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Compte rendu

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  Ouvrages recensés :

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  par Paul Théberge
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Exploring the creative process: hypermedia tools for understanding contemporary composition

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Discussed in this review essay:

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The creative process, that sequence of ideas, motivations, and material engagements that have as their result a work of "art" – a work that must, before it is truly complete, be experienced and understood by an audience – has always defied simple description, let alone attempts to capture it in mid-stream. Not that there has been any lack of good-intentioned musicologists who have, in the past, tried to do so: musicologists have routinely poured over diaries, notebooks, pencil sketches and the like by composers of the past in an attempt to understand the evolution of their musical ideas, or read contemporary accounts of the performance of musical works as a means of understanding their reception. But the distance in time that separates the musicologist from the actual moment of creation and reception, and the materials upon which they must draw, ultimately limit such forays into the world of musical processes. Recent attempts by IRCAM to bring the process of musical composition into sharper focus through the use of hypermedia technologies are thus to be commended, both because they attempt to understand contemporary compositions, where the involvement of the composers

themselves and the development of new musicological methodology are critical elements in the elucidation of the creative process, and because they make innovative use of new technologies as a means of allowing the listener/user to engage with the musical material in deeper and more varied ways.

The two projects under review – hypermedia presentations of Roger Reynolds' *The Angel of Death* and two works by Philippe Leroux, *Voi(rex)* and *Apocalypsis* – take very different approaches to the problem of understanding and representing the creative process, and do so with varying degrees of success, but they also share certain features in common: both regard the compositional process as not something that can be understood as a set of generalized principals, but rather, as a series of specific engagements that must be understood in relation to the creation of a particular musical work (or works); both involve direct input from the composer over an extended period of time, thus allowing for a more detailed account of the evolution of their compositional thinking in relation to the work in question; they enlist the involvement of musicologists in offering detailed analyses of the musical works and the composer's creative strategies; and finally, both offer various forms of interactivity, enabling users to navigate through, and engage with both the music and additional multimedia material in numerous ways.

The two projects differ significantly, however, in their look and feel, in how they deal with written texts in relation to multimedia material and, at a deeper level, in the types of interactivity they allow. The type of interactivity is important insofar as it also suggests a particular role for the user in relation to the work, thus inscribing the listener/user in specific ways in relation to the creative process. Each project also draws on the expertise of individuals who bring very different disciplinary concepts and methodologies to bear on the study of the creative process: Reynolds has worked for many years with ideas drawn from the cognitive sciences so it is perhaps not surprising that cognitive psychologists were key partners in the design and execution of the research project; whereas a musicologist and a cognitive anthropologist, using conventional analytic techniques in conjunction with personal interviews, created the basis for the research in Leroux's project. As a result, the perception studies that form part of the background to Reynolds' project have the character of a controlled laboratory experiment, whereas the research surrounding Leroux's work can be characterized more as a kind of ethnography of the creative process.

The look and feel of these two hypermedia projects are, in part, related to the aesthetic character of the musical works themselves and, perhaps in a more general sense, to the aesthetic predilections of the two composers.

At the risk of proposing an overly simplified caricature of the works in question, it is perhaps nevertheless fair to say that Roger Reynolds' work is more cerebral in character, concerned with creativity and perception as a function of cognition, and given over to calculation, algorithmic transformation, and problem solving. In contrast, Leroux's work appears somewhat more intuitive (although this is in some ways a misleading impression), seeks to understand creativity through a process of self-discovery, and is open to a variety of outside influences, including poetry, calligraphy, and musical works of the past (in this case, the music of Stravinsky).

When one first opens the CD-ROM of *The Angel of Death*, one finds discussions of the Reynolds' work presented against a background that is as colourful (if you like the colour orange) as it is slick in appearance (though not in a pejorative sense); this background remains largely unchanged throughout and, on the whole, the material is presented through a single, main menu and window (and its extensions) and hyperlinks that open other windows containing the multimedia content: diagrams, tables, sound examples, video-taped performances of earlier works, and the like. Its uniformity lends the project a somewhat restrained character (despite the intensity of the dominant colouration) but it also makes it fairly simple to navigate through the material; with the exception of the sections that allow the user to engage with the experiments in perception, however, the degree of user interactivity is relatively limited.

For its part, the graphic quality of the initial screens that one encounters in the presentation of Leroux's two works appears somewhat less attractive, consisting of large windows containing introductory texts blocked out in contrasting colours; but these quickly give way to a wider range of materials, including colour reproductions of hand drawn sketches, score examples, animations of calligraphy, transcriptions of interview material cued to pages of score and notebooks, and a portion of a video-taped interview. Furthermore, the degree of user interactivity is more elaborate in its conception: throughout the disc, one is invited to explore sections of the work by clicking on boxes that trigger recordings of the musical material, to rearrange the order of boxes representing the structure of the work, or to redraw calligraphic shapes so as to hear the effects of different physical gestures on the underlying harmonic material. In general, the layout of the material within the overall structure of any given window or set of windows allows for greater ease and immediacy of access to the music than does much of the material in the Reynolds' project, and a greater sense of integration between the different levels of hyperlinked material.

One of the most significant issues that define the character of these projects, however, is their relationship to written text. Reynolds' project is conceived of as a relatively self-contained "e-book": the CD-ROM material is dominated by several interlocking sets of written materials that describe the composer's own account of the evolution of his musical composition, his working relationship with the cognitive psychologists, and his reactions to the reception studies; the work of musicologists who attempt to place Reynolds, œuvre within the history of twentieth century composition and to place the specific composition within his creative trajectory; and texts that offer a rationale for, and the results of several audience studies that were conducted at different stages of the musical composition and its performance. Thus, to explore this project one must be prepared to spend a significant amount of time reading and scrolling through text material on a computer monitor – a tedious process at the best of times. The textual materials are structured in such a way as to allow for a certain degree of interaction between the contributions written by the different parties but there is really not much that compels the reader to follow the material in any particular order, so the overall impression that one has of the project will have as much to do with one's particular reading habits as with the principles of organization devised by its makers.

Ultimately, the amount of time and resources devoted to the creation and structuring of the texts, and more importantly, the amount of time devoted to reading them, places the multimedia material in a subsidiary role: it is not that the Reynolds' project contains significantly less media material – in quantity or diversity – than the Leroux project (it probably does not), but it just seems that way; and indeed, much of the hyperlinked material attached to the texts – diagrams, tables, statistical charts, and the like – would commonly be found in a print version of the essays. On the up-side, two complete performances of *The Angel of Death* are included on a separate audio CD (the work is performed in such a way as to allow for different orderings of the basic two-part structure); this allows the listener to become familiar with the work, through concentrated or casual listening, on conventional playback equipment. This is not possible on the Leroux project: one must listen to the music at the computer.

Leroux's project takes an opposite approach to the problem of dealing with textual materials: issue 2 of IRCAM's journal, *L'inouï*, contains two lengthy essays (a total of over 40 pages), one by Leroux and the other by his collaborators, Nicolas Donin and Jacques Theureau; the hypermedia DVD-ROM is presented as a "supplement" to the texts. While Reynolds' use of an audio

CD offers the advantage of listening to his music in a variety of contexts, the approach offered by *L'inouï* allows one to do one's reading away from the computer – an advantage of a different sort. More than just a "supplement", however, the DVD-ROM stands on its own reasonably well: only a cursory amount of introductory and explanatory texts are required for one to explore the hypermedia material, from which one can glean a great deal about the musical work and the creative processes that gave rise to it, although a fuller understanding of the motivations, evolution, and results of the research require the kind of detailed account that only the published essays can furnish.

As mentioned above, both the Reynolds and the Leroux projects offer diverse strategies through which the user can interact with their respective material, and it is the design of these interactive tools that is perhaps the most important element defining the user's relationship to the musical works themselves. In the case of the Reynolds' project, the user is able to engage in modified versions of the perception studies that were conducted during the creation and performances of *The Angel of Death*. The aim of these studies was to determine the degree to which listeners were able to make sense of the thematic materials and their transformations (the material was recorded for the purpose of the tests and for use by Reynolds in the making of the computer parts of the work while it was still being composed), and to gauge moment-to-moment emotional responses of the audience and their ability to recognize some of the more large-scale, structural changes in the work during performance. While the studies address a fundamental set of issues with regard to contemporary music and put into high relief the potential gap that may exist between the intentions and expectations of the composer versus the ability of listeners to perceive both form and structure in complex music, they lose something of their raison d'être in the context of the CD-ROM.

Indeed, as an interactive element of the hypermedia presentation, the experimental material places the user not so much in the position of a listener as that of a laboratory subject. In this regard, while the section of the project that invites the user to listen to and categorize a number of short, recorded excerpts of the music allows the user to become familiar with some of the basic, thematic elements of the musical work, it does so in a very task-oriented fashion that appears to have a very limited role to play within the context of the CD-ROM experience as a whole. Likewise, the ability to engage in an experiment designed to have audiences register their emotional responses to the music along a scale of intensity or, alternatively, to identify moments within the work according to their degree of familiarity is only valid for one's first exposure to the music. Granted, the nature of many cognitive

experiments with music often requires that particular constraints be placed on the design of the experimental parameters, constraints that are intended as much to guarantee the integrity of the experiment, as they are to reveal something meaningful about the experience of music. But reproducing an experiment that is dependent upon a singular, unique exposure to a work in a repeatable medium is relatively meaningless insofar as it does not encourage multiple engagements with the work, nor does it even add much to one's sense of the significance of the experiment that could not be appreciated simply by reading about it in the accompanying texts.

What is curious is that after examining the musical work through all the information and tools afforded by the CD-ROM one still feels a strange sense of detachment from it; one certainly has a better understanding, in an intellectual sense, of Reynolds' creative process and of the problems of listening to contemporary music, but the work itself still seems somewhat remote. Perhaps one can overcome this by listening to the recorded performances available on the audio CD and perhaps the CD-ROM may contribute, in a general sense, to one's appreciation of the music, but I cannot help feeling that an opportunity has been missed. While the detailed documentation of Reynolds' creative process in relation to the creation of *The Angel of Death*, the placing of his work in the history of contemporary music, and the documentation of the cognitive experiments conducted with listeners all have valid, pedagogical value, one wonders whether it might have been possible to have balanced the textual material with a more engaging set of interactive tools – a set of tools that would give the user/listener a more intimate form of engagement with the music. In particular, the creation of some kind of extension of the original perceptual experiments that might encourage repeated encounters with the musical material would have been useful.

The Leroux project comes closer to achieving something like this degree of access to the music by virtue of the interactive tools that it employs. On the whole, the project is more playful, even game-like at times, and encourages the user/listener to manipulate the musical material in ways that parallel Leroux's own creative process at particular stages of the composition. It is not that the project addresses the user as a "composer" , as such, but the various interactive strategies employed within the project do suggest that an opportunity to actively manipulate the musical materials will reveal more about the creative process than simple description can afford; furthermore, in soliciting repeated engagements with the music, the user gains a greater familiarity with the music at different levels of its form and structure and this familiarity enhances the act of listening.

A brief examination of one example drawn from Leroux's project will per-haps illustrate some of the advantages and risks entailed in this approach. In the second movement of his work, *Voi(rex)*, Leroux pursued a synaesthetic strategy, allowing his own calligraphy – specifically, the gestures used in form-ing various letters of the alphabet – to shape the contours of the various mel-odic phrases within the music (the effect is achieved via a program, developed by Leroux and his assistants, that allows the movements of a computer mouse to be traced through a predetermined set of pitch materials). From a com-positional standpoint, there are a variety of other strategies and constraints that are employed to produce the basic musical materials and the overall structure of the movement, both prior to the application of the calligraphic shapes and afterwards in the creation of the final score, that are essential to how the music ultimately sounds; some of these are briefly described in the textual introduction to the section of the DVD that illustrates the calligraphy and, in greater detail, in the published texts. However, it is clear that the visual and tactile nature of the calligraphic gestures themselves offered the project developers the greatest potential for creating interactive tools within the DVD-ROM presentation.

The DVD offers a variety of ways for the user to explore the interaction of gesture, sound, and structure in this movement: one can listen to the music while watching animations trace the various letters over pages of Leroux's score, one can reorder the musical phrases, grouping them according to logics other than that which governs the original structure of the movement, one can try one's own hand at creating calligraphic gestures and listen as the results are superimposed upon the harmony that underlies a given musical phrase, or one can compare the effects of one's calligraphy as it traces its way through a number of different harmonic structures. For the user, the overall effect of these operations is very appealing; even if the novelty of it all does eventually wear off, the cumulative nature of the interactions gives the user insights into the musical materials that would otherwise be difficult to convey through conventional textual or analytic means.

But for all the appeal that being able to explore, manipulate and rearrange the musical material offers, it also risks leaving the user with the impression that there is something rather arbitrary underlying the compositional process as a whole – and this is, in many ways, a potentially dangerous thing. This sense of the arbitrary is partly the result of emphasizing one aspect of the compositional process – the application of the calligraphic gesture – at the expense of virtually all other decision-making processes that were required to create the final score. Some of this might have been overcome by simply not

exploiting as many levels of interactivity in the presentation of this movement: for example, it may not have been necessary to allow the user to rearrange the individual phrases into different orders, thus confusing, and possibly undermining to some extent, the organizational logic imposed on the movement by Leroux. Similarly, while it is interesting to explore the melodic effect of different calligraphic gestures on the underlying harmonic content of the movement, it would also be useful to pursue how these melodies are played out in terms of their orchestration and their note-to-note realization in the final score: unfortunately, the score examples have not been reproduced in sufficient resolution to facilitate close examination (zooming in results in a great deal of pixel distortion, obscuring much of the detail). Ultimately, while the various tools supplied by the makers of this DVD offer effective and imaginative ways for the user to interact with the music and to gain valuable insights into the creative process, these same tools can also distort that process by privileging certain operations over others and by emphasizing the level of mid- and large-scale structure at the expense of the micro-level of musical form.

Both these hypermedia projects offer a great deal for anyone interested in contemporary music, regardless of one's previous level of knowledge. The Reynolds' project is not solely concerned with the creative process, although his account of the creation of *The Angel of Death* is revealing in many ways. But in addition to gaining a detailed look at his personal compositional concerns, one is also offered an informed musicological introduction to his work as a whole; and for those with an interest in the concepts and methods of cognitive science as they relate to the study of music, the experiments documented within this CD-ROM will serve as an intriguing case study. Indeed, despite the criticisms leveled here, having access to working models of the experiments offers insights into the design of cognitive experimentation and in this alone, they serve a useful pedagogical purpose. As a model of design in interactive hypermedia, however, the Reynolds' project leaves much to be desired: the reader/listener/experimental subject posited within the project demands that one become actively involved in decoding a set of materials given to him/her by the composer and the cognitive scientists, and the resulting level of engagement is essentially limited to an analytic and quasi-discursive form of activity.

In this regard, the Leroux project offers something quite different: the approach taken by the designers of the DVD suggests that the act of listening can be enhanced by a new kind of "musica practica" that is informed by, and intimately connected to contemporary forms of creative practice.

This latter point is important because the formal and structural design of much contemporary music make new kinds of demands on listeners (as is made so clear in the Reynolds' project) – demands that cannot always be met through conventional listening patterns learned through years of exposure to traditional music. By creating hypermedia tools that allow the user/listener to approach contemporary forms of music through visual, tactile, and sonic strategies that in some way reveal or parallel the creative practices employed by composers themselves, the designers of this DVD project have come very close to inventing a new kind of musica practica that is contemporary by its very nature. If such strategies can be extended so as to give insight into additional levels of formal organization and into a larger range of musical styles, then the end product may not only be a better understanding of the creative process but a new kind of listener as well.