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Ronald Bruce Smith
University of California - Berkeley

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Ronald Bruce Smith
Center for New Music and Technology
University of California, Berkeley
1750 Arch Street
Berkeley, California 94720-1210, USA
smith@cnmat.berkeley.edu

An Interview with Tristan Murail

Tristan Murail was born in Le Havre, France in 1947. Following university studies in economics, Arabic, and political science, he entered the composition class of Olivier Messiaen at the Conservatoire National Supérieur de Musique de Paris in 1967. Upon graduation in 1971, he was awarded the Prix de Rôme. On his return to Paris, he founded the ensemble L'Itinéraire with composers and former Conservatoire classmates Gérard Grisey and Michaël Lévinas. L'Itinéraire soon became known as the starting point for an aesthetic movement known as spectral composition, its two main proponents being Tristan Murail and Gérard Grisey. In a nutshell, much of the material in a spectral composition is derived from the frequencies of spectra and their behavior. Tristan Murail has been involved with IRCAM since 1980 as a composer, researcher, and professor. In 1997 he moved to New York City, where he is a professor of composition at Columbia University. The following interview was conducted by telephone on 7 February 1999.

Smith: Can you briefly describe the contemporary music scene in Paris in the early 1970s?
Murail: At that time, I felt that serial composers and theorists were strongly predominate. With respect to theory and actual practice, many people were still influenced by serial ideas and, of course, by the theories of Pierre Boulez. However, 1968 being the year of the student uprising in Paris provided a source for a contrasting viewpoint. In art, it gave way to many experiments. This new aesthetic emphasized the art of destruction, although this model was already quite old, dating back to the Dada movement of the 1920s. John Cage was important at that time, as were Earle Brown and André Boucourechliev, a French-Romanian composer. Many concerts at that time involved a sort of quasi-aleatoric experimentation. This was the antidote to the structuralist trend in music. I was not at ease with either of these approaches, nor were many of my friends. This was why we had to find something different.
Smith: I believe that the term used in America was "anti-establishment."
Murail: In a way, serialism was the establishment. It certainly became the establishment when Pierre Boulez came back to Paris in the mid-1970s to establish IRCAM and the Ensemble Intercontemporain. He was "establishment," as he was heavily supported by the government. It seemed that there was little room for anything else. While there were other ensembles in Paris, such as L'Itinéraire, we had to fight just to survive, to keep our meager subsidies. (Well, meager compared to what Boulez was receiving.)
Smith: At the time of the inception of L'Itinéraire, what was its mission?
Murail: We were trying to propose another approach toward music. We tried to play everything that would not be considered establishment. At times we played some music by Boulez, though we were mainly looking for novelty, for things that would bring a new approach to music.
We programmed many premieres, such as the French premieres of music by Giacinto Scelsi, who was virtually unknown at the time. We also gave the French premieres of pieces by George Crumb, because along with a certain freedom in his language, we believed that he was bringing something new to the field of timbre. We also played the music of the Italian composer Salvatore Sciarrino, who was working on extended techniques. His music is very, very special; it is not at all structuralist music! These sorts of things we did quite often. Of course, we played the music of our smaller group. We played many pieces by Gérard Grisey, for example. We were also very interested in live electronics, so we built our own equipment.

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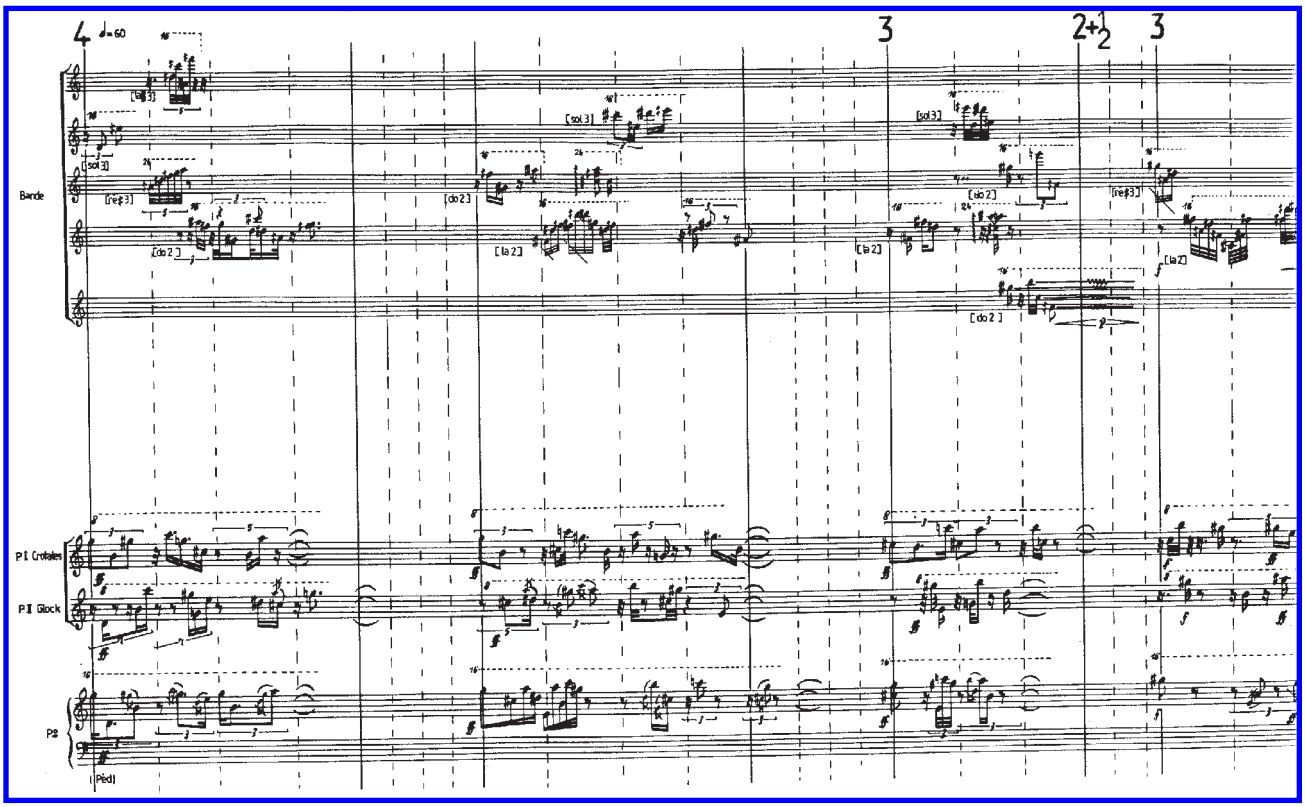
Smith: What sort of electronics did you use at that time?
Murail: Analog electronics: ring modulators, harmonizers, electric organs, electric guitars, reverb units, and the Ondes Martenot. It was centered around what was available at the time. A bit later we bought synthesizers and even later we bought computers. I don't know whether people today realize how limited the electronics were in the 1970s.
Smith: And difficult to program, too, I would imagine.
Murail: Oh, yes! We had an old EMS synthesizer, which was a very temperamental machine! There is a Swiss composer, Thomas Kessler, who has done a lot with that machine. L'Itinéraire often played his music, and it was always a nightmare. He was so meticulous. He would put tape all over the synthesizer to immobilize all of the parameters, which, as you said, were very temperamental. We did quite interesting things with him; it was a *tour de force* every time!

We also used things like ring modulators and tape loops which were also temperamental. Actually, just moving from one piece to another during a concert was complicated.

I did many experiments with the equipment from that time. Even though I did not really use the equipment in my pieces, I learned much about electronics. I derived formal models from them and just learned about sound. I think that such electronic experiences were important for many of us at that time.
Smith: You have become known as one of the founding composers and one of the leading composers of something which has been termed "spectral music." What does that term mean to you?
Murail: I think that it is chiefly an attitude toward musical and sonic phenomena, although it also entails a few techniques, of course. We were trying to find a way out of the structuralist contradiction. At the same time, we did not want to be completely intuitive like the aleatoric composers or like Giacinto Scelsi, or even György Ligeti (who was and remains an experimentalist but an intuitive composer). We were interested in those experiences, but we wanted to build something more sound (pun intended). This was part of it, as was a curiosity about sounds. Also, at that time, the information that we required was not as readily available as it is today. Gérard Grisey and I had read books on acoustics that were designed more for engineers than for musicians. There we found rare information on spectra, sonograms, and such that was very difficult to exploit. We also did our own experiments. For example, we knew how to calculate the output of ring modulators and, a little later, frequency modulation. Those things were, theoretically, quite easy to manipulate.

When I began working at IRCAM, things became easier, even though it was still not very easy. In the early 1980s it was still quite complicated for us to perform a Fourier analysis on a computer. Scientists or computer technicians did this. Eventually, the data became more widely available. This was how I came across the Fourier analyses of several instruments that David Wessel created at IRCAM. These were the basis for my first electronic piece, *Désintégrations* [1982–1983; for 17 instruments and 4-channel tape; see Figure 1].
Smith: I would think that if one were to use material derived from frequency modulation or ring modulation, it must have been an incredibly time-consuming task to make all of the calculations.
Murail: Yes. Time consuming, and boring, too. I could show you pages and pages of calculations.
Smith: How did you first become involved with IRCAM?
Murail: That was in 1980. They had organized a summer session for people belonging to or related to L'Itinéraire. It was a way of signing an armistice!
Smith: So things were that tense?
Murail: There was quite a lot of tension for the first few years of IRCAM. However, since we really needed computers for the sorts of things that we were doing, it was quite natural (both aesthetically and technically, if not politically) for us to be at IRCAM.
Smith: I would think that what you were interested in would have coincided very well with the research that was being done at IRCAM and with the research that continued there through the 1980s, particularly toward synthesis and sound analysis.
Murail: Yes. I think, in fact, that there had been a historic conjunction between an aesthetic move-

Figure 1. Excerpt from the score of Désintégrations.



ment, the spectral movement, and the techniques, research, and software developed at IRCAM. I think we needed them and, in a way, they needed us.

Smith: How were the electronics for *Désintégrations* realized? Did computer analysis of sound play a role in the construction of the composition and in the creation of the electronic sounds?

Murail: The idea behind the piece was to integrate the electronic sounds and the instrumental sounds as much as possible. I had worked on instrumental analysis before this composition, although Grisey had done more than I had. It was then quite natural that I would use that as my starting point. I did not do any new analysis for this piece. In fact, I simply used the stock analysis that had been done by David Wessel. They were just text files, and I used them as the basis for the synthesis as well as for the harmonic structures of the piece. In order to keep the richness of the information, I decided to use additive synthesis, which is, of course, the inverse of a Fourier transform. However, this gave us problems because, in terms of calculations, additive synthesis is very costly.

Computers at that time were big machines. At IRCAM, there was one huge computer that everybody shared (though it was probably less powerful than a Macintosh G3). When somebody was calculating a sound, the whole system slowed down. You also had to listen to what everybody else was working on. Each sound would circulate through IRCAM. There was a line to listen to the sounds. You had to wait your turn.

Smith: It must have been a frustrating way to work, to wait for your sound, listen to it, and then after a short pause, hear somebody else's sound.

Murail: Oh, yes. At that time Xavier Rodet was working on the program Chant. They were testing the program with Mozart's Queen of the Night aria from *The Magic Flute*. I can't imagine how many times we heard that [sings a portion] coming from the loudspeakers.

Anyway, my practical problem was that the ad-

ditive synthesis took too long. I think that it was David Wessel's idea to use the 4X, which was a very new machine at that time. There was no synthesis software available for it, so Andrew Gerzso wrote a program especially for this project. The 4X had been used to process sounds rather than for synthesis, so I think that this was one of the first applications for sound synthesis.

Also, I wrote a small program to create parameter files. Since some of the sounds required thousands of parameters, it was impossible to do it all manually. Moreover, as I could not produce more than 30 oscillators at a time, I had to produce each sound by layers and then mix everything on a 16-track analog mixer. We had a number of assistants to trigger the sounds at the right moments. A sort of real-time, real-life sequencer! In fact, we started by building the click track, and then everything was coordinated to the click track.

Smith: You have written for live performers and tape, and live performers and live electronics. What are the advantages of both, and do you have a preference for either?

Murail: My composition *Allegories* [1989; for flute, clarinet, horn, percussion, violin, violoncello, and live electronics] uses Max and a Yamaha TX816, though I'll have to find a replacement for the TX816 someday. The problem with tape, of course, is synchronization. In a piece like *Désintégrations*, there is a click track, but it gives the conductor no liberty at all. He has to follow the click track. With *Allegories*, I wanted the exact opposite, for the electronics to follow the conductor. The fact that you can adjust the time of the electronics is the main advantage of live electronics.

One might imagine other possibilities as well. For example, you could think of changing the timbre of the piece according to the room acoustics. I had thought of this with *Allegories,* but decided it was too dangerous. That would take too much time in the rehearsal and in the concert hall itself, so I didn't think that it would be realistic. Nonetheless, it would be an interesting use of live electronics.

Smith: How are you dealing with the fact that some of your works employ equipment, such as the Yamaha TX816, that is no longer easily available?

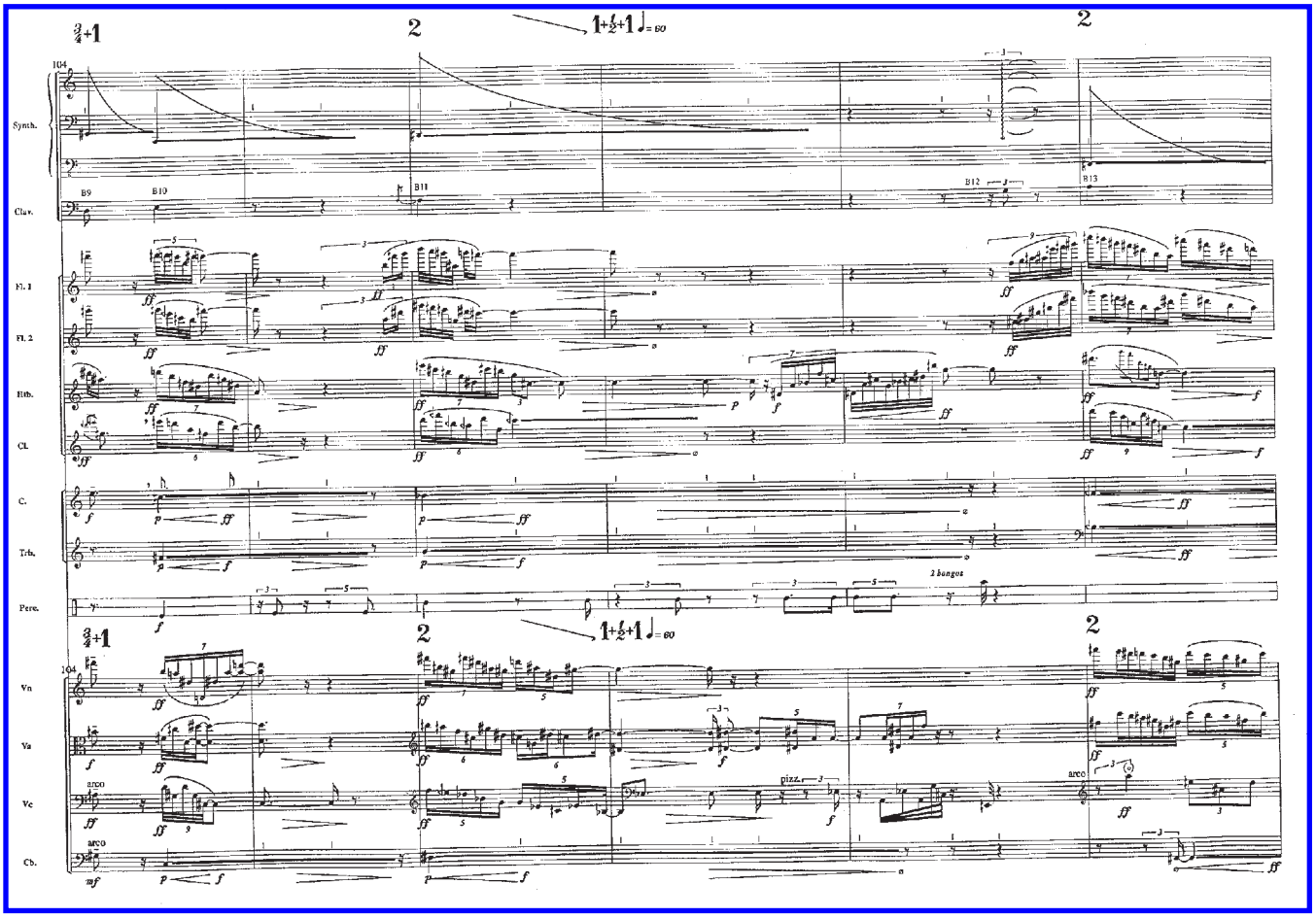
Murail: The only real solution is to emulate them with software like MSP, but it is not that easy. Even trying to emulate a [Yamaha] DX7 on a computer is difficult. The DX7 is in fact a very specialized, powerful computer. Perhaps a combination of MSP with sampling is the only solution. Still, personal computers today, while they might be capable of emulating a DX7, are not yet powerful enough to emulate a TX816.

In January 1999, I transferred the programs that I used to make *L'esprit des dunes* [1993–1994; for eleven instruments and computer-generated sounds; see Figure 2] at IRCAM to the Macintosh. It was originally done on the ISPW [IRCAM Signal-Processing Workstation] with three cards (the maximum configuration), and it can now run on MSP. This shows how fast technology moves. It means that the Macintosh G3 is more powerful than a NeXT with three specialized cards.

Smith: Among many things, your music is remarkable for your ability to create unified environments between the electronics and live instruments. Could you talk about strategies for the integration of electronics with live instruments? Also, could you share any observations and experiences about loudspeaker placement?

Murail: In a piece like *L'esprit des dunes*, my purpose was not to have a perfect blend of electronics and instruments. In a way, it is more difficult to have a convincing relationship between electronic and acoustic sounds when they are not extremely related, because one can really feel the nature of the electronic sounds. I used a similar strategy for *L'esprit des dunes* as I did for *Desintégrations*, although the techniques have changed very much. We have much more sophisticated techniques today. I used partial tracking, and I could resynthesize the tracked partials with the ISPW and now with MSP. Of course, before resynthesizing one can alter the parameters directly with Max or alter the data with Patchwork. In this case, I introduced some compositional elements in the resynthesis of the sound, although I kept some of the internal life of the sound. Acoustic sounds have a natural life in which the frequencies can be understood as behaving in ways that could be described as chaotic. It is that property, in fact, that is very hard to simulate with synthesis. Even if one uses models and then

Figure 2. Excerpt from the score of L'esprit des dunes.



alters the sounds drastically, by keeping the chaotic behavior, the electronics and the instruments can communicate more easily (since the electronic sounds act a little bit like acoustic sounds). I tried to accomplish this in *L'esprit des dunes*.

You mentioned the placement of loudspeakers. The problem also involves the room acoustics, for which there is no a priori solution. You have to work with the room. The first performance of *L'esprit des dunes* at IRCAM's Espace de Projection was very disappointing. It took place in the middle of a long day of nonstop concerts, the IRCAM Open House. At this event, nothing could be changed to accommodate the room acoustics, not even the placement of the loudspeakers. However, the acoustics of the Espace de Projection can be modified with automated movable panels. We got much more interesting results by experimenting with both the room acoustics and the loudspeakers there a year later.

Another question is, Should you amplify the instruments or not? My experience has been that it is difficult to amplify instruments for a large ensemble like *Désintégrations*, but with a smaller ensemble such as *L'esprit des dunes*, it is often better to slightly amplify or add reverb to the instruments to create a similar acoustic environment between the electronics and the instruments. Once again it really depends on the room's acoustics. My best experience with *Désintégrations* was in New York at the BAM Theater. It's a small theater. The acoustics were

such that there was a perfect blend between the tape and the instruments, but also one could clearly hear the spatialization of the tape, which is usually masked by the orchestra.

Smith: Are you interested in psychoacoustic research and, if so, does this inform your compositions in any way?

Murail: It interests me in a general way, but not in a very specific way. Most of the research, while important, has not directly applied to my concerns. At IRCAM, we did an experiment with Stephen McAdams that dealt with the perception of complex spectra (Pressnitzer, McAdams, Winsberg, and Fineberg 1996). I think that there are many things to discover, but I'm limited to my own subjectivity or my own intuition, or let's say, that I am my own subject. However, I am not the best subject, as I would like to be a naive listener and I am not.

Smith: Were you using any sort of computer-assisted composition software before IRCAM's Patchwork software first become available?

Murail: If we go back to the period of *Désintégrations*, I began to write a few programs for the computers that were available at that time. I wrote my own programs on the machines at IRCAM to calculate frequency modulation and ring modulation. After that I used a small home computer which I also programmed. I used that for many years, until the 1990s. I had quite a sophisticated program on my home computer that worked very well. I had a MIDI output, and I could bring up music staves on the screen. I used a light pen instead of a mouse, which enabled me to draw notation onto the screen. In terms of interactivity, it was superior to Patchwork, but in general, it was much more limited than Patchwork. This is what I used for most of the 1980s.

Then a few people at IRCAM began to work on a program called Esquisse (Laurson and Duthen 1990). This was not an official project at IRCAM. It was initiated by Jean-Baptiste Barriére and composers Magnus Lindberg and Marc-André Dalbavie. Then, Patchwork was proposed by Mikael Laurson around 1990. I remember that I wrote *Allegories* in my old system in 1989. I switched to Patchwork over the next two or three years.

I had worked as a consultant for Patchwork. Around that time, I was asked by IRCAM to examine several programs that were being developed there, and among them was Patchwork. Of all of them, I thought that Patchwork was the best. Most of the work that was done on it at that time was toward the interface. The idea was that a composer who had only a basic knowledge of computers should be able to use the program. One just needed to be logical to get results. It is perhaps the most widely used of the IRCAM software.

Smith: When one compares your music from the 1980s to your music from the 1990s, one notices some very distinct differences. One difference is that the formal structures in your more recent music are more complex and contain more self-reference through the recurrence of musical events or musical objects. The early works seemed to work through linear processes, more or less. Furthermore, your recent works show an increase in harmonic activity compared to the works of the 1980s. Are these differences at all related to the use of Patchwork?

Murail: The tendency toward more complex forms and more activity was an aesthetic necessity. It was made possible, in one way, through the use of computers. It is clear that when you have to calculate harmonies and durations by hand, it takes an enormous amount of time. Once one has generated a certain amount of material, after a good amount of work, one is simply happy to work with it.

The linearity of the music of that period was partially an aesthetic decision. It was a way to create a rupture, a strong break, with structuralist music. It was a conscious decision to write with linear processes. Still, we soon found the limits of this way of composing. I say "we," because at that time, I shared many discussions about these matters with Gérard Grisey. Either we were going to repeat what we had already done, or we were going to need to find other solutions, especially toward form. I think that I was aware of that fact fairly early. There are formal aspects of *Gondwana* [1980; for large orchestra] that are nonlinear or that break linear processes. The increasing ability to generate materials with a computer has facilitated such solutions. In a piece like *Allegories*, there are a good many spectral situations that would have been too time consuming to create without the computer. This technology has con-

tinued to develop since *Allegories*. In the early pieces, the processes and the frequencies employed in composition were identical to the form, whereas the recent pieces employ a second layer that uses processes and calculations that are not identical to the processes and calculations being used on the primary layer. This allows for a form that is more versatile with more references to already-heard objects and their transformation.

Smith: Do you use Patchwork to work out other aspects of a composition such as rhythm, duration, dynamics, and musical gesture?

Murail: I use it mainly for devising forms and situations and for planning durations, but I am very prudent with these. Psychoacoustic research demonstrates that perception of musical time is not identical to a precalculated formal structure. I use Patchwork for these matters, but I am also very distrustful and cautious of it. Therefore, I often use it as a guideline or a projection of the form, and then allow things to be changed by the music itself, the musical objects. Still, I use Patchwork to create complex musical objects and to transform them and so on. Here, I've found limitations, because Patchwork was not designed for such things. For my last orchestral piece, *Le Partage des Eaux* [1996], I used very complex musical objects derived from the sound of waves in the ocean. Those structures are very complex, as you can imagine. I tried to use them as such and then transform them in Patchwork. It was not easy. I had a similar experience with *L'esprit des dunes* when I tried to process the analysis of real sounds. I found limits to the memory, the computational power, etc.

Smith: Would that involve interfacing AudioSculpt with Patchwork?

Murail: Yes, but lately I've been using Additive, which is best for partial tracking. It is available on the latest IRCAM CD-ROM. It was part of Diphone, but it is now a separate application contained within the Diphone file. For *L'esprit des dunes*, I used Additive—it was only working on the SGI—then I used Patchwork, and last the ISPW. Now I can do the same thing on my Macintosh using Additive, Patchwork, and Max MSP.

For *Le Partage des Eaux*, I had to make a heavy data reduction by using the masking function in AudioSculpt and by eliminating weaker components with Patchwork. However, I believe that Patchwork's problem of manipulating larger structures will be mostly solved with OpenMusic. There is a dimension missing in Patchwork that is the time dimension. In OpenMusic, there are features like the maquette function. There is a level of organization that is higher than in Patchwork. Patches can be embedded in a higher order. One can have a time dimension and maintain the interactivity between the patches.

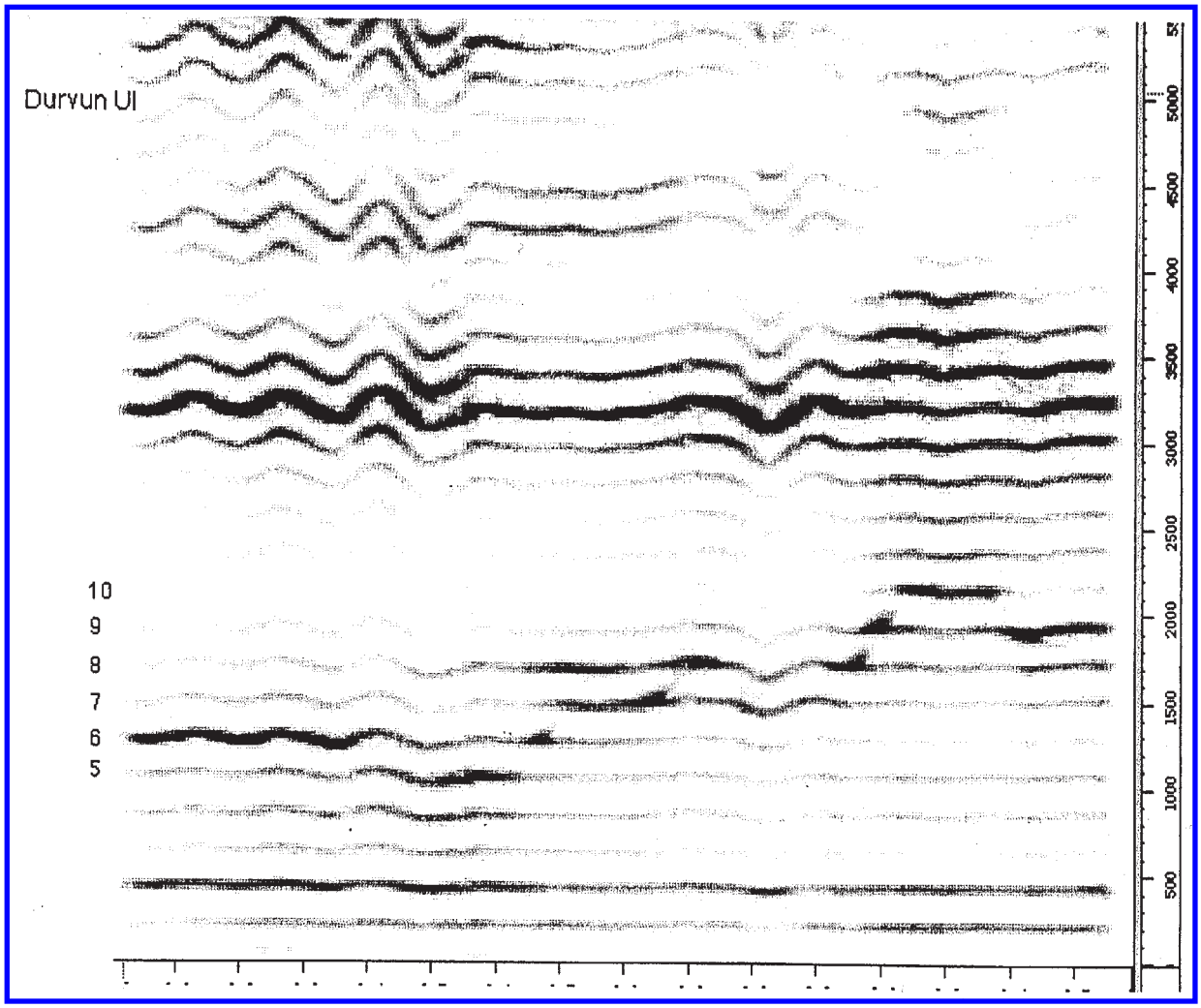
Smith: Something that you share with the music of Olivier Messiaen is that you have drawn on sounds from nature as a source for compositional material. How does your use of sounds from nature differ from how Messiaen used sounds from nature? Further, how does your use of sounds from nature differ from how a composer like Jean-Claude Risset uses sounds from nature in a composition like *Sud*?

Murail: There are several ways of using sounds from nature. There is a metaphorical way and a more direct way. In Messiaen's music, one hears both: the metaphor of nature occurs in many pieces, as does the direct use through his use of birdsong. However, even when he uses birdsong, it is quite transformed.

Risset has done a very interesting job in *Sud* by using the sounds as a source for filtering. It is a little like what I said about *L'esprit des dunes*. You keep the natural life of the sound, but you also sculpt the sound into composer-specified harmonies. This is a bit like what I do. It is a bit metaphorical, but it is really the sounds themselves that are used. I am not working with the sounds themselves, but with images of the sounds, the structures of the sounds. In Patchwork, I ultimately keep the energy, the amplitude shape of the sounds or their actual spectral content, and analysis artifacts. The frequencies that I end up with are partially artificial, but the grouping of the formants is not. I keep the formants and I keep the movement of the sound. In the final orchestration of *Le Partage des Eaux,* I kept the contours of the wave rather than the sound itself. I think that this can be quite interesting.

In another piece, *Bois Flotté* [1996; for violin, viola, violoncello, piano, trombone, and computer-

Figure 3. Sonogram showing a melodic fragment of a Mongolian voice that was used as one of the source materials for L'esprit des dunes.



generated sounds], I also use the sounds of the sea, but mostly to derive strange harmonies. It works very well, and I don't think that one could recognize the origins of the sound in this case. A *bois flotté* is a piece of driftwood that becomes a work of art after a sculptor finds it and makes a few changes to it. So, the idea is that one finds an object in nature, an interesting object, and transforms it to make something artistic with it. The fact that you do the selection yourself is in itself an artistic attitude. I try to do this with sound, which explains the title of the work. For this piece, it was the first time that I was able to do everything in my home studio.

Smith: In *L'esprit des dunes,* you use voices and instruments from nonwestern cultures. Can you speak about the sound sources of the composition, and how they are treated in the composition?

Murail: The main sources are Mongolian diaphonic singing, Tibetan trumps, and the chants of Tibetan monks. The one thing that they have in common is a very rich, strange spectra. The Tibetan trumps, for example, have a spectrum that is distorted in a manner opposite to the spectrum of a piano. Spe-

cifically, it is compressed. There is distortion of about –3 percent. I countered this distortion to make it more harmonic. The voices are also slightly distorted. The diaphonic singing is a kind of spectral singing where the overtones are used to make melody. The melody is produced inside the spectrum through a sort of filtering. This is exactly what I did at times in the 1980s. I made melodies from the spectral content, which is what these singers have been doing for centuries! I thought that this would be an obvious reference. All the sources were analyzed and resynthesized using 40 partials, which is usually enough. We made cue lists for the ISPW to make the resynthesis. The idea was not to recreate the original sounds, but to transform them to create electronic sounds. The trumps were used to create special musical objects that were percussive but with resonances. The Mongolian voices were used as a resource of melodic contours. I would filter all of the harmonics, and the various harmonics that were accentuated over time formed the basis of the melodies. It was a very long process, but one that worked well. I retained all of the microinflections of the sounds.

Furthermore, I tried to "tune" the sounds to the harmonies of my music instead of using the sounds to create harmony. In certain parts of the piece, I superimposed the trumps and the two styles of singing. I altered the sounds by shifting the partials so that their spectra matched. This is what I mean by tuning the sounds. It was fascinating, because I could go beyond processing and make interpolations in the sound in ways that were compositional.

Smith: Besides the music of the cultures used in *L'esprit des dunes*, has the music of other nonwestern cultures been an interest to you or been an influence on your music?

Murail: It has always been an interest. An influence? Perhaps. There is always the formal aspect and the sense of time that is implied in the music of India or Indonesia. However, I think that it is difficult to translate that into our own culture.

Smith: What are your current projects?

Murail: I have two pieces for instruments and electronics to write this year. I am now working on a piece for large ensemble with a few electronic sounds. The electronics will not be as involved as in *L'esprit des dunes*. It will involve only a synthesizer using synthetic sounds that I will produce with my home system. The second piece is for three instruments and electronics. I intend to use MSP for this piece and, I hope, to use it in real time. Technically, I will be working more on partial tracking, MSP, and OpenMusic. I also hope to transfer my patches and libraries from Patchwork to OpenMusic.

References

Assayag, G. 1993. "CAO: Vers la partition potentielle." *Les Cahiers de l'IRCAM.* Paris: IRCAM.

Laurson, M., and J. Duthen. 1990. "A compositional environment based on Preform II, Patchwork, and Esquisse." *Proceedings of the International Computer Music Conference.* San Francisco: ICMA.

Pressnitzer, D., S. McAdams, S. Winsberg, and J. Fineberg. 1996. "Tension et rugosité dans une musique non tonale." *Journées d'Informatique Musicale 1996.* Caen, France.