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## Jean-Claude Risset and his interdisciplinary practice: what do (or could) the archives tell us?

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**Abstract.** In 2017, Jean-Claude Risset gave his archives to the PRISM's laboratory. Thereby the researchers' community will have soon at their disposal a fund, especially interdisciplinary art and science oriented. For the moment, the archives are divided into two main parts: one within scientific research and one within artistic creation activity. More specifically, Jean-Claude Risset's own story shaped major interdisciplinary orientations: first of all, his pioneering research at Bell Labs, then back to "french reality" (his half-failure with Ircam and his difficulties concerning Marseille-Luminy), afterwards his quest for solutions as a political lever, especially through the Art-Science-Technology's report in 1998, and finally his turning point with his CNRS 1998 Gold Medal, consequently increasing conferences and mostly concerts. In addition, the study of material aspects (sharing activities between the laboratory and his home, place and content of documentation, etc.) is also necessary to understand "Risset's practice" of interdisciplinary.

**Keywords:** Musicology, Archives, Science & Art

### 1 Introduction

First of all, I would like to thank Richard (Kronland-Martinet), and through him the PRISM laboratory, for their welcome when arrived last June. I would also like to warmly thank Nemanja Radivojevic, PhD student from the University of Bern (in Switzerland), who came at the end of July to consult the Risset's fund, and helped me a lot in organizing it. Finally, I would like to thank Tanguy Risset for his trust and his help during this summer.

The physician and composer Jean-Claude Risset gave his archives to the PRISM's laboratory in 2017, in association with the INA-Grm in Paris for extracting and securing the scores, the audio-supports and digital documents (correspondences, patches, etc.). Thereby the researcher's community will have soon at their disposal (when it will be organised) a fund especially interdisciplinary art and science oriented. More precisely, the study of these archives will help all of us to better understand how Risset organised his double activity as a researcher in science and as a composer. It will also make it possible to evaluate in detail the way Risset conceived interdisciplinarity. Incidentally, these archives will also make it possible to work on the analysis of composition processes, in a perspective of TPCM conferences (Tracking the Creative Process in Music). Indeed, these archives could be a kind of workbook to implement interdisciplinary within a team or across team.

After a quantitative presentation of the collection (for the moment relatively approximate because the process is ongoing), we will propose a first qualitative approach, aiming to suggest some hypotheses on Jean-Claude Risset's own choices concerning Art / science interdisciplinarity.

## 2 Quantitative Content

With about 80% of the archives retrieved, we can describe its content as follows. These figures are a low estimate.

- 39 original manuscripts (other manuscripts are also being processed at l'INA-Grm de Paris). For the record, the number of Jean-Claude Risset's works is 68
- Sketches, drafts and various documentations of 73 works ranging from 1963 to 2016 (including several projects of unfinished parts, at least 5)
- Notebooks (more or less dated), schedules (from 1950 to 2016)
- 1.5 linear meters of archives about scientific topics (for examples, auditory perception, "hot articles" on perception, auditory illusions, historical articles on synthesis, motricity and musical performance, Ircam (1973-1979), quadraphonic spaces, voice, hearing, correlation, filtering, heuristic creativity intelligence, wavelets, math and music, etc.
- 2-4 linear meters of archives about administration of research (reports, evaluations, project reports, laboratory staff administration, careers, etc.)
- 3-5 linear meters of archives of conferences and / or concerts
- 2 linear meters of archives of projects of talks or/and papers, drafts of talks or/and papers and articles
- Between 2 and 4 linear meters of documentation about works performed in concert
- 7 linear meters of drafts, sketches and runs by Music IV, Music V, screenshot of Max-MSP patches (for works with Disklavier/Yamaha)
- 1 linear meter of class notes (when he was student)
- 44 linear meters of books, of which we can make a rough division between
  - a) the fields of Art-science, perception, psychoacoustics, cognitive sciences, computer and music... (22)
  - b) music and musicology (19)
  - c) other scientific fields (3)Books not related to the professional activities of Risset remained in the private domain of Jean-Claude Risset's heirs.
- 1.5 linear meters of correspondence
- undetermined number of recordings [not yet stripped] (concert recording, concert master)

### **3 Qualitative Content**

#### **3.1 Material Perspective**

The question of the combination of scientific and musical activities naturally depends on the places where these activities have been carried out, whether or not they have been correlated. Here again, we will distinguish different periods in Jean-Claude Risset's professional life.

On one hand, the "Bell Labs" (1964-65, 1967-1969) and "Ircam" (1975-1979) periods are times of clearly joint activity, precisely because of the claimed interdisciplinary nature of these two institutions. Resident invitations to the CCRMA (1971, 1975, 1982, 1986, 1998), Dartmouth College or the MIT Media Lab (1987, 1989) belong to the same kind of interdisciplinary. The close combination of theoretical research, technological development, musical "craftsmanship", collaborative work with teams, at the heart of the interdisciplinary approach defended by Anglo-Saxon researchers in those years, had a very strong adhesion in Jean-Claude Risset's mind.

On the other hand, his activity within the LMA (Laboratoire de Mécanique et d'Acoustique, CNRS, Marseille, between 1971 and 1975, then from 1979 to his death), reveals a more strong division between the scientific work, carried out within the laboratory's premises (Luminy, then CNRS-Aiguier campus), and his artistic activity, rather made from home. These first findings, which we will have validated them through a series of interviews with direct witnesses of his Marseille activity, interviews that I intend to conduct in 2020. In a rather obvious and logical way, it can be recalled that the sound synthesis on the Music software is carried out in the CNRS laboratory because it requires heavy equipment before the Personal Computers technological mutation, and the parts of graphic writing for instruments (for mixed music) or the writing of purely instrumental works have been made rather at home. This point has been confirmed by Tanguy Risset (Jean-Claude Risset's son). By "home", we refer to Marseille, or in summer in Bénodet in Britain, West of France.

The observation of the existing documentation at his home - articles, and especially books, excluding books outside the artistic and scientific fields - shows the predominance of musicological books, and the fields of cognitive sciences, computer music and sound perception, many of which have been already there in the LMA laboratory (now PRISM laboratory). A more in-depth study of the home documentary collection moved by the Risset's family to the PRISM lab still to be undertaken.

#### **3.2 Disciplinary Perspective**

"Both science and art are ways of understanding the world beyond the individual subjective view of reality" said Jean-Claude Risset [4, 18]. And Risset to precise: "According to Jacques Mandelbrojt [6], science is good at describing reality itself ("en soi"), while art is more apt to express or translate reality in us ("en nous"): its exquisite sensitivity and its extreme quest of subjectivity capture human universals

and archetypes” [4, 18]. For the record, Jacques Mandelbrojt is both painter artist and theoretical physician.

Beyond the common vocation of science and art to create knowledge, the interdisciplinarity according to Risset was first and foremost a radical mastery of each of the two disciplines. “I am a composer and researcher. Inseparably, while never having confused [scientific] research with [artistic] creation” [4, 173] With his difficulties: “If my research has nourished my creation, I have nevertheless experienced the conflict between different activities in their aims, methods and tempo. This conflict is transposed to the institutional level” [1, 175]. These are also areas that are largely different and even often opposed, by their goals (revealing mechanics vs. inventing new sound and musical forms), their methods (theory and experiential vs always *experimental*), their inclusion in the social ecosystem: “The scientific work is collective, ascertainable, provisional or temporary: it is subject to correction (adjustments), obsolescence and incorporation into the progress of science. The artistic work, on the other hand, is individual, subjective and sustainable.” [1, 179] “[Science] proceeds by tests superimposed one on the other and whose dark thickening slowly shows at the level of the true. Nothing similar in art. ‘Art is not successive, art is once and for all’, said Victor Hugo [2, 29], ‘real presences’ according to George Steiner [3].” This vision, close to the thinking of the physician Jean-Marc Levy-Leblond [5], a vision that no one could suspect of being too positivist, emphasizes the notion of *alloy* rather than that of *identity*.

Risset said: « There is no need to recall that music has benefited from science and technology. However, the inspiration which music has brought to science and technology is largely under-estimated. Music has a special kindship with scientific disciplines. According to Jon Appleton, ‘music inspires the kind of rational thoughts necessary to produce scientific work’” (4, 13). However, we suggest that the reading of the draft articles, sketches of theoretical works, as well as some of Risset's texts shows that Jean-Claude Risset participated very largely in fighting against this asymmetry, he was favor of cross-fertilization art and science.

Finally, this dual activity is also expressed in the writing of reports and other evaluations, many of which have been found in the archives. Jean-Claude Risset's extreme generosity meant that, when he was asked to take part on PhD defense or HDR juries (HDR means French new thesis after the PhD thesis to obtain authority to conduct research), he did not hesitate to switch from an expertise in musicology to acoustic physics, from aesthetics to signal studies, and so on. Many texts (papers or talks) - including a few excerpts cited here - show a constant self-assessment process, or more precisely, introspection into his practices. He acted as if his own metaposition had to be shared with potential multidisciplinary community suggest us "good practices". Additionally, the very large number of correspondences, scrupulously preserved but totally fragmented in his various activities, shows once again the crosswise dimension of his scientific, artistic, intellectual, and even political relations (but more rarely). A careful study of his correspondence could again allow us to understand some of the mechanisms of interdisciplinary activity.

### 3.3 Historical Perspective

Jean-Claude Risset's own story shaped major interdisciplinary orientations: first of all, his pioneering research at Bell Labs, then back to "french reality", afterwards his quest for solutions as a political or institutional lever, and eventually his turning point with his CNRS 1998 Gold Medal, consequently increasing conferences and mostly concerts. As Risset himself admitted, the Bell Laboratories offered him perhaps the only moment of interdisciplinarity to his own person. "I have myself worked as a researcher (at CNRS), as a composer (at IRCAM) and as both (at Bell Laboratories)." [4, 22]. And indeed, according to Jean-Claude Risset, Bell Labs seemed to be a model: "It must be said that the hosting of American laboratories, not only the material capacity, but also the open-minded and interdisciplinary affordability, were quite large and, in my opinion, quite exemplary, and this is not the case here [in France]. That is to say, in this great extraordinary scientific laboratory at the time called Bell Laboratories, we were involved in information theory, that is, we discovered the background noise of the Big Bang, we discovered the theory and practice of the transistor, we would never stop recalling the extraordinary contributions. There was an extraordinary atmosphere of openness where mathematicians, articles, psychologists, physicists, computer scientists, could work together. And so I was able to do both research for music there, and then even music where I did as an artist in residence in a laboratory. In France, it is a difficult concept..."<sup>1</sup>.

In fact, second period, is a return to the "French reality". We must remember his half failure at Ircam (1975-1979). The requested and insistent injunction of "artistic production" was incompatible, according to Risset, with the longtime of scientific research. What do the archives say? It was a time of great musical production with *Inharmonique*, *Passages* and works around the emblematic *Songes (Profils. Moments Newtoniens*, etc.) Hence Risset's remark mentioned above that his Ircam's activity was essentially related to musical composition.

But the return to France was also the initial enthusiasm for the creation of an interdisciplinary department (art-science) within the Science Faculty of Marseille-Luminy, under the impetus of the physicist Daniel Kastler (son of the Nobel Kastler Prize winner) and the support of Mohammed Mebkhout, for 4 years (between 1970 and 1975). The Ircam parenthesis (1975-1980) being closed, his scientific activities were only within the LMA. The archives show both the richness of the correspondence with these Marseilles precursors of the introduction of interdisciplinarity in France, but also the administrative difficulties with which Risset faced. The lack of understanding of the CNRS's supervision at the time, which only recognized research results, not musical activity, hindered cross-fertilization. And yet, "It is for musical reasons that our computer music team [IM means "Informatique Musicale" - LMA, CNRS Marseille] has contributed since 1984 to the development of the possibilities of wavelet transformation [7]"[1], to cite just one example.

Afterwards, Risset quest for solutions as a political, institutional and academic education lever, especially through the Master ATIAM (Acoustic, Signal processing and Computer Science Applied to Music) from 1993, and the Art-Science-

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<sup>1</sup> Interview with Jean-Claude Risset by Jean-Yves Bosseur, France Culture, « Opus », 17/04/1999.

Technology's report in 1998, commissioned by the Minister of "Education Nationale" in France. The archives are particularly rich in files mentioning numerous contacts at national level, for the implementation of the ATIAM Master's degree, then the broad consultation with the main actors of the art-science-technology in France (following the creation in 1983 of an association, "Collectif pour la Recherche en Informatique Musicale").

The turning point with his CNRS 1999 Gold Medal, consequently increased conferences and mostly concerts. Concerning this period, the archives are extremely abundant (numerous invitations, especially outside France, which combine talks or keynotes and concerts (monograph or isolated pieces). Jean-Claude Risset scrupulously kept all the drafts of the talks, the correspondence for the preparation of the concerts, and other more tourist details.

#### 4. Conclusion

"I think that interdisciplinary never works as good as when it is embodied in the same person. There are already communication difficulties within myself between the musician and the scientist, even though I can be both but not necessary at the same time. But then if it's about getting around a table... for instance, interdisciplinary with specialists if each one of them doesn't go part of the others way, it seems extremely heavy to me"<sup>2</sup>. Interdisciplinarity is not so frequent, neither at the individual level, nor at the institutions level. Concerning Jean-Claude Risset, the study of archives (for the moment superficially) seems to indicate that Risset composer is more the inspiration of Risset researcher (than the opposite). Thus, Risset's work seems to seek to rebalance frequent tropism in the field of art and science, according to which scientific discoveries inspire artists, rather than the opposite. Therefore, musical ideas can largely provoke new fields of research and knowledge.

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<sup>2</sup> Interview with Jean-Claude Risset by Philippe Boulanger, France Culture, « la Science et les hommes » 10/07/1991.