly, that Schaeffer practiced phenomenology in his research "without realizing it".

Considering that phenomenology is a method or a style of thinking, it is reasonable to surmise that Schaeffer's realization that he had been doing phenomenology all along opened up a horizon of questioning before him. As Heidegger understood, "If the act of questioning is really carried out, the content and the object of the question react inevitably on the act of questioning. Accordingly, this questioning is not just any occurrence, but a privileged happening that we call an event" (Heidegger, 1959: 4). Thus, one can argue that Schaeffer recognized in Husserl's phenomenology something that resulted in him positing anew the content and the object of his musical research, that the horizon of questioning that emerged before Schaeffer consisted in "determining and expressing in the concrete form this phenomenology for [himself]" (Merleau-Ponty, 1962: viii), and that the phenomenology for himself in the concrete form resulted in the postulation of the concept of the object - that is, the concept of sound object. If so, it is critical that we need to examine how Schaeffer understood phenomenology and its concepts, and particularly, how successfully he grasped the workings of the phenomenological reduction as a way of accessing phenomenology and how he applied it to his research on sound objects and listening.

In this paper I shall argue that Schaeffer did not employ a complete implementation of phenomenological attitude and reduction in his research, and I shall also discuss its consequences. To this end, this paper will briefly survey the reductive process and subsequent phenomenological approaches made by Schaeffer. The focus of this survey is twofold: first, it will compare the phenomenological concepts to those of Schaeffer and examine specifically how the phenomenological reduction and key issues of phenomenology were applied to Schaeffer's thinking. In doing so, special attention is

³ Applying phenomenological attitudes to understanding the experience of electro-acoustic music listening inevitably prompts a question to many readers: to whose phenomenology does this paper subscribe? Certainly, there has been much debate about differences, or even contradictions, among major phenomenologists, namely, Husserl, Heidegger, Merleau-Ponty, and Sartre with regard to their own phenomenology. It appears that it is due to the recognition of these debated differences in phenomenology that Chion had to qualify Schaeffer's phenomenology as having adopted the principle of Merleau-Ponty's phenomenology (Chion, 1983) although Schaeffer's phenomenology rings more true to Husserlian phenomenology as Kane rightly observed (Kane, 2007).

given to those phenomenological concepts that are either missing, modified or reworked for the sake of Schaeffer's research; and second, examining the consequences of such omissions, modifications or reworkings in Schaeffer's thinking, it will revisit the phenomenological reduction and some of the key issues in phenomenology that are relevant to electro-acoustic music and need to be brought to light to help us gain a better understanding of the phenomena in electro-acoustic music listening.

Phenomenological Approaches in Pierre Schaeffer's Musical Research

2.1. Acousmatic situation as a phenomenological attitude in listening

Aiming to question "the being and nature of reality," a phenomenological project starts by recognizing that one cannot simply presuppose "the metaphysical and epistemological assumptions that characterize our daily life, which is implicitly and unquestionably accepted by all of the positive sciences" (Zahavi, 2007: 44). To break away from a world laden with implicit and unquestioned assumptions, Husserl identifies two different attitudes towards experience and knowledge: the natural attitude and the phenomenological attitude.

The natural attitude is based on "our implicit belief in the existence of a mind-, experience-, and theory-independent reality," a belief "so fundamental and deeply rooted that it is not only accepted by the positive sciences, it even permeates our daily pretheoretical life" (Zahavi, 2007: 44). Husserl asserts that this belief need be critically tested without any dogmatic, metaphysical and scientific prejudices, and that to do that, one should turn "toward the givenness or appearance of reality," that is, one should "not let preconceived theories form our experience, but let our experience determine our theories" (Zahavi, 2007: 45). The goal, in so doing, is to assume a new kind of attitude called the phenomenological attitude in which one's focus is turned away from positing things in the empirical attitude and towards the reflection "upon the natural attitude and all the intentionalities that occur within it" (Sokolowski, 2000: 42).

Similarly, Schaeffer, aiming to "grasp the experience of perception" (Chion, 1983: 31), takes a decisive turn away from ordinary listening, which includes both natural listening, the "main and primitive tendency to use sound for information about the event," and cultural listening that "turns away from the sound event and the circumstances which it reveals about its source and uses it as a means to comprehend a message, a meaning, values" (Schaeffer, 1966: 120-121). Also just as Husserl refuted the reductionism of biologicistic or psychologistic accounts of our experiences and knowledge, Schaeffer takes a critical distance against the attitude of the acoustician: "[The acoustician] forgets that it is the sound object itself, which is given in the process of perception, that determines the signal to be studied and that therefore it cannot possibly be reconstructed from the signal." (Schaeffer, 1966: 269) Likewise, he finds fault in the attitude of the psycho-acoustician in the 1950s and 1960s. For, based on the belief of "scientific" empirical data, such an attempt at studying through simple examples of acoustic signals "the connection between variation in an elementary physical dimension of the object and variation in a sensory value" (Schaeffer, 1966: 170) often neglects or disregards "the active role of the ear in constructing and defining the characteristics of perceived sound" (Chion, 1983: 22). Through these critical views, Schaeffer assumes a certain

specialized kind of listening attitude, comparable to Husserl's phenomenological attitude. But the phenomenological attitude in Schaefferian phenomenology is characterized, and thus, should be distinguished, by its two peculiarities: one has to do with the emergence of Schaefferian phenomenology, while the other with its resistance to the return to phenomena themselves.

Termed the acousmatic situation, this phenomenological attitude by Schaeffer is initiated, and held, by technological intervention. Following the definition of acousmatic introduced by Chion (Chion, 1983: 18),⁴ we can see that the acousmatic situation is not new; we often hear sound without seeing its causes. When taken up again by Schaeffer, however, this term has undergone a metamorphosis: from "acousmatic" as in indicating a sound heard in natural listening without its causes to "acousmatic" as in indicating a sound heard in phenomenological listening with an intention to remove its causes and concentrate on the sound for its own sake. And it was the technological intervention that made this intentional act of removal and concentration possible. The listening situation that Schaeffer wanted to designate with this rarified, Greek-derived term was one that he had experienced during his experiments with the sound recording technology, particularly, with two "inaugural" experiments "in interruption" of *musique concrète*, the closed groove and the cut bell. The closed groove experiment consisted of "closing a recorded fragment in on itself (as is done accidentally by a scratch [on supple discs]), thus creating a periodic phenomenon taken, either by chance or deliberately, from any sound continuum and able to be repeated indefinitely," whereas the cut bell experiment aimed at "intervening in the progress of a recorded sound," like the attack of the recorded bell sound, thus creating a flute-like sound (Chion, 1983: 20). Chion observes: "[By] isolating a sound from its context, manipulating it, and thus creating a new sound phenomenon which could no longer be traced directly to its cause, the experiment of the cut bell together with the closed groove encouraged people to practise "reduced listening" and draw out from it the notion of the sound object." (Chion, 1983: 20)

Note, and this is one of the reasons why the phenomenological attitude in Schaefferian phenomenology is a peculiar state, that in the acousmatic situation constituted by technologically intervening activities - sampling, isolating, manipulating, and repeated reproducing (replaying), etc. - one finds oneself not only situated acousmatically, but also situating one's listening attitude acousmatically. It is in this sense that the acousmatic is "not just simply a situation" but also "a procedure" (Chion, 1983: 19), and that we can even say - even though it may sound awkward in the beginning - we assume the acousmatic attitude.

Both situated and situating, the acousmatic attitude in Schaefferian phenomenology does not put the listener into a role of mere passivity; rather, the acousmatic attitude becomes a rigorous intending process through which the listener's intention is directed wholly towards what the acousmatic attitude allows to emerge: what one is listening to and how this listening occurs. And by assuming the acousmatic attitude, the listener recognizes what he is listening to as well as how his listening occurs as phenomena,

⁴ For a revealing examination of *acousmatic*, and the myth of the Pythagorean veil which is often quoted to designate the implications of acousmatic in electro-acoustic music practice, refer to Kane (Kane, 2008).

the objects of his intending acts, if and only if we correctly understand phenomena not as the appearance of what is real, but as what phenomenology understands: “[Phenomenologists’] descriptions of phenomena are not of what is distinct from the real, but simply of how one experiences things; and included here is how in some cases one in fact distinguishes between the experience of what is real and of what is only apparent. That is, any distinction between the real and the apparent is one that operates within the more general category of “the phenomena,” all of which phenomenology is concerned to describe.” (Hammond, 1991: 2)

Appropriately recognized and understood, therefore, the whole listening phenomena become the objects of the acousmatic attitude. Interestingly, however, this is not the case with Schaefferian phenomenology: “[T]he acousmatic involves a reversal of the normal course of events.... It is no longer a question of knowing how a subjective listening interprets or distorts *reality* or of studying reactions to stimuli; the listening itself becomes the origin of the phenomenon to be studied, The question: “What am I hearing?... What precisely are you hearing?” is turned back on to the subject, in the sense that he is being asked to describe, not the external references of the sound he perceives, but his perception itself.” (Schaeffer, 1966: 92; my italics)

To the practitioner of phenomenology proper, this statement by Schaeffer is confusing. Schaeffer argues that the listener in the acousmatic attitude should limit the scope of his questioning from the whole phenomena of listening to the listening itself, which becomes the “origin” of phenomena. He furthermore stresses that the listener’s description should not include everything; rather, it should stick to the perception itself. But this goes directly against the very goal of the phenomenological attitude in the acousmatic situation - that is, by assuming the acousmatic attitude, you make everything in your listening experience explicit. One may argue that Schaeffer simply wants to stress on the listener’s vigilance in the presence of lurking natural listening habits. But even this vigilance should be directed towards the assumption that everything in listening, even including “the external references of the sound” the listener believes to have perceived, be laid out for the phenomenological investigation. In other words, under the acousmatic attitude, the vigilance should be exercised not on discriminating from the description certain listening experiences, but on discerning them in the wholly described listening experience for their intentionalities in the natural attitude.

Yet another may still contend that Schaeffer’s resistance to the subjectivity of listening in the acousmatic attitude is due to the firm basis of his research on Husserl’s phenomenology, which made a decisive turn away from psychologistic descriptions of experiences of the world and advocated “the return to things themselves,” and that in this view, allowing subjectivity in listening would mean to Schaeffer that we are hopelessly returning to the natural attitude. The issue at stake here is what it means for Schaeffer to return to “things themselves,” and how he posits the relation between this return to things themselves and subjectivity. The rigorous concentration in Schaefferian phenomenology exerted on sound objects is, in part, the result of Schaeffer’s repudiation of psychologistic accounts of sounds we hear. Such an attitude taken by Schaeffer is in line with that taken by

Husserl, as Merleau-Ponty observes: "It is understandable, in view of this, that Husserl, having accused Kant of adopting a "faculty psychologism," should have urged, in place of a noetic analysis which bases the world on the synthesizing activity of the subject, his own "noematic reflection" which remains within the object and, instead of begetting it, brings to light its fundamental unity." (Merleau-Ponty, 1962: x)

Let us briefly tease out what Merleau-Ponty says. Husserl posits that on the contrary to what Kant argued with his concept of phenomena and noumena, those which appear to us and those which do not appear to us and therefore we can never reach, things do appear to our consciousness and can be described by two ways: the noetic descriptions, which describe our experiencing, and noematic descriptions, which describe what is experienced. But it should be noted the two descriptions are directed towards each other: "noetic description describes acts of consciousness, but in so doing will make reference to objects of consciousness; noematic description describes the objects of consciousness, but in so doing, will make reference to acts of consciousness" (Hammond, 1991: 49). Thus the return of things to themselves for Husserl is really the return to phenomena as they appear to our consciousness, which include both what (noema) and how (noesis). And considering that these descriptions are about phenomena appearing on our consciousness, the issue of subjectivity should not be avoided, but become the core of the problematics of phenomenology. As Thompson asserts: "The phenomenal character of experience includes both the qualitative character of what we experience (for example, sensory qualities of the world and our body) and the subjective character of the mental acts whereby we experience (perceiving, remembering, imagining, and so on).... [P]henomenological analysis focuses explicitly on the linkage between the qualitative character of what we experience and the subjective character of the mental activity whereby we experience it." (Thompson, 2007: 146-147)

As such, a proper phenomenological project targets the totality of phenomena that emerge through experience. However, with Schaefferian phenomenology, we feel something amiss. It is not the totality of the phenomenon given to our experience that is our investigative object; we are led to only part of it, and our investigation seems crippled. I think Schaeffer got part of phenomenology wrong. But which part of phenomenology is it that Schaefferian phenomenology missed? This question can be answered by examining Schaeffer's concepts of the reduced listening and epoché.

2.2. Reduced listening as a phenomenological reduction

Let us return to the quotation introduced at the beginning of this paper in which Schaeffer, elated, lets on that he has been doing phenomenology all along. This paper has argued that by doing phenomenology, he means that he has been exercising a type of the phenomenological reduction while assuming the acousmatic attitude by means of technological intervention. Schaeffer terms this phenomenological reduction reduced listening, "which consists in listening to the sound for its own sake, as a sound object, by removing its real or supposed source and the meaning it may convey" (Chion, 1983: 33). Chion points out that the reduced listening "refers to the notion of phenomenological reduction (epoché), because, in a way, it consists of stripping the perception of sound

of everything that is not 'in itself,' in order to hear only the sound, in its materiality, its substance, its perceivable dimensions" (Chion, 1983: 33). In Schaefferian phenomenology, thus, doing phenomenology lies in a kind of a negative move whereby the listener removes those which are not part of the sound in itself - that is, the sound's causes and meaning. And this negative move made by the reduced listening is based not only on Schaeffer's discovery in his early experiments, but also on his understanding of the phenomenological reduction, which to him is not a "return to nature," since "we find nothing more natural than accepting indoctrination. It is an anti-natural effort to perceive what previously unconsciously determined consciousness" (Schaeffer, 1966: 270). Is this how the phenomenologist understands the phenomenological reduction? Not exactly.

Examining how the phenomenological reduction has transformed over the course of the history of phenomenology, Taminiaux asserts that: "It is important to notice that the methodological rule of [phenomenological] reduction combines two moves: a negative one, and a positive one. The negative move consists in suspending what blocks the way to the phenomena. The positive move is a return - a *reductio* - to the specific mode of appearing of the phenomenon." (Taminiaux, 2004: 9)

For Husserl, for example, the operation of the phenomenological reduction works in two moves: "In Husserl's language, the negative move of *epoché* suspends all transcendence, and the positive move that opens the way to phenomenology is a return to immanence" (Taminiaux, 2004: 22). Similarly, Zahavi asserts that Husserl distinguished between the *epoché* and the reduction: "The *epoché* is the term for our abrupt suspension of a naive metaphysical attitude," whereas "the reduction is the term for our thematization of the correlation between subjectivity and world" (Zahavi, 2007: 46). What this recognition by Husserl, as articulated by both Taminiaux and Zahavi, signifies is this: "To perform the *epoché* and the reduction is not to abstain from an investigation of the real world in order to focus on mental content and representations, as it has occasionally been claimed. The *epoché* and the reduction do not involve an exclusive turn toward inwardness, and they do not imply any loss. On the contrary, the fundamental change of attitude makes possible a decisive discovery and should consequently be understood as an expansion of our field of research." (Zahavi, 2007: 46)

For Heidegger, likewise, the phenomenological reduction is not the only component - not even the central one - of the phenomenological method; rather, the phenomenological method consists of three basic components. The first is the negative move, the phenomenological reduction of the *epoché*. The second is the positive move called the phenomenological construction, which is required for "us to be led towards being" from the *epoché*, a "merely negative methodological measure." And, finally, the third is the phenomenological destruction whereby "the traditional concepts, which at first must necessarily be employed, are de-constructed down to the sources from which they were drawn." Thus Heidegger stresses that these three components "belong together in their content and must receive grounding in their mutual pertinence" (Heidegger, 1982: 21-23).

Similarly, the phenomenological reduction to Merleau-Ponty is “to suspend the resultant activity, to refuse it our complicity, or yet again, to put it ‘out of play’,” but is not to “withdraw from the world towards the unity of consciousness as the world’s basis; it steps back to watch the forms of transcendence fly up like sparks from a fire; it slackens the intentional threads which attach us to the world and thus brings them to our notice.... it reveals that world as strange and paradoxical” (Merleau-Ponty, 1962: xiv-xv). As such, the goal of the phenomenological reduction is not (even to attempt) to remove a part of the phenomenon as it is deemed to be external to the essence of things perceived; rather, it is to lead back and to “watch” the totality of the phenomenon with “wonder”. He even goes further to admit that “[t]he most important lesson which the [Husserlian] reduction teaches us is the impossibility of a complete reduction” (Merleau-Ponty 1962: xv) because the practitioner of the reduction, Merleau-Ponty argues, is bound to come to terms with the fact that he cannot “overcome radically ‘naive belief’ in the intersubjective world to which he belongs as an empirical man” (Taminiaux, 2004: 27-28).

To reiterate, the phenomenological reduction, rightly understood and executed, begins with the epoché, whose only goal is to suspend our commitment to our natural attitude towards the world. But then the reduction proceeds with its phenomenological investigation by returning to, but not assuming, the natural attitude because it is in this natural attitude that our experience to things in the world is situated, and also because only by returning to it can we examine things in the world and our intentionalities to them. In this regards, as Husserl stresses, in executing the epoché, nothing is lost: “Meanwhile the world experienced in this reflectively grasped life goes on being for me (in a certain manner) ‘experienced’ as before, and with just the content it has at any particular time. It goes on appearing, as it appeared before; the only difference is that I, as reflecting philosophically, no longer keep in effect (no longer accept) the natural believing in existence involved in experiencing the world—though that believing too is still there and grasped by my noticing regard.”(Husserl, 1965: 19-20)

It is this returning to the world, experienced as it is, which is missing in Schaefferian phenomenology. Admittedly, Schaeffer did acknowledge that: “However reduced the listening to the sound object for itself is, we cannot detach its two sides one from the other, and the attachments it retains to the two aims which usually go beyond the object: ‘What’s going on?’ and ‘What does it mean?’” (Schaeffer, 1966: 271), and accordingly, Chion asserts, “Reduced listening still retains a link with ‘ordinary listening’ and is like ‘its other side’” (Chion, 1983: 33). But even this acknowledgment shows that Schaefferian phenomenology misses the point of reduction. From the phenomenological viewpoint, listening cannot be divided into reduced listening and ordinary listening; there is only one listening, and in order to assume the phenomenological attitude and to examine it as an intentional act in the natural attitude we apply, as a method or a way in, the reduced listening. Furthermore, by placing the reduced listening, which is only a method, on the other side of ordinary listening, which is a natural attitude, and by germinating from the reduced listening the sound object, which, if it is understood as the “intentional object,” should instead have been established by the reduction of our experience in the natural

attitude, Schaefferian phenomenology runs the risk of becoming the “Objective Thought” (Merleau-Ponty, 1962: 81-82).

Conclusion

Aimed at examining Schaefferian phenomenology from the viewpoint of phenomenology proper, and in particular, critically observing how successfully Schaeffer understood the workings of the key phenomenology concepts and applied them to his research on sound objects and listening, I have tried with this paper to conduct a short survey on the relationship between the natural and phenomenological attitudes as well as the concept and implications of the phenomenological reduction understood by phenomenology proper as well as by Schaefferian phenomenology. The survey has shown that, while Schaefferian phenomenology rightly - and timely - recognized the acousmatic situation, or acousmatic attitude, as the phenomenological attitude under which our listening experience can be investigated phenomenologically, it misunderstood the workings of the phenomenological reduction and employed only part of it. Consequently, as this essay has argued, Schaefferian phenomenology limited the totality of listening phenomena to its part, thus endangering the phenomenological project that it set out to do. Schaeffer was right to admit that his research was “one side of the scales” in *In search of music itself*, a postscript in the third edition of the *Traité des Objets Musicaux*: “The main fault of this work is indeed that it remains the only one. More than six hundred pages on objects weigh down one side of the scales.... The *Traité des Objets Musicaux* can, therefore, be interpreted in two ways: positively, as a bridgehead, from the point of view of materials and the faculties of hearing. Negatively, as having missed the point, since it seems to ignore the other bank, of combinations which give meaning to the collections of objects. Between these two banks, a deep river: referential structures, that term vague or precise according to the usage and users, describing the intermediate configurations by means of which the river can be crossed.” (Chion, 1983: 166)

What he did not see, however, from the phenomenological viewpoint, is that his research was incomplete right from the beginning. And it seems that the damage has been done: many electro-acoustic researchers continued to follow the framework of Schaefferian phenomenology, and while recognizing that something was missing, their objections to Schaefferian phenomenology seemed to have been tagged on to it as they merely nodded to the “other side”. But the true implication of the phenomenological reduction, or the reduced listening understood as a true application of epoché, is not just giving a nod to the other side; rather, it is the return to the natural attitude, now understood as the world of noemata, noeses, and our intentionalities to them. Correctly assumed, the acousmatic attitude makes our whole listening experience in electro-acoustic music explicit, and correctly exercised, the reduced listening as a phenomenological reduction brings, and allows us to explore, this experience in totality onto a horizon of the “compresence of qualitative character and subjective character (for-me-ness)” (Thompson, 2007: 146). The acousmatic attitude and reduced listening should expand our field of investigation just as Husserl compared “the performance of the epoché with the transition from a two-dimensional to a three-dimensional life,” in which “the perpetually functioning, but so far hidden, transcendental subjectivity is disclosed as the subjective condition of possibility

for manifestation“ (Zahavi, 2007: 46). One may maintain that, after all, what this paper has argued for and the objections it has raised have little to do with what Schaeffer really aimed at with his research, and that phenomenological thinking is only part of Schaeffer’s project, which concerns more important issues, such as categorizing and describing musical objects; in other words, it is this paper that misses the point. But one cannot argue against the fact that Schaeffer’s use of phenomenological thinking was essential in the development of his research. Thus it is absolutely required that our investigations on Schaeffer’s whole research be based on the correct understanding of Schaeffer’s use of phenomenological thinking and its consequences. Furthermore, we can readily witness that Schaefferian terms borrowed or modified from phenomenology proper are being widely used in educational settings where these terms are taught and applied to the listening without critical observations, which results in inflicting wrong approaches to listening phenomena. As this paper has argued, Schaeffer’s phenomenological concepts need to be rectified and metamorphosed so as to allow us to inquire into the whole listening phenomena in electro-acoustic music. It, thus, seems that the metamorphosis is necessary.

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Images and Sound Created and Synchronized by Algorithm
Vladimir Bonačić's Computer-Generated Interactive Audiovisual
Object GF. E(16,4), 1969 – 1974

by Darko Fritz

Vladimir Bonačić has worked at the Ruder Bošković Research Institute in Zagreb since 1964, where he was Head of the Cybernetics Laboratory from 1969 to 1973. He received his PhD in 1967, in the field of sample recognition and structures of concealed data. His artistic career begun in 1968 within the framework of the international New Tendencies movement in the Zagreb Gallery of Contemporary Art, which advocated his participation in the movement. Bonačić's constant inspiration was the Galois Field, a system of pseudo-random algorithms named after the mathematician Evariste Galois. The computer-generated audiovisual object GFE (16,4) has achieved the synthesis of image and sound in a unique way and enabled different levels of interaction through the control of image and sound. This object was conceived in 1969 and realized in Zagreb in 1971; it was for the first time officially presented in Paris and additionally improved in collaboration with the *bcd cybernetic art team* 1972 – 1974 in Jerusalem. The dimensions of the object GFE (16,4) are 178 x 178 x 40 cm and it weighs half a ton. The front plate has a relief structure made of 1024 fields in 16 colours. Three Galois Field generators illuminate the thus constructed three-dimensional "monitor", generating different patterns. These generators interact with other generators and control the sound that comes through four loudspeakers. The viewer / researcher / user can influence the image and sound manually or with a remote controller (in a later version of this work with a special interface featuring an external monitor and a light pen). Image and sound can be manipulated along the time constant, by "skipping" sequences, by repeating selected segments or by manipulating the performance speed. The viewer / researcher/ user cannot change the logic of the system. The entire "composition" of this audiovisual spectacle, consisting of 1,048,576 different visual patterns and 64 sound oscillators, can last from 6 seconds to even 24 days.

Vladimir Bonačić (1938–1999) worked at the Croatian national research centre Ruder Bošković Institute in Zagreb from 1962 to 1973. There, he headed the Laboratory of Cybernetics from 1969 to 1973. He earned his PhD in 1968 in the field of pattern recognition.¹ Vladimir Bonačić's artistic path is inseparable from the international New Tendencies movement and its world view of the synergy between science and art. The Gallery of Contemporary Art organized five New Tendencies exhibitions in Zagreb from 1961 to 1973; in addition, international exhibitions were held in Paris, Venice, and Leverkusen, West Germany. A group exhibition of European artists in 1961 developed into an international movement provided a gathering place for artists, gallery owners, and theoreticians during the Cold War. This unique situation was enabled by the cultural and geopolitical position of Zagreb, in the former non-aligned Socialist Federal Republic of Yugoslavia.

In the catalogue of the first New Tendencies exhibition in 1961, artist François Morellet, a member of the Paris-based Groupe de Recherche d'Art Visuel [Visual Art Research Group], wrote: "Imagine that we are at the eve of a revolution in the arts that is as great as the revolution that exists in science. Therefore, the reason and the spirit of systematic research

¹ Vladimir Bonačić, Pseudo-slučajna transformacija podataka u asocijativnoj analizi kompjuterom, PhD thesis, Faculty of Electrical Engineering, University of Zagreb, Zagreb, 1968.

has to replace intuition and individualist expression.⁴² Further New Tendencies ideas – that can be wholly applied to Bonačić's work – were presented in the 1963 catalogue of the second New Tendencies exhibition in a text by the Croatian art critic, theoretician, and co-founder of the New Tendencies movement, Matko Meštrović. Tellingly, the text was later republished under the title "Ideologija novih tendencija" [The Ideology of the New Tendencies], which it surely is from its programmatic and theoretical structure. The demythicization of art and demystification of the creative process were also proclaimed through a positive approach to the industrial production of works of art (the possibility of multiplication was essential), collective work, and a rational approach. Meštrović called for the speeding up of the evolution and synthesis of science and art within the framework of rendering humanities and art more scientific, as part of the long-term utopian process of rendering all human activity scientific. In Meštrović's view, this process could be actively begun within the framework of art immediately, as well as the development of a global model, undertaking efforts to act in the sphere of culture at a smaller scale, for example, through the appropriation of scientific methods, such as the experiment. There is the issue of distributing all material and spiritual assets in equal measure, as well as of returning the achievements of science to the public domain. Meštrović did not consider artworks as unique commodities for the art market, but as "plastic-visual research, with the aim of determining the objective psychophysical bases of the plastic phenomenon and visual perception, in this way a priori excluding any possibility of including subjectivism, individualism, and romanticism [...]."⁴³

Further, the thesis was advanced that ultimately art as we know it would be transcended through developing the consciousness of the world using a metamorphosis of the social into the artistic act, which actively transforms the entire world.⁴⁴ We can trace such developments in the practices of the numerous New Tendencies artists and researchers in the early 1960s, which formed the context for the inclusion of scientist-artists later, such as Bonačić.

During the first half of the 1960s, the New Tendencies attained a noteworthy international reputation as a leading international platform for the avant-garde visual art that favoured rationality, social engagement, and interactivity with the user, which was achieved through the scientific methods of experimentation and algorithmic programming of visual elements in creating objects, as well as the environments made of industrial materials, movement, and light. Whereas, in Matko Meštrović's words, "at the beginning of the movement, artists intuitively oriented towards science, often lacking a notion of what it implied,"⁴⁵ this situation changed radically in 1968 when the programme "Kompjuteri i vizuelna istraživanja"/"Computers and Visual Research" began, and a greater number of

² François Morelet, "Untitled," in: *nove tendencije*, exhib. cat., Galerija suvremene umjetnosti, Zagreb, 1961; translated from French.

³ Matko Meštrović, "Untitled," in: *nove tendencije 2*, exhib. cat., Galerija suvremene umjetnosti, Zagreb, 1963, n. p.; translated from Croatian. See also: Matko Meštrović, "Scientifikacija kao uvjet humanizacije" in: Matko Meštrović, *Od pojedinačnog općem*, Mladost, Zagreb, 1967, pp. 221–230.

⁴ See: Meštrović 1963, n. p.

⁵ Statement at the symposium "Kompjuteri i vizuelna istraživanja" / "Computers and Visual Research," 6 May, 1969, Kulturno informativni centar [Culture and Information Center] (KIC), Zagreb, transcript from an audio recording, Archive MSU Zagreb; translated from Croatian.

scientists began to participate actively in the New Tendencies. At the conferences and exhibitions, which were a part of the programme, a number of scholars, who had left the realm of pragmatic scholarly work by using computers creatively, participated alongside the artists.

In addition to his academic work at the Ruđer Bošković Institute in Zagreb, Vladimir Bonačić participated actively in all parts of the “Computers and Visual Research” within *tendencies 4*, and during this short and obviously intense period he both started to realize a wide range of artworks and developed his own theory of computers and visual research. Bonačić participated in both conferences related to computers and visual research: the colloquy in 1968 and the symposium in 1969, the papers of which were published in the journal *bit international* which was launched by the Gallery of Contemporary Art in 1968.⁶ Within the two exhibitions of 1968 and 1969, Bonačić exhibited one coproduced work, a collaboration with artist and designer Ivan Picelj, as well as twenty-one own works. He also presented a large, 36-metre computer-controlled light installation, *DIN. PR18* in a public location.

Joining the New Tendencies

How did such intensive production and presentation come about? During the preparation of *tendencies 4*, organizers from the Gallery of Contemporary Art sought collaborators at the Ruđer Bošković Institute in Zagreb. Along with other scientists who were to take part in the symposia, the New Tendencies organisers met the young scientist Bonačić at the institute, who used visual research in his scientific work. Also at this time, Ivan Picelj, New Tendencies’ chief graphic designer, was asked to design the poster for the *tendencies 4* events. He decided to use punch cards of the institute’s computer for a collage. Picelj then had the idea to take his work a step further and to produce a light object following his *Površina* [Surface] series of reliefs in wood and bronze, which he had been developing since 1961. At this point, Vladimir Bonačić came upon the scene, and they began the collaboration that resulted in the electronic object entitled *t4*, the abbreviation of *tendencies 4*. It was presented in 1969. The front panel of the object is made of a grid of round aluminum tubes, each holding a small light bulb. Each tube is cut at an angle. The upper part displays variations of the characters “t4,” moving from the left to the right, for example. The rest of the panel lights up in asymmetric light patterns, and four knobs on the back of the object allow certain manipulations. Bonačić’s experience in physics and electronics helped a great deal, as did the excellent production conditions in the workshops of the Ruđer Bošković Institute.

Bonačić stated “computer must not remain merely a tool for the simulation of what exists in a new form. It should not be used for painting in the way that Piet Mondrian did, or for composing like Ludwig van Beethoven. The computer gives us a new substance; it

⁶ See: Vladimir Bonačić, “Mogućnosti kompjutera u vizualnim istraživanjima” / “Possibilities for Computer Applications in Visual Research,” in: *bit international 3*, Boris Kelemen and Radoslav Putar (eds.), Galerije grada Zagreba, Zagreb, 1968, pp. 45–58. Vladimir Bonačić, “Umjetnost kao funkcija subjekta, spoznaje i vremena” / “Arts as Function of Subject, Cognition, and Time,” in: *bit international 7*, Boris Kelemen and Radoslav Putar (eds.), Galerije grada Zagreba, Zagreb, 1971, pp. 129–142.

reveals a new world before our eyes. In that new world, after many years, scientists and artists will meet again, driven by a common desire for cognizance."⁷ Bonačić's reference to Mondrian was a critique of A. Michael Noll's experiment with a computer-generated Mondrian-like drawing.

The "Galois Field"

The "Galois field," named after the French mathematician Évariste Galois (1811–1832), whose work marked one of the beginnings of group theory, was a source of general inspiration to Bonačić. In abstract algebra, the finite fields are known as Galois fields, and Bonačić studied them in connection with his work on the roots of polynomial equations. First in his scholarly work, and later in his artworks, Bonačić developed his own, original method of studying the Galois field through the way that he visualized it. In his article "Kinetic Art: Application of Abstract Algebra to Objects with Computer-controlled Flashing Lights and Sound Combinations" (1974) he noted: "One of the most interesting aspects of this work [on Galois fields] is the demonstration of the different visual appearance of the patterns resulting from the polynomials that had not been noted before by mathematicians who have studied Galois fields."⁸ In the visualization of algebra of the Galois field, the calculated algebraic result can be shown in both symmetrical and asymmetrical visual compositions.

Dynamic Objects

All of Bonačić's dynamic objects have the possibility of interacting with time dynamics, as viewers (users) are enabled to control the rhythm of images or stop them. From 1969 to 1971, Bonačić created a series of dynamic objects consisting of the different computer-programmed light patterns displayed on an originally designed panel made of metal tubes of different shapes and sizes. For all his dynamic objects Bonačić made use of the "pseudorandom" algebra of Galois fields (see "GF" in the title of the work). The patterns were programmed on a SDS-930 computer in Real-Time FORTRAN, allowing a direct usage of Assembler, too, thus providing an excellent tool for various bit manipulation techniques.⁹ The software co-programmer was Miro A. Cimerman.¹⁰ Bonačić used custom-made hardware for all his dynamic objects that were produced or assembled from the electronic components by himself and experts at the Ruđer Bošković Institute. The dynamic objects were embodied statements of what he later elaborated on in his critique of the influence of the commercially available display equipment on the computer-based arts.¹¹ In his 1974 article "Kinetic Art," Bonačić emphasized that this was "akin to an artist being limited to the use of only two or three colours in a painting. It is true that much can be done with such equipment, but one can hope that ways will be found to take better advantage of computers."¹² In 1977, almost ten years after his first artistic experiments, Bonačić stated that a dynamic object was a "concept in which

⁷ Bonačić 1968, p. 58.

⁸ Vladimir Bonačić, "Kinetic Art: Application of Abstract Algebra to Objects with Computer-controlled Flashing Lights and Sound Combinations," in: *Leonardo*, vol. 7, no. 3, 1974, pp. 193–200.

⁹ Personal communication of the author with Miro A. Cimerman.

¹⁰ Cimerman collaborated with Bonačić at the Ruđer Bošković Institute from 1968.

¹¹ See: Bonačić 1974, p. 193.

¹² *Ibid.*

impregnable unity is established between the computer system and a work of art."¹³ In 1987 he added: "To integrate computer systems and art, without allowing one to dominate the other, is seen as a step towards the common language. This means that the artists and their work of art are able to communicate; artists and their art use a common language."¹⁴

From a contemporary perspective, Bonačić's Dynamic Objects are a pioneering example of the use of interactivity in the computer-based art. Like many other artworks created within the New Tendencies context,¹⁵ Dynamic Objects by Bonačić are designed both as artworks that can be experienced aesthetically, and as instruments or tools for visual research. Especially the latter aspect could lead us to the cognitive process (visual learning of mathematics and its hidden laws), a possibility mentioned by Bonačić when describing his art production.¹⁶ All Dynamic Objects were made to be manipulated either by the author (or someone from his team) or by the observer. Such experimentation and visual research (in the literal sense of the term) can be done within the controlled environment of an artist's or scientist's studio or laboratory with the assistance of the artist or his collaborators, or by gallery visitors.

GF. E(16,4) - NS C M

Bonačić introduced a higher level of interactivity in the Dynamic Object *GF. E(16,4) - NS C M*, which was conceived, developed, and built in Zagreb from 1969 to 1971.¹⁷ It is 187 × 187 × 30 cm large and weighs half a ton. The front panel shows a relief structure made of 1,024 light fields in 16 colours. Several Galois field generators operate in order to light the grid in different patterns and to produce the sound played through four loudspeakers, which create a quadraphonic sound system within the installation space. The field of interaction is not confined to the object. The researcher/user/observer can influence both sound and image by using various knobs and switches on the (custom-made) special-purpose computer which is positioned next to the object. Sound can be manipulated by excluding some tones. The speed of the visual display can be adjusted by looping the selected sequences. A remote (radio) control can be used by the viewer to manipulate some basic features. However, the observer cannot change the logic. The entire "composition" of this audiovisual spectacle, which consists of 1,048,576 different

¹³ Vladimir Bonačić, "On the Boundary between Science and Art," in: *Impact of science on society*, vol. 27, no. 1, January/March 1977, p. 25.

¹⁴ Vladimir Bonačić, "A Transcendental Concept for Cybernetic Art in the 21st Century," in: *Visions for Cybernetic Art*, exhib. cat., Paris Art Center, Paris, 1987, n. p.

¹⁵ For example, *Reljefometer [Relief-Metre]* (1964–1967) by Vjenceslav Richter, manipulable lumino-kinetic works by Gruppo MID, or *Un instrument visuel [A Visual Instrument]* (1965) by Michel Fadat, all exhibited at the New Tendencies exhibitions.

¹⁶ See: Bonačić 1971, pp. 129–142.

¹⁷ This computer sculpture was first exhibited in 1971 at the 7th Biennale in Paris in the section "Interventions" at Parc Floral, Bois de Vincennes, from 24 September to 1 November, 1971, followed by the exhibition at the UNESCO building in Paris, from November 1971 until November 1972, on the occasion of the 25th anniversary of the UNESCO.

visual patterns and 64 independent sound oscillators, can be played within 6 seconds or with a duration of 24 days.¹⁸

The bcd cybernetic art team, which was founded in 1971, consisted of Bonačić, his colleague from the Ruđer Bošković Institute, Miro A. Cimerman, a software designer, and Bonačić's wife, architect Dunja Donassy. They worked together until Bonačić's death in 1999. The bcd cybernetic art team continued to develop the Dynamic Object *GF. E(16,4) - Ns C M* over a number of years and experimented with different forms of external hardware. The *GF. E(16,4) - Ns C M* was an instrument that changed interface design, not only by taking advantage of the newest technical possibilities that were rapidly changing between 1969 and 1974, but also by developing the original new solutions. Between 1972 and 1974, several upgrades were carried out that extended the interactivity level of the *GF. E(16,4) - Ns C M* by using an external computer and a light pen: the computer offered a new interface – an interactive monitor – and the light pen enabled more intuitive interaction with its graphic interface. The object was also connected to the standard computer industry hardware, such as the GT40 graphic terminal with printer, but the use of human brain-wave activity was also considered as a possible interface of interaction. The object's tranquil audiovisual output and the transcendental quality of the cognitive and physical experience of higher mathematics led to the object being set up in St. Kilian's Church in Wiesbaden, Germany, from 1983 to 1985, "where it helps the Franciscans to prepare for meditation."¹⁹ In 1975, two music concerts have been performed by Bonačić using the *GF. E(16,4) - Ns C M* hardware, at the Dormition Abbey at Mount Zion and as well in the Italian Consulate, both in Jerusalem.

Art Installations in Public Spaces

Bonačić also developed the computer-based light installations for public spaces which enabled another kind of interaction: interaction at the social level. As part of the *tendencias 4* exhibition in 1969, he set up the large-scale Dynamic Object *DIN. PR18* on the facade of the Nama department store at Eugen Kvaternik Square in Zagreb. The 36-metre-long installation consisted of 18 elements; each element had a 3×5 grid light matrix. The installation performed a light show that flickered 262,143 patterns of the irreducible 18th-degree polynomial ($x^{18} + x^5 + x^2 + x + 1$).²⁰ The clock was set at 200 milliseconds, but there was a possibility to set it to different rates at "the border of the perception of the observer and frequency clock."²¹

At that time, the square was rather dark, with little public lighting, so the installation also acted as additional illumination. In July 1969, art critic and curator Želimir Koščević published in the cultural review Telegram an affirmative evaluation of the "message"

¹⁸ In his *Leonardo* article, Bonačić elaborates these different kinds of interaction from a practical and theoretical point of view, and also considers the use of brainwaves in artistic practice; see: Bonačić 1974, pp. 195.

¹⁹ Raymond Daudel, "The Cybernetic Art of the bcd Team," in: *Visions for Cybernetic Art*, exhib. cat., Paris Art Centre, Paris, 1987, n. p.

²⁰ See: Vladimir Bonačić, "Ekspozit u okviru *tendencija 4* Zagreb maj 1969" / "Exhibits within *tendencias 4*, Zagreb May 1969," the text of the explanatory plaques for the *tendencias 4* exhibition, Archive MSU Zagreb, n. p.

²¹ Ibid.

of this public light system, used for an aesthetic rather than a commercial purpose, as opposed to the illuminated signs of companies that had started to appear in Zagreb's city centre.²² Koščević also found that this public installation demonstrated a refinement of the idea of democratization of art within the context of the New Tendencies movement. He observed that Bonačić, "with his ideas, is a part of the front that, within the 'Tendencies' movement, attempts to open a path for art that would simply be work, the results of which will be intended for everyone, without the obligation to take our hats off and buy an entrance ticket for the unavoidable museum or gallery before we can confront it. Tomorrow is, as it seems, meant for just that kind of art."²³

In 1971, the installation *DIN. PR18* was replaced by a more complex installation, *DIN. PR16*, in the same place, at the top of the facade, but in the form of a triple frieze of light elements. A spatial extension was added by new light elements set in the continuation of the frieze on the other side of the building, as well as into the indentation of the front. A year before, in 1970, another Dynamic Object was set up on the facade of the Museum of Contemporary Art, Belgrade for the 4th Triennial of Yugoslavian Art.²⁴ When Bonačić replaced the installation at Nama in 1971, he also set up another installation on the facade of the Nama department store on Ilica Street, the Dynamic Object *DIN. PR10*.

Finally, another Dynamic Object was exhibited only several hundred metres away on the facade of the Kreditna banka Zagreb building on Ban Jelačić Square in Zagreb. None of the "outdoor" works mentioned here that were set up in public spaces are still in place, nor can their original elements be traced at present. However, at least, all of Bonačić's "indoor" Dynamic Objects still exist and are in good condition;²⁵ they belong to the small group of the computer-generated interactive objects from the 1960s that are still functioning today.

Critique of True Randomness in Computer Art

"I am especially sceptical of the attempts to produce computer art through a play with randomness and the deliberate introduction of errors in the programmes prepared for non-artistic purposes,"²⁶ wrote Bonačić in 1974. He supported art practices where, like in his Dynamic Objects that make use of pseudorandomness, the "feedback loop might be closed with an aesthetic output to an art object, which would then provide semantically relevant information to a viewer. I believe that such interactions will add to cognition, which will be reflected in the language and perhaps provide the improved means of communication."²⁷

²² See: Želimir Koščević, "Svjetlost nove urbane kulture," in: Telegram, 479, July 4, 1969, p. 17; translated from Croatian.

²³ Ibid; translated from Croatian.

²⁴ 4. trijenale jugoslovenske likovne umetnosti, Muzej savremene umetnosti, Beograd, 3 July – 15 September, 1970; curator: Jerko Denegri.

²⁵ In total, eight electronic Dynamic Objects were presented at the *bit international* exhibition, curated by Darko Fritz: seven objects at the Neue Galerie [New Gallery] in Graz, 2007, and three at the ZKM | Centre for Art and Media Karlsruhe, 2008/2009. Miro A. Cimerman, Dunja Donassy-Bonačić, and ZKM experts restored *GF E(16,4) -Ns C M* for its first public exhibition since 1985.

²⁶ Bonačić 1974, p. 193.

²⁷ Ibid., p. 194.

In his paper of 1969, Bonačić discussed the notions of information and entropy, and redundancy and originality in the writings of George David Birkhoff, Max Bense, and Abraham A. Moles: "Observing the qualitative relation for the aesthetic measure, we come to the conclusion that the maximal originality (namely, disorder created by the random selection of symbols) brings immense aesthetic values. Let us suppose we have created the programme in some other way; but it is still the programme that will result in an aesthetic object. Using the random generator, we shall carry on with random distribution of the existing information. Although a consistent use is made of the random generator, we speak of 'maximal originality,' no matter what the results of the programme might be. The random generator creates the accidental and unique presentation, which has neither value nor importance for human beings. Such information can evoke various associations in the observer. However, a computer used in such a way lags far behind the human being. Even if the expressive potentialities of the computer were equal to those of a human being, the essence of Pollock's world and creation would not be surpassed, regardless of the complexity of future computers or peripheral units. That, of course, does not mean that a man (or a monkey or other animal) aided by a computer could not create an aesthetically relevant object if they act consciously or unconsciously obeying the law of accident."²⁸

This critique inspired the creation of the object *Random 63*, which used 63 independent true random generators, each of which activated an electric lamp. The geometric pattern of the placement of the light bulbs on the object's front was calculated with a PDP-8 computer using the pseudorandomness of the Galois fields. This is the only object by Vladimir Bonačić that makes use of true randomness for the dynamic control of the lights. Bonačić expressed doubts about information aesthetics, a theory which was important to several participants of *tendencije 4 / tendencies 4*. In his book *Science and Technology in Art Today* (1968), Jonathan Benthall, who participated in two Tendencies conferences, observed: "Max Bense writes that mathematical aesthetics is a process which is 'devoid of subjective interpretation' and deals objectively with specific elements of the 'aesthetic state' of as one might say the specific elements of the 'aesthetic reality.' These elements include meanings as well as sensuous or formal qualities. Bense proposes a 'generic aesthetics' which would explain how aesthetic states are generated in the same way as generative grammar in linguistics attempts to explain the logical processes by which sentences are performed and interpreted; but a prior stage of analytical aesthetics is held to be necessary. The main mathematical techniques proposed by Bense are semiotic (the study of signs, originated by Charles Sanders Peirce and others), metrical (concerned with forms, figures, and structures), statistical (concerned with the probability of appearance of elements), and topological (concerned with the relations between sets of elements)."²⁹ Benthall pointed out: "Vladimir Bonačić is sceptical about the applicability of information theory to aesthetics, since it takes so little account of semantics. But he approaches visual phenomena in a mathematical and systematic way."³⁰

²⁸ Bonačić 1971, p. 138.

²⁹ Jonathan Benthall, *Science and Technology in Art Today*, Thames and Hudson, London, 1972, p. 59.

³⁰ *Ibid.*, p. 62.

The statement of Brazilian artist Waldemar Cordeiro at the *tendencije 5 / tendencies 5* conference that “Constructive art belongs to the past, its contents correspond to the Paleocybernetic Period of computer art”³¹ – that computer art had replaced Constructivist art – found its proof in Bonačić’s artwork. Moreover, with his dynamic objects, especially those set up in public spaces, Bonačić probably managed to make real the utopia outlined by Matko Meštrović and other New Tendencies theoreticians at the beginning of the 1960s. Bonačić’s work is exact research that leads to cognitive insights. Science has been humanized, and art has been scientized. Works have been realized through the use of machines, and their basic materials were time and light. They involve the viewer as an active participant, sometimes in physical interaction with dynamic objects, and they are both socially engaged and democratic. It is possible to multiply the works by programming purpose-built software and constructing hardware.

It seems that Bonačić’s work fulfilled and dynamized Meštrović’s visions of 1963, introduced at the beginning of this text, which are summarized in the idea that “[a]rt must perform a breakthrough into the extra-poetical and extra-human sphere, because today, without that action the human sphere cannot be enriched.”³² Bonačić’s work has, at least temporarily, realized the programme of the New Tendencies that at a certain point in time looked merely utopian. However, today it is being reactualized in a new geopolitical, technological, and cultural climate.

Parts of this text were previously published in two essays on Bonačić’s work by Darko Fritz: “Vladimir Bonačić: Computer-Generated Works Made Within Zagreb’s New Tendencies Network (1961–1973)”, in: Leonardo - Volume 41, Number 2, MIT Press, Cambridge, Mass., 2008, pp. 175-183 and “The Work of Vladimir Bonačić: A Temporary Realization of the New Tendencies Program”, in: A Little-Known Story about a Movement, a Magazine, and the Computer’s Arrival in Art: New Tendencies and Bit International, 1961-1973, Rosen, Margit, Darko Fritz, Marija Gattin and Peter Weibel (eds.), ZKM, Karlsruhe / MIT Press, Cambridge, Mass., 2011, pp. 49-56.

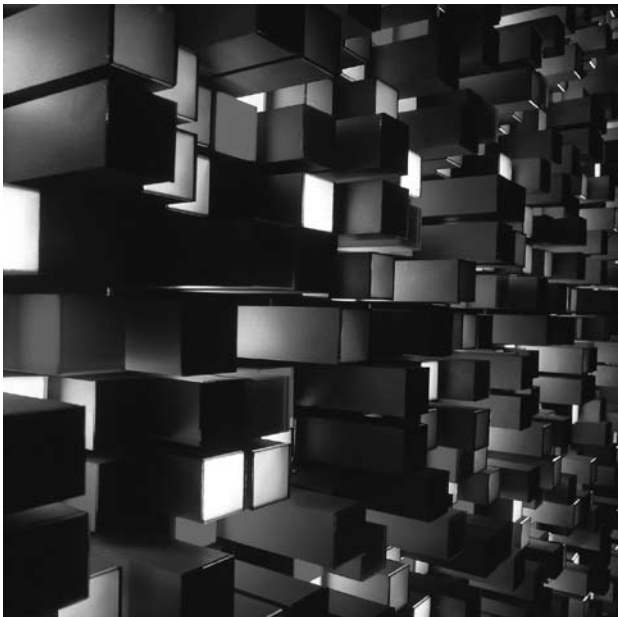
Courtesy by the author

³¹ Waldemar Cordeiro, “Analogical and/or Digital Art,” *tendencije 5 / tendencies 5*, “The Rational and Irrational in Visual Research Today. Match of Ideas,” Galerija suvremene umjetnosti, Zagreb, 2 June, 1973, conference proceedings, n. p.

³² Meštrović 1963, n. p



Vladimir Bonačić in interaction with GF. E (16.4), computer-controlled dynamic object / audiovisual installation, 187 x 187 x 30 cm, 1969-1971. (<c> Dunja Donassy Bonačić--bcd cybernetic art team. Photo: Petar Dabac.)



Vladimir Bonačić, GF. E (16.4), detail, computer-controlled dynamic object / audiovisual installation, 187 x 187 x 30 cm, 1969-1971. (<c> Dunja Donassy-Bonačić--bcd cybernetic art team. Photo: Petar Dabac.)

Analysis of Electro-acoustic Music through Multimedia Aesthetics

by Stephen McCourt

Concepts derived from multimedia and the visual domain are useful for analysis of electro-acoustic music. In particular compositing, spatial montage and space-medium as defined by Lev Manovich are relevant to analysis of form. And, vectors as defined by Herbert Zettl are beneficial when sounds are considered in terms of their directional behaviour. This approach to electro-acoustic music is further supported by shared perceptual phenomena between the sound and the image such as figure-ground organization. Comparisons between the sound and visual objects are also beneficial towards this approach. This paper follows from the previous research to further explore the benefits of multimedia aesthetics for the analysis of electro-acoustic music.

Introduction

This paper considers an analogy between the visual composition for film and sound composition in electro-acoustic music. Through this analogy, the multimedia concepts normally applied to visual images can be applied to the analysis of electro-acoustic music. These concepts include spatial montage, compositing and space-medium as defined by Lev Manovich [5]. Spatial montage is useful for the analysis of relationships between the spatially juxtaposed sounds, in terms of images and concepts they suggest. Compositing is considered in relation to the unification of sounds through their inherent sonic properties. Space-medium is a useful concept to describe instances where ambiguity of the figure-ground relationships can be considered as a feature of composition. Vectors as defined by Herbert Zettl are used in multimedia to analyze the direction and continuity of images [7]. In electro-acoustic music, vectors are useful for analyzing directional behaviour of sounds. Comparisons between sound and visual objects are considered in relation to the mimesis of visual structures. Three pieces are discussed: Jonty Harrison's *Hot Air*, and Mathew Adkin's *Melt* and *Aerial*. The approach described in this paper supports the idea that consideration of multimedia aesthetics and visual concepts can broaden horizons of listening strategies, which can reveal features of a composition's structure. This approach also supports an integration of Schaeffer's idea of the reduced listening [3] with other listening modes, as it can sometimes be beneficial to alternate between listening to a sound for its own sake and listening to it for extrinsic references.

Jonty Harrison - *Hot Air*

Throughout Jonty Harrison's *Hot Air*, sounds are suggestive of images related to their source. Sounds are also suggestive of the concepts such as heat, air and energy. When sounds are juxtaposed spatially, simultaneous images and concepts are suggested that form dialectical relationships. These relationships afford the new interpretations of meaning and can thus be described as a form of spatial montage.

As well as sounds forming dialectical relationships through the suggested images and concepts, they are also effectively integrated sonically through the shared features and spectral processes. This sonic integration can be considered as a form of compositing. In film, compositing is used to blend heterogeneous images from diverse sources into a cohesive form. An example of compositing is the integration of real and animated footage

in modern science fiction films [5]. Images are composited through the consideration of their intrinsic visual properties such as colour and visual texture rather than their meaning. This feature of compositing is comparable to the way extrinsic references of sounds are disregarded in favour of intrinsic properties during the reduced listening. Just as spatial montage relates to the referential features of images and compositing to the intrinsic substance of images in film, these concepts can simultaneously be applied to the referential features of sounds and the internal substance of sounds in a piece such as *Hot Air*. This approach to the analysis of *Hot Air* suggests that experience of this piece can benefit from both causal and reduced listening.

The multimedia concept of vectors is also considered during the analysis of this piece. In film and television, vectors describe whether images converge, diverge or continue along the same path. They also help establish continuity from one frame or scene to the next [7]. In electro-acoustic music, vectors are useful for analyzing various types of sonic direction, such as the movement through real space, movement through pitch space and directional behaviour of sounds [6].

Initially inspired by children's party balloons, Harrison eventually incorporated "other concepts of air (breath, utterance, natural phenomena) and heat (energy, action, danger)". Objects moving in space and the energy of interactions between air molecules themselves led him to a structure that involved "a free association of sounds and references, each linking and influencing its neighbour". Eventually, associations within the piece led him to an image "of the inflated balloon as a metaphor of the fragility of that very environment, of the Earth itself - capable of being manipulated, but not infinitely so" [4].

The piece contrasts the sounds of nature with the sounds of technology. Heat is suggested by the fire related sounds and through the sunlight-associated scenes containing birds, bees, farm animals and farm machinery. As well as suggesting air and energy, the balloon sounds introduce an almost tactile, textural element. The piece can be described as containing sounds related to the following categories: air/energy, heat, nature, and technology. A narrative can be followed through the relationships formed by spatial juxtapositions of sounds related to these categories. The following sound examples help to describe how this narrative can be explored through the consideration of spatial montage enhanced by compositing. A useful application of vectors is also demonstrated. The piece begins with the sound of a balloon being inflated. The spring-like sounds and sounds of friction that are provided by balloon manipulations following this inflation and throughout the piece are suggestive of energy. These balloon sounds are always related to human contact through source-bonding. Sound example 1 (0'00-1'01).

The first spatial montage involves the sounds of processed balloon sounds juxtaposed spatially with the sound of thunder. This association of air/energy caused by a human contact with nature sounds begins a narrative related to the environment. These sounds also form a composite through their similar texture and spectral evolution, which reinforces their association. Sound example 2 (2'01-2'30). When the balloon sounds are juxtaposed with the sounds of sparks, the associations of air/energy with heat are

suggested, which develops the narrative further and also relates to the title of the piece. At the same time, the transient and erratic nature of both of these sounds enhances their fusion as a composite. The initial sound of an inflating balloon can be interpreted as an input of air and energy that causes the introduction of heat. Sound example 3 (5'14-6'34).

In a later scene, the balloon and heat-related sounds are so effectively fused as a composite that it is difficult to distinguish between them. The idea of converging vectors is also useful here, as these sounds follow similar behaviours until they converge towards what can be perceived as a high frequency fusion of both sounds, which also contains the sound of computer processing. In this instance, the air/energy and heat related sounds have fused and converged towards a sound related to technology, as well as towards higher frequencies. This trajectory is made more meaningful by the aircraft sounds that follow, which enhance the convergence towards height through metaphor, while also enhancing the convergence towards sounds of technology. Sound example 4 (9'38-11'10).

Suggestions of the influence of technology continue throughout the rest of the piece. After associations have been made between air/energy, heat, and technology, associations are made between air/energy, heat, technology, and nature. These associations can be perceived in a spatial montage that contains the machine, nature and processed balloon sounds. Heat can be perceived as part of this scene through an intense machine sound that suggests a generator of heat, which continues from previous fire related sounds and sunlight-associated nature scenes. Sound example 5 (16'35-17'20)

A narrative related to a climate change is thus formed through the associations made progressively throughout the piece. The associations demonstrated can be summarized as follows:

Air/energy + nature

Air/energy + heat

Air/energy + heat + technology

Air/energy + heat + technology + nature

Through spatial montage, Harrison has transformed the meaning of sounds by making associations between the various forms of sound material. Spatial montage is enhanced by the way sounds are composited, through consideration of the shared features and application of spectral processes. Spatial montage is evident when causal listening is employed, as images and concepts are revealed through attention to the perceived sources of sounds. When sources are disregarded, the reduced listening can draw our attention to the way sounds are composited. Attention to internal qualities of sounds can then enhance our experience of the external images and concepts suggested. *Hot Air* can thus be considered as a piece where sounds are sonically integrated in space through compositing, and simultaneously form image/concept relationships through

spatial montage. This approach offers an almost cinematic experience of the piece when compositing and spatial montage are considered as a gestalt, just as they are when images are viewed on a screen.

Mathew Adkins – *Melt and Aerial*

Another form of space related to multimedia aesthetics is space-medium. Space-medium describes the situations in a composition where figure-ground relationships can be perceived as ambiguous [6]. This treatment of space and form, which appears in the work of abstract painters such as Mark Rothko and Willem De Kooning, is also revealed in the electro-acoustic music of Mathew Adkins. For example, in *Melt*, Adkins was partially inspired by J.M.W. Turner's painting *Rain, Steam, and Speed* (1844) [2]. Turner uses light and colour to merge foreground with background in this painting, and Adkins employs a similar approach through sound to merge various sounds from a train journey. This approach to space is relevant to the structure of the piece, as sounds at times emerge into the foreground and at others submerge into a fused, surreal sonic space. Sound example 6 (1'43-3'05).

When considering the analogies between sound and visual composition, it is also useful to consider the comparisons between sound and visual *objects*. These comparisons are particularly useful in relation to the works where sound is mimetic of visual structures. An example of such a piece is Matthew Adkins' *Aerial*. According to Adkins: "*Aerial* is a sonic photograph of the hills and mountains that surround where I live in the north of England. The work is not an attempt to depict one particular location, but a response to the landscape as a whole" [1]. When this form of mimesis is considered, attending to the continuous sonic textures can reveal suggestions of different forms of visual surface, while attending to discrete spectral and amplitude changes can reveal suggestions of more detailed features such as surface boundaries, surface intersections and changes in surface illumination [5]. Sound example 7 (0'00-1'30). This piece can also be considered as formed through the aesthetics of compositing rather than spatial montage, as sounds do not form dialectical relationships but are combined to suggest a particular form of landscape.

Conclusion

As the visual domain influences many electro-acoustic composers, concepts derived from this domain can be useful for the analysis of certain works. The concepts that relate to structuring moving images are useful when images are suggested by sound through source-bonding or mimesis. Spatial montage can be applied to analysis of source-bonded sounds that appear simultaneously in dialectical relationships. Compositing, which is used here to describe the fusion of sounds to create a more homogeneous form, can also be considered as contributing to the effectiveness of a spatial montage. This combination of spatial montage and compositing was discussed through the analysis of Jonty Harrison's *Hot Air*. An example was also given where the concept of vectors was considered to shed light on how the directional behaviour of sounds contributed to the structure of this piece. For Mathew Adkins' *Melt*, space-medium was used to describe ambiguity between foreground and background. In *Aerial*, sounds are mimetic of a visual

landscape. In this form of composition, perception of sonic textures as surfaces, and discrete spectral and amplitude changes as boundaries, intersections and changes in illumination, can enhance a listening experience. The approach to analysis described in this paper considers a sound's extrinsic reference and its inherent properties to be equally relevant to situations where both contribute to a work's structure. Images and concepts revealed through causal listening can be enhanced after attending to internal properties of sounds through the reduced listening. Schaeffer's ideas can, therefore, be integrated with new forms of analysis developed through multimedia concepts.

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The effects of Radiophonic Experience in the Poetics of Pierre Schaeffer and Vladan Radovanović

by Biljana Srećković

This paper explores the influence of radiophonic experience to the development of Pierre Schaeffer's and Vladan Radovanović's poetics, and also examines the relationships and possible connections between the discourses of those authors. Although they came from different positions and backgrounds, primarily an engineer and a composer, Schaeffer and Radovanović reach the radio, an institution and media field, as a plateau, which provides different possibilities for an experimentation and interdisciplinary activity. Through the analysis of their discourses about the radio as a media and the radiophony as an artistic concept, and also concise examination of their focal radiophonic works (Schaeffer's *La Coquille à Planètes*/Radovanović's *The Small Eternal Lake*), I would try to locate the possible foundations of their crucial projects: *musique concrète/art synthesis*. In that sense, the main conclusion would be drawn from the idea about radiophony as one of the basic forerunner concepts in the poetics of those artists.

Located on the borderline between the public discourse and private enjoyment, radio exists as a transmitter and communication device, but also as a medium of artistic practice and experiments (Gilfillan, 2009: xiii). Because of its own self-directed space and material, radiophonic field could be recognized, as suggests Brandon LaBelle, as a *dreamland* whose creative potential initiates further artistic development (LaBelle, 2006: 140; see Weiss, 1995).¹ Numerous artists from different artistic disciplines have recognized these possibilities over the past century, placing the radio as a media in the most diverse poetical territories.² Among them are two intriguing versatile figures – Pierre Schaeffer (1910-1995) and Vladan Radovanović (b. 1932). Although they are standing on different historical, aesthetical, educational, even to say, geographical positions, they are not remote counterparts; instead, they were both interested in experimental artistic/musical practices³ and sound research through an interdisciplinary approach, leaving the trace of the avant-garde action in their artistic circles in order to re-examine the traditional artistic language. What their connections makes stronger is an interest for the radio as a medium and radiophonic art as a creative sphere. In fact, searching *through* the radiofonic art/in searching *for* radiofonic art, those two artists create some foundations for their future concepts, which is a considerable place of their correlation. According to that, in this paper I would try to explore the function of radio in the poetics of those

¹ Already in the first half of the last century, many scholars have recognized an artistic potential of radio. One of them is Rudolph Arnheim who, in his essay *Radio: An Art of Sound* from 1936, considers the possibilities of "new form of art, born from the invention of the wireless", examining the social and political possibilities of the technology in the realm of perceptual invention (Cardinal, 2007: 1).

² For example, in the field of contemporary experimental electronic music we could notice an extremely complex and developed use of radio as an instrument of artistic creation and presentation. Just to mention John Cage's work *Imaginary Landscape No. 4* for twelve radio receivers (1951), and his collaboration with Morton Feldman which resulted in the project entitled *Radio Happenings* (1966-67); Karlheinz Stockhausen's works *Kurzwellen* for six players and shortwave radio (1968-69), *Spiral* for a soloist with a shortwave radio receiver (1968), *2Pole* for electronium, electrochord and shortwave radio (1970), etc.

³ I explain briefly experimental art/music as a practice that is based on the project, research process and innovation (according to Šuvaković, 2005: 161–62).

authors and to examine the possible relations between Schaeffer's and Radovanović's discourse, with the special accent on their activities in the field of radiophony.

If we take into account the circumstances concerning Schaeffer's education and professional activity in the late thirties, it was not surprising that he first choose the radio as a medium for his primal ground of activities. The facts that he had the education of an engineer and just basic musical knowledge, or that he began to build his career as a telecommunications engineer and technician in broadcasting services, confirm that additionally.⁴ Therefore, it seems that the institutional support, musical knowledge, and above all, the research spirit, were the crucial elements which direct Schaeffer towards the examining the possibility of radiophonic works. Having in mind that he spent his entire career linked with the radio as an institution,⁵ we could suppose that those moments were the initial points for his creative development. Unlike Schaeffer, twenty-two years younger Serbian artist Vladan Radovanović picked another way to reach the radio as a medium choosing music as his prime discipline, which was supported by his decision to attend studies of composition at the Academy of Music in Belgrade (1952-56), as early as mid-fifties. After that, he discovered his interest in electronic music and the possibilities of technology in working with sound, improving his skills in experimental studios all around Europe.⁶ Curiosity for electronic music and sound experiments led him to the Radio-Belgrade, where he initiated the foundation of the first electronic music studio in the former Yugoslavia (where he was director from 1972 to 1999). Because of those facts, or to say circumstances, it seems that it was very natural for both of them to devote more attention to the possibilities of radio and radiophonic art, through theoretical and practical discourse. In the paper "Notes sur l'expression radiophonique" from 1944, Schaeffer described the possibilities of the radio with obvious enthusiasm, calling it "miracle-machine", "chamber of wonders" that allows a listener to discover "the whole new world" and "to liberate the imagination" (Schaeffer, 1970a: 89, 99, 116).⁷ Referring to its creative power, and not just retransmitting role, Schaeffer speaks about radiophonic work as an ideal artistic model where characteristics of different fields become united (drama, music, acoustic) through the principle of "radiophonic counterpoint" (Schaeffer,

⁴ Schaeffer embarked on a scientific career entering the Ecole Polytechnique in 1929. In 1934, he began to work as a telecommunications engineer in Strasbourg and afterwards, from 1936, he was a technician in the Radiodiffusion Française (RF) (from 1949 called Radiodiffusion-Télévision Française/RTF) (see more in: Dhomont, 2010).

⁵ In 1942, Schaeffer co-founded the Studio d'Essai (later known as the Club d'Essai), within RF, which became a centre of his musical activity and the birthplace of *musique concrète*. After that, in 1949, Schaeffer with Pierre Henry founded the Group de Recherche de Musique Concrète (GRMC) which received official recognition from RTF in 1951. Schaeffer left the GRMC in 1953, but reformed it in 1958 with Luc Ferrari and François-Bernard Mâche as the Groupe de Recherches Musicales (GRM). Thereafter, he created the Service de Recherche de l'ORTF in 1960. His final founding venture was the establishment of the Institut National de l'Audiovisuel (INA), in 1974, which brought together the experts responsible for research, professional training, cooperation and conservation. After he had reached the age of retirement, Schaeffer continued to sustain his connections with the GRM, now part of the INA, and had premises and studios at the Maison de la Radio in Paris.

⁶ He has worked in experimental music studios in Warsaw (1966), Paris (1969), Utrecht (1976) and Budapest (1987). About Radovanović's activities in electro-acoustic musical field see: Radovanović, 2010; Veselinović 1991; Radovanović, 1974.

⁷ Compare with Schaeffer, 1970b: 125; 1970c: 132, 138-139; Schaeffer, 1966: 88.

1970a: 113). However, in spite of this statement about a multimedia act and disciplines networking, impregnated to some extent with a Platonist standpoint, Schaeffer stressed that radiophony had its own specific tools, and, as a result, a particular radiophonic style (*le style radiophonique*) (Schaeffer, 1970a: 96). In the foundation of this style is unique, supreme radiophonic substance – sound, which acts, at once, as an audible phenomenon, aesthetical object, socio/cultural model, signifier and so on (Schaeffer, 1970a: 98). Pointing to the extensive range of sound possibilities in the early forties, Schaeffer here announced his future concepts and directed his creative work towards the second chapter of his artistic career – *musique concrète*/concrete music phase, which marked the end of the decade.⁸ What is maybe more important for this period of Schaeffer's work, and also for the idea of concrete music and the development of his entire musical practice, are the procedures and techniques of sound recording. The possibility to record one, unique, spontaneous sound event, making of it the isolated, decontextualized, concrete sound fragment or, as Schaeffer claims, "a monument, document, text for analysis and psychoanalysis", particularly attracted Schaeffer and, perhaps, encouraged him to execute the potential experiments based on the idea of the *l'objet sonore*/sound object⁹ (Schaeffer, 1970a: 105).¹⁰ In addition to technical abilities that characterize radiophony, Schaeffer emphasized one more dimension – its influence on a perception field. Radio, as "an art for the blind", as Schaeffer called it, gives a space to the listener to focus on pure sound or pure sounding, which is achievable due to the potential of a microphone (Schaeffer, 1970d: 25; 1970a: 103). He explains that with the following words: "A microphone, like a microscope and a camera, has a possibility to exaggerate [...] with it we can substitute the lack of scenic elements and complete our senses [...] the microphone reveals the deepness of sound that alienates sight" (Schaeffer, 1970a: 100). He then elaborates: "Microphones do not transform sound, but the listening process" (Schaeffer, 1970a: 103).

Emphasizing the dominance of the aural over the visual, and the importance of listening, Schaeffer segregated the aspects which will be of central importance in his later discourse – the idea of *concrete music* and *acousmatic listening*, i.e. that is of acousmatic as practice which requests an isolation of sound from its resource and semantic relations (compare Schaeffer, 1966: 91–99; Šion 2007: 32).¹¹

Although in this period of intense radiophonic work Schaeffer was not particularly interested in music as a compositional practice, he could not hide his musical way of thinking, especially in this multimedia milieu. One paradigmatic example for that is an

⁸ In this paper, Schaeffer even refers to concrete music, adding (more than two decades later) one digression considering the procedures that have prepared the appearance of that concept (Schaeffer, 1970a: 109, footnote 1).

⁹ To find out more about a sound object, particularly about typo-morphology process, read Schaeffer 1966: 389–509.

¹⁰ It is worth to mention that Schaeffer's idea to record different "found" sounds, was floated to the surface when he discovered the "library" of sound effects or raw noise materials at the RF, developing the idea of found objects/*les objets trouvés* (Schaeffer, 1952: 12).

¹¹ This statement furthermore opens a series of questions and themes about the relationship of the phenomenological method to Schaeffer's work as a theorist and composer (see Kane, 2007).

ambitious series *La coquille à planètes/The Universe in a Shell*¹² – a radiophonic work made of eight one-hour experimental episodes,¹³ between 1942 and 1944, and broadcast in 1948.¹⁴ Even though Schaeffer did most of the work by himself – the writing, the studio production and even the acting practice, music was not in the frame of his competence, but of his collaborator Claude Arrieu's (see: Dack, 1994). Here we are coming to one intriguing paradox – Schaeffer did not compose music, but he organized the work, bearing in mind some principles of musical genres. Thus, the subtitle of the work – “the fantastic suite for one voice and twelve monsters”, refers to the cyclical concept, and obviously the romantic discourse. Besides that, Schaeffer described this work as an “immense radiophonic opera”, which is one more approval of his musical way of thinking (Schaeffer, 1970a: 89). But, he added one more explanation – the aim of this works is to “make some noise”, referring, at the same time, to his modernistic attempt to redefine musical canons by introducing extra-musical contents in the musical realm (Schaeffer, 1970a: 89). Because of that, this period, of the late thirties and the early forties, could be understood as Schaeffer's poetic centre from which his main ideas and musical concepts were spread. Schaeffer himself confirmed those conclusions by saying that radiophonic works represented important part of his oeuvre, just like his musical and theoretical occupation – “I have four ears, and at least three works: the radio work, musical work, and written work”, he claimed (cited in Douek, 2003). Thus, the practice has shown that his different activities or preferences are in the state of networking. The same case could be found in the poetic of Vlada Radovanović, also based on the impregnation of different artistic idioms.

Although, as we have already said, Radovanović's prime discipline was music, he has also shown interest in other artistic areas and multimedia/polymedia activities,¹⁵ which was obvious already during the period of his composition studies. This state of affairs he explains with the following words: “Since the beginning of the fifties, it has been my contention that at the level of the creative-exploratory personality, one must also, apart from being active in different artistic genres and in their *synthesis*, do creative work in dissimilar and even opposing styles, to express diverse views and positions toward art through art itself” (Radovanović, 2005: 138).

¹² With this progressive project Schaeffer was trying to “promote the acknowledgement of specifically radiophonic expression into every possible and imaginable domain”, using noise, music, words (cited in Dack, 1994; compare Schaeffer, 1970a: 109; see also Hoog, 2006: 27).

¹³ The titles of those episodes are: *Le Zodiaque*, *Dialogue avec les monstres*, *Nocturne aux lions*, *L'Opéra de minuit*, *Eres et aubes*, *L'Idylle aux machines*, *Mon tout est l'amour*, *Retour à l'évidence*.

¹⁴ As Schaeffer explains in the text “Notes sur l'expression radiophonique” this work depicts one day in the life of a character named Leonard, who is in dialogue with twelve zodiac signs – “each of them knows more about the universe than all teachers of philosophy”. The piece was obviously inspired by Paul Valéry's text “L'Home et la Coquille” (1937).

¹⁵ According to Radovanović, *multimedia art* is a combination of at least two or more different sensory media, which could be organized through the principle of dominance or equality. This is the most general expression for all the created works made of more than one media, whose forms differ in type of meaning, the degree of mutual dependency of media lines and according to their determinism (Radovanović, 2007: 144). Multimedia art usually includes a multitude of models, such as the theatre, ballet, opera, *Gezamtkunstwerk*, *vocovisual art*, film, video, mixed media (happening, fluxus), *intermedia* (in which all the elements are equal and integrated; Radovanović uses the term *polymedia* for such works), *multimedia* (opera, film, environment), *pluralmedia*, performance, art synthesis, etc. Contrary to multimedia art is *single-media art* (music, poetry and painting) (Matijević/Radovanović, 2007; Janković, 2003).

In the previous sentence, Radovanović accentuated the key word of his poetic – word “synthesis”, alluding to the *art synthesis* concept that he formulated in the early nineties.¹⁶ Trying to reach an integral art model and total synthesis of the media, Radovanović directed all of his procedures towards achieving this ideal condition. The *writing down of dreams* was his earliest form of preoccupation with this topic (1953),¹⁷ and after that, during the fifties, he was concentrated on: *artifugal* and *mental projects*; the absolute integration of numerous media – *polymedia* concept; a combination of words, images and sounds through the *vocovisual* actions.¹⁸ In a little while, Radovanović discovered another artistic field, especially suitable for the examination of synthesis idea – radiophonic art.

Like Schaeffer, Radovanović also tried to formulate the theoretical narratives about this media and particularly its role in the artistic context. In his discourse, he firstly differentiate diverse functions of the radio, explaining, on the one hand, radio as a “transmitter of the art”, and, on the other, as a “media for the art”. At the same time, radio is an artistic phenomenon – “media of the art” and that is the point of Radovanović’s focus (Radovanović, 1982: 56– 57). The mentioned functions, according to Radovanović are not in a correlation, but each model has its own way of consistence – the first represents what radio can, and the second signified what is typical for the radio discourse (Radovanović, 1982: 59). In that sense, one of the main features of the radiophonic idiom, according to Radovanović, is the capability of storing sound models as a specific sound archive.¹⁹ Correspondingly to Schaeffer’s statements, Radovanović speaks about the importance of recording and the use of magnetic tape as a device which allows the transformation and reorganization of sound material (Radovanović, 1982: 57). It is important to notice that Radovanović compares those procedures with Schaeffer’s concrete music principles, claiming that techniques of that practice are especially appropriate for radiophonic media (Radovanović, 1982: 57). In fact, concrete music, in his opinion, has opened the new chapter of music in technological sense and enabled a further development of radiophonic art, which suggests that Radovanović had known the principles of this practice, especially the fact that radio was some kind of natural

¹⁶ Radovanović explains *art synthesis* with the following words: “While total synthesis is not necessary in every individual work of art, in synthesis there must partake a minimum of two (expanded or non-expanded) media”, adding that synergetic principle, according to which the whole is greater than the sum of its parts, is crucial (Radovanović, 2005: 154). Art synthesis is a model of multimedia art, which is mainly based on synaesthesiae. It makes an interactive fusion of the old and new media in the predominantly deterministic way, but with no apparent dominance of one particular media. This concept includes the different styles based on human decisions from one spiritual centre (Matijević/Radovanović, 2007).

¹⁷ Radovanović connects art synthesis with uncounscious actions. As Jelena Janković explains analyzing his poetics: “His synthesis of media-lines is neither a product of rational decision nor is it inspired by the works of other artists. Its initial form appears in the mind of the artist as a sensation or a representation that emerges from sleep and a dream or from his exploration of the mysteries of his inner being” (Janković, 2003).

¹⁸ In spite of the fact that *vocovisual* had its origin in poetry, it is not poetry nor is it some other single-media art, but a multimedia genre or artistic form. Besides the aural and the visual, this form may also include the tactile, kinetic, gestural and spatial dimensions that posses or acquire meaning in the work of art (Radovanović, 2005: 152).

¹⁹ However, at the same time Radovanović categorizes radiophonic listening as “irreversible” – “everything that we are listening on the radio is going to disappear” (Radovanović, 1979: 38).

environment of this concept (Veselinović, 1991: 194).²⁰ He explains this kind of music as radiophonic, but not with the determination “only” because it possesses its own nature and autonomy (Radovanović, 1982: 58). However, the question is how one work could be categorized as radiophonic? It is not the question of the extremely high artistic quality, but, says Radovanović, of the constellations which fit the radiophonic requirements (Radovanović, 1982: 59–60). Here, as a paradigmatic case, Radovanović separates a *musical radiophonic work*, explaining it as “a work based on the idea of *media/art synthesis*” where music exists just as one, independent part of the whole, sharing the common artistic properties with the other parts (Radovanović, 1979: 37). Almost the same definition he is going to formulate fifteen years later, explaining the concept of *art synthesis*: “Each media line is structured in such a way as to also possess a relative degree of independence, but also so as to depend on other lines with which it forms a whole” (Radovanović, 2005: 154).

A case study model for all of his essential concepts that we have mentioned before, could be a radiophonic piece *The Small Eternal Lake/Malo večno jezero*, dated from 1984,²¹ through which we could examine Radovanović’s ideas about radiophony as a synthetic/syncretic activity, and, further more, his connections with Schaeffer’s concepts. Through the sonic polymedia model, which is the main frame of this work, we could see diverse media layers – poetic/textual, concrete/ambient sounds, vocal and instrumental sounds, electronic music/composer’s auto-citation (from the works *Sonora* and *Vokalinstra*), or the citation of the works/discourses of other composers, quite remote in stylistic sense (such as Beethoven, Mozart, Stravinsky).²² A special level, to say mental layer, represents the transcriptions of the composer’s dreams (six of them), influencing the works fragmentary structure, because the nature of dreaming is of the same kind. The impression of the whole is produced, on the one hand, by thematic material, whose basic theme is transience of life, along with the motives of creative obsessions, and, on the other hand, by consistent application of the chosen principle of work shaping, based on the idea of media equality (see Milin, 2007: 129; compare Veselinović, 1991: 133 - 137). Besides that, very important ingredients for achieving the unity of the work represent concrete sounds – they are, at the same time, the symbols of reality, opposite to the other sound segments that represent dream realm, but also a musical and dramaturgical element (since they are at the beginning of each segment, they have a role of borders in the whole work). All the layers, finally, are reunited through the radiophony – a model that, with its own technology, makes an ideal space for synthesis of arts, according to Radovanović. If we have in mind that radiophony occupied Radovanović during the eighties, and that the idea of *art synthesis* became finally realized at the beginning of the nineties, it is possible to conclude that his radiophonic period represents the final phase, or a final forerunner, that leads to the *art synthesis* concept.

²⁰ In his latest study Radovanović repeatedly examines Schaeffer’s procedures, emphasizing his role in the development of electro-acoustic music (see Radovanović, 2010).

²¹ This work has been given the *Gianfranco Zafrani Award* at the competition *Prix Italia*, in 1984.

²² In that context, Radovanović claims that this work could be categorized as one of the earliest postmodern pieces in the former Yugoslavia region, because of the application of almost non-transformed quotations and auto-citations, of its non-traditional conception, and mixture of different procedures (Radovanović, 2010: 144).

Although they came from different positions and backgrounds, primarily an engineer and a composer, Schaeffer and Radovanović reach the radio, an institution and media field, as a plateau, which provides different possibilities for experimentation and interdisciplinary activity. Therefore, the influence of radiophonic experience on their poetic was, as we see, an expected station on the way of acquisition of the new artistic spaces. Nowadays, in spite of the appearance of *new media*, the interactive power of computer and communications technology, the very inspirational potential of radiophony should be realised, and constantly renewed as a field of artistic innovations.

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Reality and Music. Floating Borders.

by Elzbieta Sikora

How the recorded sounds of the real environment become sound objects? Is Pierre Schaeffer's idea of *objet sonore* as a basis for all musical constructions still pertinent and acceptable today? Can we truly extract the abstract from the reality of sound? Is it possible to detach "the story" from the sound? Included in a musical context, is the sound losing its significations? How can we manipulate the perception of the listeners? All these questions and many others are in the centre of my compositional process in electro-acoustic, mixed and radio works. As answers to these questions, I would like to present and analyze several fragments of three of my pieces: *Lisbon*, *Tramway 28* for saxophone(s) and electro-acoustic sounds, *Eine Rose als Stütze* radio work and *Chicago al fresco* electro-acoustic work, composed in 1998, 2000 and 2009 respectively.

Introduction

How do the recorded sounds of the real environment become sound objects?

Is Pierre Schaeffer's idea of "objet sonore" (sound object) as a basis for all musical constructions still relevant and acceptable today? Can we truly extract the abstract from the reality of the sound? Is it possible to dissociate "the anecdote" from the sound? Taken in a musical context, does the sound lose its meaning? How can the listener's perception be manipulated?

All these questions and many others are at the centre of my compositional process in electro-acoustic, mixed media and radio works.

Example: "Lisbon, Tramway 28" for saxophone(s) and electro-acoustic sounds.

Paris 1968, sound object.nknkn

The emotional shock for me of hearing "The Study of the Railway" by Pierre Schaeffer and "Symphony for a Man alone" by Schaeffer & Henry remains etched in my memory forever. It can be compared with that of "Arcana" by Edgar Varese or earlier of Stravinsky's "The Rite of Spring".

When I arrived in France in 1968 the concept of *concrete music* was a mystery to me. I vaguely understood only some aspects of it. By *concrete* I simply imagined the existing objects which could be used to make sounds. Between that and the notion of "sound objects" and the whole musical science of Pierre Schaeffer, there was an abyss. I needed time to convert and adapt my rather conventional tools of musical analysis into new communication means which suited the enlarged and adventurous new musical universe. In the sixties, endless discussions took place after our classes: is noise music? Or: can the concept of the note considered as the first molecule of music be replaced by the concept of *objet sonore* as a unit capable of describing any kind of sound? From this period I acquired an extraordinary freedom that allowed me to advance further without too many problems, rightly or wrongly.

Reduced listening, open ears

Since then, the search for sounds has become my everyday occupation. My listening has changed completely. It was impossible for me to hear a plate vibrating when placed

on top of pile of other dishes without thinking *rebound* or the noise of a traffic jam without thinking evolving *trame*. I noticed that some sounds have a neutral aspect, others offer an additional something that I call "internal strength". Some are phonogenic, others are not.

Instrumental gestures, phonogenic sounds

If you can manipulate the sound objects or sounds of instruments during the recording process with more and more perfection, the sounds captured live outside or inside follow their own evolution. That is where our ears become the most attentive. A good real sound or a sequence of interesting sounds is never repeatable. To capture it takes foresight, perseverance and good fortune; the latter only works when it is provoked.

In search of sounds

In 1998 I worked on a multimedia project on the Portuguese poet Fernando Pessoa. The project was abandoned, but I liked the idea and decided to go to Lisbon in search of traces of the poet, equipped with only a SONY DAT and a microphone. Soon, the poet was sidelined by the city with its sounds, creaks, squeaks and screams. Lisbon attracted me. I was captivated by its unique atmosphere, with its bright and dark tones, with its calm, its violence, its beauty and its decay. I was off in search of sounds. Then I had the good fortune to find tram 28 - this unusual and gigantic "instrument" climbing up and down the city jingling its bell, its brakes squeaking and singing, the passengers talking, the driver calling for order. In three trips and an unexpected stop thousand of sounds soon filled the DAT cassettes.

Reproducing, rediscovering

Once back, I listened to them – the café Brasileira, the market by the station, the quiet street and the TRAM. There were misfires: nothing happened for several minutes at the café and I switched my DAT off just when the trolley filled with empty bottles wobbled and all the bottles fell down in a cascade of sounds, breaking on the pavement outside the cafe in an incredible din.

But there was this man's voice that sounded so good. Captivated, I located him and started to record. He knew who Pessoa was. Perfect! The first movement of "Lisboa" included him and his voice. The merchants with their melodious shouts at the market and the tram were real virtuosi.

From the instrument to the sound object

I still needed other sound materials. To compete with the tram I turned to the double bass and a friend, Richard Benoit, who plays it. Together we recorded: held notes, pizzicati, ricochet, on the bridge (breathing), random sequences of sounds, *col legno*. These sound objects were drawn on paper, described, and later electronically transformed.

From reality to music

The writing of the instrumental score followed. Bridges were created. One influenced the other and vice versa. An example: the blown sound of the saxophone copied from

the double bass, or the instrumental *rebounds* announcing the similar electro-acoustic sequence included in the work. Did the saxophonist represent Fernando Pessoa, forgotten in the meantime? I give no answer. The instrumental sound blended into the city and the landscape, growing in importance, behaving like a solo voice in a concerto. In that way, when composing “Lisboa, Tramway 28” I tried to abolish the boundaries between “music” and “reality”. By definition music = “sounds organized in time” (R.Leibovitz).

Conclusion

Real sounds carry incredible richness. Often unpredictable, they are born out of an action, a gesture. They let themselves be observed by the microphone like a cell under the microscope lens. Once heard again one can discover an incredible range of variations in grain, shapes, manners, tones and structures. Percussive or with a recognizable pitch, they gracefully give birth to a multitude of transformations, keeping however the imprint of their own identities. Forgetting the anecdote is a listening exercise. Using the imprint is a composer’s duty.

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