
The GRM: landmarks on a historic route

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The year 1958 witnessed the birth of the institution GRM, nurtured by the French Radio and Television service (RTF). However, the fifty years of the GRM cannot be dissociated from the preceding period, datable from 1942, when Pierre Schaeffer began experiments with radiophonic sound which led him to *musique concrète* while bringing into existence the institutional infrastructure of the group. We can therefore see the Studio d'Essai (1942–46), the Club d'Essai (1946–60) with its Groupe de Recherche de Musique Concrète (GRMC, 1951–58) as forebears of the GRM. The fundamental principle, which lies in working with sonic material directly on the recording media through a precise listening to recorded elements, led Schaeffer to affirm that there is another way to access music other than from notation.

He used this powerful idea as the fixed point on the compass for all his research. Linked from its origins to the broadcasting services – RTF until 1964, ORTF up to 1974, then INA ever since – the GRM has constantly adapted its theories and its ideas to successive technological developments: smooth disks (shellac records), magnetic tape, computer memory. A fruitful period at the Service de la Recherche (1960–75) allowed Schaeffer and his team to systematically examine the world of sounds from their own listening experience. The *Traité des Objets Musicaux* (Treatise of Musical Objects) bears witness to this research. Since 1975 another adventure has been under way: that of the preservation and making available of works and discoveries gathered over the years – an exceptional heritage which continues to grow and interest an ever larger public.

1. INTRODUCTION

In 2008 the Groupe de Recherches Musicales will be fifty years old. To tell its story in due form, we should begin in 1958, the year it was set up by the Club d'Essai in the French Radio and Television service (RTF). Pierre Schaeffer was named director of the GRM and the team comprised a dozen collaborators, among them Luc Ferrari, Bernard Parmegiani, François-Bernard Mâche and Jacques Poullin.

By focusing on 1958 to call up the history of the GRM, however, we are losing sight of the previous period, that of the GRMC or Groupe de Recherche de Musique Concrète (1951–58), which from its outset produced the most original masterpieces of *musique concrète*, and constitutes an important part of the GRM's heritage: *Symphonie pour un homme seul* (1950)

by Pierre Henry and Pierre Schaeffer, *Le crabe qui jouait avec la mer* (1950) by Philippe Arthuys not to mention the early jewels such as the *Études de Bruits* by Pierre Schaeffer, which dates back to 1948, and his *Suite pour 14 instruments* (1949). So, how far back must we really go to find the origins of the GRM? Even if one distinguishes the official birth of *musique concrète* in 1948¹ from the emergence of the GRM as an institution ten years later in 1958, it remains difficult to capture the essence of this 'group', which seems to cross the historical periods, aesthetic movements and technological revolutions effortlessly. In this article, to give certain landmarks in the history and pre-history of the GRM, we will take as our starting point 1942, and glimpse over one's shoulder even further towards what took place much earlier, between the years 1910 and 1920.

2. GLIMPSES OVER ONE'S SHOULDER: BEFORE 1958

2.1. To begin with what is best known: the invention of *musique concrète*

The very first appearance of the term '*musique concrète*' was at the presentation of Pierre Schaeffer's 'Concert de bruits' on Sunday 20 June 1948, at the Club d'Essai in Paris. Pierre Schaeffer made the notable declaration:

To reach music, one can take an inverse path, which is to set out from sound data instead of notation, and from a former composition instead of a traditional execution. If the term did not seem so pretentious, we would call these attempts 'attempts at *Musique Concrète*', in order to better define their general character and because it is not so much a question of noise but of a method of musical composition.

This 'inverse path to reach music' grew out of the emergence of a technological revolution that started at the end of the nineteenth century, which made possible the capturing and then fixing – or memorising – of sounds by recording them on a medium.

¹Pierre Schaeffer, 1951, *A la recherche d'une musique concrète*. In the first part of this book, Schaeffer recounts its invention in the form of a diary.

When Pierre Schaeffer began his professional career in 1936 as a young engineer with the Radio Diffusion Française (RDF up to 1949, then RTF), the pioneering period of mechanical recording was over. The cylinders patented by Edison in 1877, on which a needle inscribed variations in pitch from a sound source recorded through a horn, were no longer being used. Recordings through a microphone were engraved on shellac records, covered in wax. These Pierre Schaeffer and then Pierre Henry (who arrived in 1949) used until the beginning of the 1950s. Magnetic tapes only came into general use in the 1950s, and the hard discs of computers in the 1990s. But one cannot explain the invention of *musique concrète* merely by reference to a simple technical shift. Without the foresight of one man, then that of his collaborators, nothing would have happened.

2.2. The personality of Pierre Schaeffer

Born in Nancy in 1910, in a family of musicians, it was natural that Pierre Schaeffer should study the cello. He was also deeply religious, a practising Catholic, and when young was an active member of the French Boy Scouts, with the Rovers, with whom in particular he learned theatre. On top of his engineering studies at the Ecole Polytechnique, he specialised in telecommunications; but it is essential to take into account another aspect of his education, not only to understand the man himself but also to understand the institution that he founded, the GRM. In 1941 Schaeffer met Gurdjieff and followed his teachings on and off over several years.² George Ivanovitch Gurdjieff (1877–1949) was a guru of Armenian origin who lived for a long time in the East, where he was initiated into the Eastern philosophies. He settled in France in 1922 and lectured on his theories in the milieu of those European intellectuals³ who were curious about other ways of being and thinking. Gurdjieff advocated a daily practice of ‘movements’, a sort of gymnastic exercise for the body and the mind, aiming at a detachment from oneself and an opening up to the perception of other beings and things in a fresh manner, liberated from the conditioned reflexes acquired through one’s education. For that he founded ‘groups’ that brought together the candidates for initiation. The word ‘Group’ in the title ‘Group for Musical Research’ comes directly from the model proposed by Gurdjieff. Sheltering within the word lies something of the philosophy: to use the ability to perceive and the body to ‘do’, to detach oneself from previous states in order to enter into a new association with the world (of sounds), to work together under the direction of a master, and to reach knowledge through

oneself. It is immediately apparent that this approach is not at all incompatible with the rigour of scientific experiment, acquired by Schaeffer in the course of his studies as an engineer, all the more so because Schaeffer did not have the mind of a mathematician, who calculates, but of a physicist, who tests things out.

2.3. The political and artistic context prior to the invention of *musique concrète*

Another important element to consider when looking at the coming of *musique concrète* (1948) and of the GRM (1958) is the period of history that engendered them – the prenatal phase. This occurred during the rise of Fascism and Nazism. In retrospect we need to look at a number of artistic currents, even if at that period Schaeffer affected to ignore them. Ever since the 1910s, the great Italian Futurist movements, notably that of Luigi Russolo (1885–1947) with his 1913 Manifesto *The Art of Noise*, had been making a case for the ‘ever greater enlargement and enrichment of the field of sounds’.⁴ Marinetti (1876–1944) was also on to this, when he declared in 1913 ‘Under the influence of the great scientific discoveries, Futurism has for its principle the complete rebirth of the human spirit’.⁵ A great number of Italian Futurists, however, openly declared their support for Fascism, which put off many of the admirers of their artistic approach from acknowledging their influence. This denial lasted for a long time after the Second World War, up to the end of the 1950s. For its part, Russian Futurism, which had kept its political distance from Italian Futurism, had contributed to the reflection on the new arts, especially that of the cinema: a media art like that of *musique concrète*. In the wake of Futurism, and its various forms, came Dadaism from 1915 onwards, and Surrealism, the first manifesto of which came in 1924. Schaeffer always feigned ignorance of Italian Futurism before the Second World War – but how could he have acknowledged it without being labelled a Fascist himself? On the other hand, in 1936 he travelled to Germany to learn about the new equipment being used for radio. On this occasion, he discovered the art of *Hörspiel* (theatre plays for radio), which the Germans had been practising since the 1920s. We must remember that at the outset of his career in radio, Schaeffer was entrusted with the responsibility for fitting up the sound system in the Paris Opera, in order to broadcast the productions. His first publication arose out of this experience, *Vingt leçons et travaux pratiques destinés aux musiciens mélangeurs* (Twenty Lessons and Practice Works for Mixer Musicians), published in collaboration with *La Revue Musicale* in 1938.

²Pierre Schaeffer gives his account of Gurdjieff in Louis Pauwels’ *Monsieur Gurdjieff*, 1954, pp. 347–82.

³Many of these were English, among them the well-known literary critic A.R. Orage, founder of a review called *The New Age*.

⁴Luigi Russolo, *L’art des bruits*, Futurist Manifesto 1913, in Giovanni Lista, 1973, *Futurisme, Manifestes Documents Proclamations*, Lausanne: L’Age d’homme, p. 316.

⁵*Ibid.*, p. 142.

If one focuses on the musical milieu between the two wars, one must take into account André Breton's attitude, the leader of the Surrealist movement, who declared himself hostile to music, which he considered a 'bourgeois' art. This created an uncertain situation in France. Consequently, the writer-poet Jean Cocteau, who had been a staunch supporter of musicians, and the musicians themselves were isolated from the Surrealist mainstream, whereas music ought to have been the major art.

Finally, we can trace the roots of *musique concrète* in the work of Erik Satie (1866–1925), Claude Debussy (1862–1918), Olivier Messiaen (1908–92) and Edgar Varèse (1883–1965).

2.4. The Institutional Advance: from the training session at Beaune (1942) to the GRM (1958)

2.4.1. The training session at Beaune, from 15 September to 15 October 1942

The war broke out, and then the German occupation. Schaeffer, as a civil servant, was sent to Vichy. In 1942, Schaeffer, taking advantage of the element of uncertainty in cultural matters during the occupation, suggested organising a training session for practitioners of the emerging radiophonic arts: the Beaune training session. Schaeffer succeeded in persuading the actor and theatre director Jacques Copeau (1879–1949) to join him in this undertaking.⁶ Together they elaborated exercises for speaking texts into a microphone, and how best to transmit emotion: 'to confide in the audience', as Copeau put it.⁷ Jacques Copeau advocated a return to enunciation and to a 'school of sincerity', opposed to that of the fiction created by theatre. The trainees, about ten of them, had been chosen not on the strength of their CVs but for their pluri-disciplinary aptitude. They had to be actors, singers, musicians and technicians, all at the same time.

The training session in Beaune remained a model for Schaeffer, a successful symbiosis between art and craft, between research and creativity.

2.4.2 The Studio d'Essai, 1942–46

After the dress rehearsal that was the training session in Beaune, the Studio d'Essai (Trial Studio), inaugurated on 12 November 1942 at 37 rue de l'Université in Paris, had to be both a laboratory of radiophonic art and a

vocational training centre. Pierre Schaeffer at this time was working as the chief engineer at the radio, in charge of staff training.

But what went on exactly, at the Studio d'Essai?

It was wartime, and resources were limited. Nevertheless, in 1943/4, Schaeffer composed a radiophonic opera in eight parts, based on the musical work of the composer Claude Arrieu: *La coquille à planètes* (The planetary seashell). Moreover, together with his official duties, he was training his team for secret activities in the Resistance. In particular, it was he who organised the radio broadcast call for the liberation of Paris in August 1944, which led him to be appointed Director General of Radio after the Liberation in 1945, although he fell out of favour with his hierarchy after only a few weeks and returned to the Studio d'Essai as technical adviser. Very soon afterwards, he was sent abroad on a study and research tour, principally in the United States and Canada, to observe how radio worked in those countries.

2.4.3. The Club d'Essai 1946–60

The Club d'Essai, directed by the poet Jean Tardieu, followed on from the Studio d'Essai. This was the real start of the period known as *avant-garde*, where the discovery and the improvement of the aesthetics of *musique concrète* were established amid the effervescence of new radiophonic creation. Schaeffer was also an active participant in the Centre d'Études Radiophoniques (CER), which was at the heart of radiophonic research and training. From the beginning of 1947 he was more and more involved with the Ministry of Foreign Affairs, for the distribution of radio frequencies among the countries, which led to a great deal of travelling. Between each trip, however, he returned to the Club d'Essai to continue his experiments, for Schaeffer and his colleagues were in the middle of bringing to life what one would describe today as the switch from research into the pattern of sounds as background effects, towards their expression as music, or to put it another way, the passage from realistic sound effects adapted to radiophonic theatre to a musical abstraction.

Schaeffer was strongly inspired by the aesthetic adventure that was cinema. In a first article dated 1941 on the *Esthétique des arts relais* (Aesthetic of relay arts), he had already made a parallel comparison between radio and cinema. According to him, language had power over the abstract, but cinema and radio were better equipped to conjure it up. He then differentiated between language 'that which makes sense', and cinema and radio, 'that which refer to the senses'.⁸ He thus came

⁶Jacques Copeau had founded the famous Vieux Colombier Theatre in Paris in 1913, in reaction to what he saw as the traditions embodied in the Comédie Française. With his friend Charles Dullin, he had opened the door to young actors such as Louis Jouvet and Jean Villard, wanting to push for an *avant-garde* theatre dedicated to the mind, far from naturalism and free from commercial servitude. Copeau had also taken part in the creation in 1909 of the *Nouvelle Revue Française* with André Gide and some others, and with the support of André Gallimard.

⁷Pierre Schaeffer, *Propos sur la Coquille*, 1990, p. 91.

⁸From the CD booklet accompanying the *10 ans d'essais radiophoniques 1942–1952* (10 Years of Radiophonic Trials 1942–1952). Phonurgia Nova/INA, Paris, 1989, p. 17.

to the conclusion that cinema and radio were relay arts, between concrete and abstract. In 1946 Schaeffer extended this idea in three important articles published in the *Revue de Cinéma*.⁹ He described music as an 'ideal malleable matter'¹⁰ and explored the idea that its passage from the realm of the senses to that of the emotions in the perception of sound reappears, mirror-fashion, in the association that sound forms with image.

It seems necessary to me to emphasise here the circumstances under which this intense intellectual activity took place, at the end of the war. Research into the abstract was not fortuitous: it was present in all the artistic movements immediately after the war. It was a response to a deep desire in all who survived the war and its horrors to forget the past, to make a fresh start. This inquisitive and inventive state of mind was very fertile. Schaeffer's discovery of 'an inverse path to bring music into being' was stumbled upon almost by chance, by continually listening to the sounds he had recorded. He then came up with the idea of 'reduced listening' derived from prolonged listening of a closed groove on a disc, whose repetition in the form of a loop of sound leads one to forget the reasons for the sources of sound, and instead to appreciate only its effects.

We come then to 1949, when to continue his research, Schaeffer recruited a new collaborator capable of 'performing percussion-rolls' on sound objects, during recording sessions. This turned out to be Pierre Henry, a young percussionist, who had recently discovered musique concrète while listening to the *Concert de Bruits* on the wireless. Everything moved very quickly from then on, the duo Schaeffer/Henry being complementary. Schaeffer continued with his role as theoretician, while Henry showed a genius for machines as well as being an outstanding musician. Works, experiments, and lectures all followed one another.

2.4.4. *The GRMC 1951–58*

For Schaeffer, the creation of the Groupe de Recherches de Musique Concrète in 1951 meant the coming of autonomy of musique concrète within the frame of radiophonic art, of which he announced would come to its end given the rise of television. The group would be organised around Gurdjieff's principles with certain initiated individuals who would receive and train the applicants in this adventure, while working as trainees. One saw the entry into the composition studios of a number of inquisitive young musicians, who all came to experiment with musique concrète. The great names of the day followed one another: André Hodeir, Pierre Boulez, Olivier Messiaen, Michel Philippot, Monique Rollin, Karlheinz Stockhausen, Jean Barraqué, Darius

Milhaud, Edgar Varèse, Henri Sauguet and Roman Haubenstock-Ramati. The period 1951–58 was very fertile. At the outset, all the musical genres and all the individuals rubbed shoulders with one another without inhibition. We saw a number of 'firsts'. Pierre Boulez composed on magnetic tape a serial work on one sound called *Etude 1*, and an étude using seven sounds called *Etude 2*. Olivier Messiaen occupied himself with spatialisation with his *Timbres Durées* diffused through three channels, and André Hodeir produced the first mixed work, for tape and piano, *Jazz et Jazz*. Yet in spite of all this, a shadow appeared. Was Schaeffer being too ambitious? There was a memorable scandal at Donaueschingen in Germany for the première of *Orphée 53*, a musique concrète opera mixing sounds recorded on magnetic tape with real singers, harpsichord and violin, which was booed. The press and the musical world that day were united in their inability to follow this. It must be said that the neo-classical style of this opera by Pierre Schaeffer did not in the least match the radical modernism that was expected of him. But can one make a definitive judgement about a musical form, in its early stages, and as important as that of musique concrète, on a single performance? Musique concrète had yet to win acclaim in a very conservative musical world that was set against such experimentations.

In any case, Schaeffer remained charged with official missions by RTF, which frequently took him away from the studios. In 1954, he was called to set up and direct the organisation that became in 1956 the French overseas broadcasting company, the Société de Radiodiffusion de la France d'Outre-mer (Sorafom), and then the Radiophonic co-operation office (Ocora) in 1962. During his absence, Philippe Arthuys was named responsible for the GRMC and Pierre Henry, Director of Works. From then on, Schaeffer kept up the practice of delegating the functions (though not the title) of Group Director to colleagues: Michel Philippot (1960–61), Luc Ferrari (1962–63), Bernard Baschet and François Vercken (1964–66). From the beginning of 1966, François Bayle took over the direction for the duration of thirty-one years, to 1997. He was then replaced by Daniel Teruggi.

At the GRMC, Pierre Henry's composing talent developed dramatically by working with experimental filmmakers (Max de Haas, Jean Grémillon, Enrico Fulchignoni, Jean Rouch) and choreographers (Dick Sanders, Maurice Béjart). Ever since the first choreography of musique concrète in a shortened version of the *Symphonie pour un homme seul*, by Pierre Schaeffer and Pierre Henry, given on 31 July 1955 at the Théâtre des Champs-Élysées with the Ballets de l'Etoile and Maurice Béjart as choreographer, the Béjart/Henry collaboration grew deeper. Pierre Henry's success (as that of Philippe Arthuys who went on to specialise in the composition of film music) annoyed Pierre Schaeffer so

⁹*La Revue du Cinéma*, Paris, 1946, no. 1: 'L'Élément non visuel au cinéma, analyse de la bande son'; No. 2: 'Conception de la musique'; No. 3: 'Psychologie du rapport vision-audition.'

¹⁰*Ibid.*, No. 1, p. 47.

much he finally forced them to resign from the Group. This was the end of the avant-garde period of musique concrète, and also the birth of the GRM as we know it today.

3. THE GRM SINCE 1958

At the end of 1957, Schaeffer decided to take over the GRMC again. On his return after an absence of several months, he announced his disagreement with the direction his colleagues had taken: 'I used to dream of a straightforward approach to the phenomenon of hearing, of experimenting for different audiences, and an ethical approach for the listener, in all of which the musician could retrieve, after all, their regulation and their self-confidence. None of this has happened.'¹¹ The governing body of RTF then gave him their agreement to 'renew completely the spirit, the methods and the personnel of the Group, with a view to undertake research and to offer a much needed welcome to young composers'. The GRM was set up. Pierre Henry, Philippe Arthuys and several of their colleagues resigned in April 1958. A few months later, Schaeffer recruited his new collaborators: Luc Ferrari, Iannis Xenakis, Bernard Parmegiani, Mireille Chamass-Kyrou, François-Bernard Mâche. Later arrived Ivo Malec, Philippe Carson, Romuald Vandelle, Edgardo Canton and François Bayle.

In 1958 Schaeffer returned to the studio and composed *Etude aux allures* (3'28) and *Etude aux sons animés* (4'12). In 1959 he composed *Etude aux objets* (16'40), which, after revision in 1971, lasted 17'10 with five movements: *Objets exposés*, *Objets Etendus*, *Objets multipliés*, *Objets liés*, *Objets rassemblés*. With this he dropped the name musique concrète and henceforward called it 'experimental music', as his project was entirely directed at research. He decided to programme a series of concerts in Paris where he invited like-minded foreign studios to the GRM, also to produce their work. The success of these demonstrations, which where of the latest works composed in Tokyo, Brussels, Cologne and Milan, created a favourable climate for the management of RTF to undertake a more ambitious project. Thus was founded the Service de la Recherche that brought together under one roof the activities of the Club d'Essai, of the Centre d'Etudes de la Radio-Télévision and of the Groupe de Recherches Musicales. Moreover, Schaeffer recommended that the basic research should be extended to the image, in a joint approach between artistic definition and new technical methods. That suited everyone, the RTF needing to modernise and at minimal cost. The research department replied to both these imperatives seeing that it concentrated modernisation within a single department.

¹¹Pierre Schaeffer, 1957, Letter to Albert Richard', *La Revue Musicale*, no. 236, pp. IV-V.

3.1. The nurturing of the Service de la Recherche, 1960-74

The research department of Radio Television Française was officially set up on 1 January 1960. Within a few months Schaeffer found himself at the head, no longer of a small GRM of some fifteen colleagues, but of a bigger research department of more than a hundred people, most of them hired by himself. The 'Service' would function until the 1 January 1975. It survived the change of status when RTF became the Office de Radio Television Française (ORTF) in 1964, putting an end to its monopoly on production. The GRM, incorporated into the Service de la Recherche, constituted the basic model: multidisciplinary by bringing into contact artists, technicians and other researchers. Together with the GRM, three other groups saw the light of day: the Groupe de Recherches Image GRI, the Groupe de Recherches Technologiques GRT and the Groupe de Recherches Langage which became the Groupe d'Etudes Critiques. Other than the permanent technical and administrative staff, the others involved were on either temporary contracts, corresponding to the period of a production, or else on annually renewable ones. To offset their duties as civil servants, the participants were authorised to carry on their own activity as creators. 'Unrestricted' research and innovation were then de rigueur, a synergy with the great cultural bubbling-up in the years leading up to the events of May 1968.

At the GRM the theoretical teaching remained based on practice and could be summed up in the catch phrase 'do and listen'. In 1961 a first major training course was set up. This concerned every new collaborator who was designated to carry out experimental music in the studio as well as to render minor services for at least two years before being officially given the status of 'member of the GRM'. In 1968, this 'training session' was replaced by a class under the aegis of the Conservatoire National Supérieur de Musique de Paris. This was a double consecration, for the electroacoustic music genre and for Pierre Schaeffer himself, who became its first professor. He was replaced, in 1976, by Guy Reibel. This was also the way to reach a younger generation of composers, who would later spread their wings and give a new impetus to the world of music.

The productions of the Service de la Recherche were many and varied, the exchanges between workers in the plastic arts, choreographers, actors, musicians and technical people being very fruitful. Taking only the GRM, more than three hundred works were composed for the concert as well being used in cinema, advertising, dance and theatre. These complemented lectures, and research conferences where the challenges and innovations were demonstrated to the public. Schaeffer insisted that his colleagues would have a more systematic approach to their work. Everyone was to devote the greater part of their time to preparing the elements of

sound that would be listened to during the test sessions, within the group, with the idea of creating a new Solfeggio, which would re-establish music on the basis of the central tenets of the listening experience. This systematic analysis of sonic material lasted for many years, not without some disappointments: Iannis Xenakis left the GRM in 1963, as did Luc Ferrari. At last, in 1966, Schaeffer published his treatise on musical objects, the *Traité des Objets Musicaux*¹² (TOM) – a hefty volume of seven hundred pages, the summation of all his work. The *Solfège de l'Objet Sonore* came out in the following year, and consisted of three LPs of sonic examples that served to illustrate the *Traité*.

The following include some of the important works of music that belong to this period: *Orient-Occident* (1960) by Iannis Xenakis for a film by Enrico Fulchignoni premiered at the Cannes festival that same year; *Hétérozygote* (1963) by Luc Ferrari, the first work to be termed 'anecdotal', which played with an ambivalence between a musical and a documentary listening; *Sigma* (1963) by Ivo Malec, the first application of effects created in the studio to instrumental scoring for full orchestra; *L'Instant mobile* (1966) by Bernard Parmegiani, the first completely electronic work to enter the repertoire of the GRM; *Variations en Étoile* (1966) by Guy Reibel, which used a wide sweep of all the possible manipulations of the one sound by exploring the sonic figurations described in Pierre Schaeffer's *Traité des Objets Musicaux*;¹³ *Les Shadocks* (1968), an animated cartoon for television for which the music was composed at the GRM by Robert Cohen-Solal and in which the character of the 'terrible' Gégène is supposed to be a sketch of Pierre Schaeffer; *Mutations* (1969) by Jean-Claude Risset, the first work in the GRM's repertoire synthesized on a computer, at the laboratories of the Bell Telephone Company in the United States, with the Music V programme written by Max Mathews; the *Expérience acoustique* (1970/1973) by François Bayle, the first full-length electroacoustic work, whose composition had taken several years; the *Requiem* (1973) by Michel Chion, one of the major works by this composer, who was one of the new generation of members of the GRM who arrived after May 1968.

The technology evolution over these fifteen years remained rooted in the analogical world, a preparation for the new departure into digital that began at the outset of the 1970s. The GRM, which had always on principle created its own tools, developed its own prototypes under the supervision of the engineer Jacques Poullin, a faithful colleague of Pierre Schaeffer up to 1975, with the technical support of RTF, in close collaboration with the composer-researchers. The first phonogènes date back to 1951; the chromatic phonogène keyboard was used for the

first time in the work *Orphée 51* or *Toute la lyre*, by Pierre Schaeffer and Pierre Henry, as well as the sliding phonogène that allowed a glissando through continuous control over the variation in speed. The morphophone (1954) basically allowed the user to generate multiple delays, and the universal phonogène (1961) varied the length and pitch of sounds separately – that is to say, separated the elements of shape and the elements of matter contained in the sonic object.

The rivalry between the electronic music studio in Cologne, directed by Stockhausen, and the studio in Paris, regarding first concrète then experimental music, had eased off. The first electronic sounds introduced into a piece of musique concrète at the GRM date from 1956, with *Haut voltage* by Pierre Henry, but it was only in the middle of the 1960s that the research and development of tools for synthesising sound (by Enrico Chiarucci, who had trained as a physicist) became widely used. Parmegiani was the first to use them in *L'Instant mobile* in 1966, when Stockhausen, in Cologne, had inaugurated the mix between electronic and concrète sources with *Gesang der Jünglinge* back in 1954, and had composed *Kontakte* entirely from electronic sounds in 1960. The GRM finally created an electronic studio in 1970, the Studio 54 envisaged by Enrico Chiarucci. The main attraction of this studio was the 'Coupigny modular synthesiser' (named after its inventor), that consisted in some twenty sound generation devices, which offered the possibility of putting controlling certain ones by means of others through a matrix of pin connectors. Studio 54 was also given a Moog synthesiser with VCA¹⁴ and a sophisticated mixer control that was co-designed in partnership by engineers from RTF and the GRM, among whom Guy Reibel played a leading part. Nearly all the important works of the 1970s, which are the glory of the GRM, were composed at the '54' (e.g. *De natura sonorum* by Parmegiani, *Vibrations composées* by François Bayle).

Schaeffer, however, remained reticent about the burgeoning computer music, for this did not correspond to his tenets that gave priority to perception in order to come to terms with music. The early 'computer music' (*Music I* by Max Mathews in the United States dates to 1957) is chiefly turned towards a prediction mode more proper for musical writing. One must write interminable lines of code to obtain, after long nights of calculation, a sound or in the worst case an error message.

3.2. Within the INA 1975–2007

On 1 January 1975, the GRM became part of the National Audiovisual Institute (INA).

Pierre Schaeffer was at the origin of INA's foundation. He had proposed its setting up to parliament a few weeks before the dissolution of ORTF, when he realised

¹²Pierre Schaeffer, 1966, *Traité des Objets Musicaux*.

¹³Ibid.

¹⁴VCA: Voltage Control Amplifier.

that many essential activities intimately tied to audio-visual production had been completely overlooked in the legal framework governing the audiovisual activities; namely research, professional training and the preservation of archives. But, by one of the ironies of history, in this year of INA's creation (1975), Schaeffer turned 65, the age of retirement. The Public Service took advantage of the occasion to 'thank' the brilliant if controversial inventor. The poet Pierre Emmanuel became the first President of INA and François Bayle was named Director of the GRM.

The GRM was thus part of the INA, as were the GRI and the GRT, but the research department was dissolved. Each would function autonomously from then on. Needless to say, the Service de la Recherche was missed by all who had known it. The great laboratory was closed, but people were still there and beside research, two important departments were put in place: Vocational Training, and Preservation of the Sound and Visual Archives of radio and television.

On taking up his duties, François Bayle had at heart the renewal of the concert form. The public's sense of curiosity and excitement, before 1968, was long gone. Up to the beginning of the 1970s, concerts had resembled more demonstrations than fully fledged musical events. François Bayle, with the assistance of the engineer Jean-Claude Lallemand, thought up the Acousmonium, or orchestra of loudspeakers. Its inauguration took place on 1 February 1974 at the Espace Pierre Cardin in Paris with François Bayle's *Expérience acoustique*. The set up of the diffusion included, depending to the character of each concert, some fifty to a hundred loudspeakers arranged on the stage and all around the hall, in order to spread the sound through space and create a unique listening moment. According to Bayle, the Acousmonium's effect is to 'substitute a momentary classical disposition of sound making, which diffuses the sound from the circumference towards the centre of the hall, by a group of sound projectors which form an "orchestration" of the acoustic image'.¹⁵ It was from this period that the GRM won the reputation of giving concerts with a very fine sound.

For theoretical research, the hard task of succeeding Pierre Schaeffer fell to François Delalande. Delalande started a new research workshop on the teaching methods designed to create musical awareness in children. Regular collaboration with the Ministry of Education was developed, and was backed up by radio broadcasts. This basic work, on understanding perception and looking for methods of pedagogic outreach for 'doing and listening' among the very young, was to have long-term repercussions in the twenty-first century when the Ministry of Education committed itself

firmly to the GRM, especially financially, to develop software programs adapted to children's use. The Acousmographie workshop, producing software to help in the graphic transcription of music, had been started in 1975 by the GRM and was revived more seriously in 1988. The software finally saw the light of day in 2005, after a journey packed with incidents because of a shortage of resources, as much human as financial. François Delalande was also interested in the analysis of electroacoustic works, from the listening end. The workshop was strengthened during the first years after 2000 with the use of new multimedia tools that made the exploration of the interface between sound and vision much easier, for since computer science has equipped us with screens, the heard and the seen have never been so close to each other as they are now. In 2006 François Delalande retired and was succeeded by another engineer, Adrien Lefèvre, who specifically developed the Acousmographie software.

Other research undertaken by the GRM was directed towards bringing about new tools to help composition. The GRM acquired information technology a little late, in 1975, but quickly overcame this gap, notably with regard to the new competing research centre, IRCAM, which had just been created and endowed with considerable resources directly financed by the Ministry of Culture. The internationally famous composer and conductor Pierre Boulez directed this Centre, with the complete support of the highest in the land. In these circumstances, the GRM owed its survival only to its small size and its roots in the audiovisual world. Just the same, François Bayle took the risk, posed by this challenge, to direct the group towards new technologies. He recruited two young researchers, Bénédicte Mailliard and Jean-François Allouis, for the specific task of adapting the computer tools to the philosophy of the studios, a philosophy inherited from the days of musique concrète. After a series of upheavals following the dissolution of ORTF, and the creation of seven new companies,¹⁶ the GRM moved to the Radio France building (Maison de la Radio), close to the radiophonic production facilities with whom it continued to collaborate as in the past. It was supported in its mission by the new law governing the audiovisual sector. The internal structure of the group remained the same: research, creation and production were always the order of the day. This is an important point, for it was the association of the different activities that guaranteed the internal dynamic of the structure: the imperatives of production stimulated the rest of the activity. A new generation of researchers was recruited: Christian Zanési, Daniel Teruggi, Evelyne Gayou, Yann Geslin

¹⁵François Bayle, 1993, *Musique acousmatique, propositions ... positions*, p. 44.

¹⁶Radio France, TF1 (national television station), Antenne 2 (national television station), FR3 (regional television station), TDF (Télédiffusion de France, in charge of the transmitters), SFP (Société Française de Production, for television and cinema programmes), and INA (Institut National de l'Audiovisuel).

and Jean-Christophe Thomas. Everything was ready to take advantage of the technological break that computers heralded. The research activities in information technology were set up in studio 123, and from 1977, the program Syter (Synthèse Temps Réel (Synthesis in Real Time), then Système Temps Réel (System in Real Time)) was competing with the generation of 4A, 4B, 4C and then 4X developed at IRCAM. One of the advantages of Syter was that it gave back to the musician not only the opportunity to synthesize sounds in real time, but also the possibility of playing them directly.

From 1983 onwards, the GRM was also a workplace using MIDI tools, MacSoutils and MIDI Formers tools, the development of which was entrusted to the engineer Serge de Laubier, who later would develop a personal tool, the Meta-Instrument. The MIDI tools allowed a diversification of sonic sources by adding synthesizers to digital keyboards and other interactive controls that one could play directly. This orientation of research and development was part of the same project of contributing actively to the renewal of concert performance.

It was the arrival of personal computers that made the adaptation of Syter to lighter work stations possible. Hugues Vinet, a young engineer trained at the Ecole Nationale Supérieure des Télécoms, launched this task that soon became known as GRM Tools. In 1992, Version 1 of GRM Tools was put on the market: thirteen algorithms worked with a sound card, Sound Tools II. In 1994, GRM Tools developed a compatibility with Pro Tools. The first plug-in versions came in 1995–96, and in 1999 GRM Tools could work with on the PC platforms. In 2001–02, Emmanuel Favreau, the engineer in charge of the development of GRM Tools after Hugues Vinet left in 1994, suggested four new treatments of sound, based on phase-vocoders. This sound treatment software quickly became a bestseller, used by every professional working with music and sound, especially in the cinema.

Along with this, the activity of creation reached its height. The GRM had a policy of welcoming composers into its studios 116 A, 116 B, and 116 C. The philosophy was always the same: each composer was left alone with the tools to work directly with sound material – this was one of the main differences from that of IRCAM, which put a musical assistant at the invited composer's disposal. From 1979, the GRM and Radio France undertook the co-production of a series of 'acousmatic' concerts each season. The new works were then broadcasted on the radio and sometimes recorded on CD, for a policy on publishing rounded off the activity of musical creation: books, CDs, broadcasts. More recently web radio and developments for access to documentation on the Internet has been entrusted to Dominique Saint Martin, who in 1999 was given a wide brief to develop multimedia at the GRM.

All these activities year after year obviously created an important body of works – around 1600 at this time – and many associated documents. Since the beginning of the 1960s, the phonothèque of the GRM had the mission of protecting this particular content and constantly adapting it to the new technologies. The Acousmathèque (started in 1993) extended this activity by adding to it the activities of conservation and publication. The preservation of this heritage was a major concern within the GRM – as well as the principal mission of INA. With digitisation this problem seems to have found a long-term solution: on a single server are now found all the data, both sound and visuals (photographs, films, graphics, transcriptions). Daniel Teruggi, the latest director of the GRM (since 1997), is aware that this is a double task. The challenge of keeping our memory must be set out as that of the permanent enrichment of the contents by creation and research, and also to offer it to a public, keen on experiencing novelty and interested in this recent history.

We must not forget that the last great innovation at the outset of the GRM's fiftieth anniversary concerns an ever larger and younger public in the years since 2005. The techno wave in the middle of the 1990s had already contributed to making electroacoustic music better known to a general public who knew little of the possibilities opened up by sophisticated work on sound. Many techno musicians have found their roots in the work of pioneers of electroacoustics, bringing about a new scene: electro, which appears as a hybrid genre between techno, electronic and electroacoustic, breaking down the barriers between commercial music and serious music. The GRM has chosen to enlarge this movement, especially through the work of Christian Zanési,¹⁷ who has undertaken to welcome musicians from the international electronic world, on the sole criterion of musical affinity, at the *Présences Électronique* Festival, in permanent partnership with Radio France and held in Paris over four days every year at the end of March.

4. CONCLUSION

Even though Pierre Schaeffer had been especially visionary and stubborn, his successors have not broken with this tradition. The history of the GRM resembles that of a saga. It has been a long journey since the first works were composed by recording sound objects on discs, speeding up, slowing down, creating closed grooves; and such progress since the first concerts broadcast in mono on the wireless! Yet, at the same time, what continuity in the philosophy and ideas! The GRM, the fruit of the recording techniques, has adapted itself to successive technological upheavals, from the

¹⁷In his role as artistic director of the *Présences Électronique* Festival.

vinyl disc via the magnetic tape to computer memory; for archives stored on a single shelf to putting works online on the Internet. The result is a great collective work where everyone has nevertheless kept his originality. This is because of the personal listening experience, and the experimental work on sound, which leads to a 'doing' community. More than a studio, the GRM has become a school where the whole world can come and verify that indeed there exists 'an inverse path to reach music, which is to set out from the sound data instead of the notation'.

REFERENCES

- Bayle, F. 1993. *Musique acousmatique, propositions ... positions*. Paris: INA-GRM Buche/Chastel.
- Booklet with the CD *10 ans d'essais radiophoniques 1942–1952*. 1989. Paris: Phonurgia Nova/INA.
- La Revue de cinéma*, 1946. No. 1: 'L'Élément non visuel au cinéma, analyse du bande son'; No. 2: 'Conception de la musique'; No. 3: 'Psychologie du rapport vision-audition'. Paris.
- Lista, G. 1973. *Futurisme, Manifestes Documents Proclamations*. Lausanne: L'Age d'homme.
- Pauwels, L. 1954. *Monsieur Gurdjieff*. Paris: Albin-Michel.
- Schaeffer, P. 1951. *A la recherche d'une musique concrète*. Paris: Seuil.
- Schaeffer, P. 1957. 'Lettre à Albert Richard', *La Revue Musicale*, no. 236.
- Schaeffer, P. 1966–68. *Traité des Objets Musicaux*. Paris: Seuil.
- Schaeffer, P. 1990. *Propos sur la Coquille*. Arles: Phonurgia Nova.