

Modes of Compositional Engagement

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Introduction

The composer, in short, is a man of mystery to most people, and the composer's workshop an unapproachable ivory tower.

Aaron Copeland, 1957:20

A story is recounted by C.F. Ramuz (Cook 1990) of the bewilderment of two women as they sat on park benches outside the house where Stravinsky was working, upon hearing the sounds of Stravinsky's compositional process at the piano and with assorted percussion instruments.

The story demonstrates not only the historically central role of audible feedback during composition but the unusual way in which the composer uses audible feedback during that process. The story illustrates for Cook that;

when a composer composes at an instrument, he does not listen to what he is playing in quite the manner in which a performing musician does (or in which the composer himself would when performing) (1990: 187).

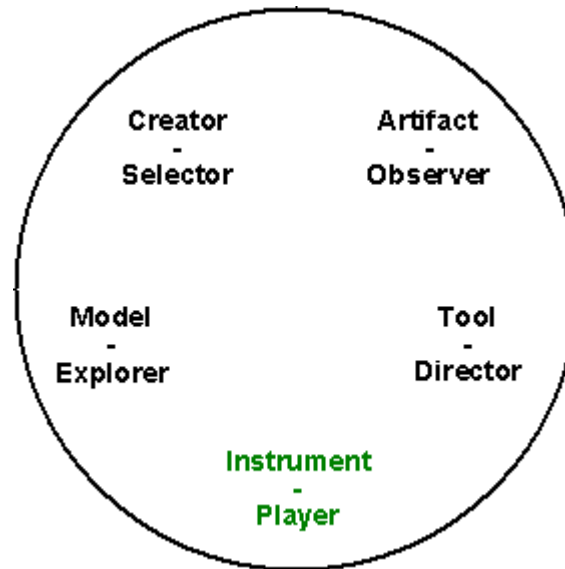
The image of the solitary composer at work creates an almost mystical impression of the compositional process. The activity of a composer interacting with musical materials, as evident with Stravinsky banging away at the piano, is what I characterise as compositional engagement.

In this paper I will present some perspectives on compositional engagement which have arisen from my PhD study into composition processes with computers. I believe that while the specific tasks and outcomes of making music with computers might be different from another medium, such as paper or piano, the composer's engagement is fundamentally similar.

The main point I wish to make is that compositional engagement is multifaceted. There are a range of ways in which composers interact with musical materials and mediums. I refer to these as modes of compositional engagement. A composer works in different modes depending upon the stage the composition is at, the type of material they are working with, the compositional methods they are using, and the medium in which they are working. A composer might work predominantly in one particular mode of compositional engagement, change between modes quickly, or display features of different modes concurrently.

I do not make any claim that the modes of composition are complete nor mutually exclusive, but in describing compositional activity in this way it is hoped that the compositional process and in particular the role of the computer as a compositional medium might become less mystical and more available to debate and understanding.

An overview of the modes of compositional engagement



I have identified five modes of compositional engagement. They depict the composer as:

- Observer,
- Director,
- Player,
- Explorer, or
- Selector.

There are two perspectives from which to view each mode, firstly from the composer's level of involvement, and secondly from the way the medium functions. Engagement combines these perspectives and implies a partnership between the composer and the materials in a medium. The medium can be a computer, it can be another instrument (commonly a piano), it can be a paper score, or it can be the imagination. The composer's perspective is not independent of the medium, but rather exists in relation to it. Therefore, associated with the composer's perspective is the function of the medium.

- Observer - Artefact
- Director - Tool
- Player - Instrument
- Explorer - Model
- Selector - Creator

While in this presentation I will discuss the modes from the perspective of both the composer and medium, I will focus mostly on the composer's side of the relationship, as I feel it would be of most

interest to this audience and avoids awkward technical details of computer music systems.

Alignment with previous theories of composition practice

A common understanding of the compositional process is a two stage process of what Roger Sessions (1941) calls *inspiration* and *execution*, where a musical idea is generated and undergoes a deliberate process of development. This characterisation of process I would describe as focusing on the *player* and *director* modes of compositional engagement.

Newell, Shaw, and Simon (1962) propose a general theory of problem solving which involves two types of processes, *solution-generating* processes and *verifying* processes. These processes interact where heuristics are used to generate possible solutions which are judged successful or otherwise in the verification process. The problem solving metaphor of composition aligns most closely with my modes of *director* and *selector*, while the processes described by Newell et al. align predominantly with the *director* mode.

A scheme or vision is often seen as an important aspect of the compositional process (Gardner 1980, Solboda 1985). Composers report having a plan about what the composition will be like and so the process of composing involves the filling out and modification of that plan. This process of following a general scheme aligns most closely with what I describe as the *explorer* mode of engagement and includes aspects of the *director* mode. Starting with a scheme assumes that a musical space exists but is not clearly defined, and the activity of the composer is to find a pathway through it.

About the study

The modes of compositional engagement arose during my study of five composers, Steve Reich, Paul Lansky, David Cope, Bridgit Robindoré, and David Hirschfelder. Each of these composers used computers in a significant way as part of their compositional process, and each is an experienced composer and highly regarded in their area. The study examines how computers are used by composers. It became apparent that the diversity of compositional approaches and roles of the computer between these composers sat uneasily with previous, overly simplistic, understandings of the compositional process. The computer was used as a utilitarian tool by some and played like a delicate instrument by others, yet the computer medium was the same platform in each case. This diversity could be partly explained by the malleability of the computing medium itself. With reprogramming, the computer could change, chameleon-like, from one type of tool to another. On closer inspection it became evident that each composer demonstrated a wide range of approaches to the computer, even in the composition of one piece. Its function changed as circumstances demanded – its not unlike a piano shifting function from a tool to test harmonic progressions to a performance instrument. The diversity of function was only partly due to the flexible nature of the computer and more significantly due to the shifting relationship between composer and medium due to changing demands of the compositional process. I suspected that the differences in computer usage were revealing underlying shifts of emphasis in the dialogue between composer and musical material through the medium. The relational dialogue is the process I call engagement. The modes of engagement characterise different aspects of the relationship between a composer and the computer; their musical medium. Many modes of engagement are observable in each composer, but to varying degrees. An individual composer has a preferred mode or modes in which they are most comfortable, and each computer music systems lends itself to certain modes.

Modes of compositional engagement in action

I will now explain each mode of engagement in more detail drawing on examples from the case study composers as illustrations.

Observer - Artefact

As an *observer* the composer stands apart from the compositional process, detached, as an audience. It is almost of state of dis-engagement, where the composing medium, computer or score, is objectified. Often this mode is used by a composer to evaluate the completeness of a work, to attempt to dispassionately assess the development of the work. At times the dis-engagement may be complete that they feel no involvement and make no judgement. The musical material is viewed in a historical sense, not unlike a museum object.

David Hirschfelder provided a indicated that this mode of engagement was important to him, and that it did not come easily but was an perspective he fostered. Hirschfelder comments on the shift between creative involvement and the observer mode.

It's subjectivity and then objectivity. It's being subject so you are the product and you are that gut reaction, then it's being able to step right outside of that as a listener and being totally objective and saying "How's that working?" Because if you stay subjective and too married to an idea it sometimes makes it difficult to move on. It's necessary to move on because I believe there are two forms of music, finished and unfinished, and that's all. You can always say music is unfinished, but too many people sign off on things too early because they remain subjectively attached. I speak *completely* from experience. I'm guilty of that sin, and probably will be again.

That's why I like to have the time to listen to things after I've let it go. I think I can give myself credit for being able to detach myself a lot earlier than I could when I was younger. When I was younger it would take me weeks or months to get unattached to an idea and see it as others see it. . . I think I can literally detach in about half an hour now. (Hirschfelder 1997:235-259)

When a composer acts as an *observer* they relate to the music as though it were an *artefact* separate from them, static, and complete. They hear it as others would, without imagining elaborations or seeing the potential, they stand critically apart from it and observe its actuality.

Director - Tool

Crafting a composition has much to do with articulating a musical statement through controlling and moulding the musical materials. When a composer is consciously manipulating the musical materials to shape them into a desirable form, they are engaged in the compositional mode that I call *director*. This mode is what is most commonly understood as 'compositional' activity, because it involves the externalised manipulation of musical representations. This manipulation can be of a symbol system such as common music notation or a computer programming language, or more direct manipulation of sound material such as digitally sampled waveforms, for example.

When the composer acts as a *director* they usually relate to the compositional medium as a *tool* with which to write or manipulate their musical ideas. The medium is conceived as a canvas upon which they can arrange the music, as a set of processes through which the ideas can pass, or as a lens with which they can highlight and distort the ideas. While the medium has properties that enable or limit the crafting of the music, the dominant conception is that the composer is controlling the creative process with the medium responding to their instructions.

While all composers in this study worked in this directorial mode, Steve Reich provides a clear example of this compositional approach. Reich clearly differentiated the inspiration and perspiration aspects of composing using different tools for each stage. The piano or tape recorder were often used for the generation and selection of ideas and material, these were transferred to the computer for

elaboration and development. Most of the time is spent in the working-out stage at the computer. Reich estimated that the balance between work away from or at the computer was divided about “60/40 with the computer getting sixty” percent (Reich, 1997:336-337).

Reich reinforced the directorial nature of his compositional approach with statements about his deliberate control over the process and his views of the computer as a tool used for reasons of efficiency. He describes how when composing *Hindenburg* the computer’s ability to manipulate the pitch of samples enabled him to bend the recorded material to his musical ends, rather than having tempo and pitch determined by the samples, as was the case in *Different Trains* and *City Life*.

[For *Hindenburg*] I wanted to be able to structure the piece harmonically the way I would structure a piece which was not using samples, where the harmony would be worked out the way I wanted to work out the harmony independent of the sampled material. I wanted to set up a tempo and get a head of steam going rhythmically the way I did with my other pieces. So I decided that in this piece I will change, drastically if need be, any of the sampled material to fit the music. So I start off in three flats and if Herb Morris [who’s voice is sampled] is not in three flats, and he’s not, then I’m going to make him in three flats, and when I want to stretch his voice out then I just stretch it out. So the whole aesthetic is different and the whole technical means of working is better - well, harkens back to the way I was writing if I weren’t working with samples. It’s like having your cake and eating it. (Reich, 1997:537-551).

The mode of composing as a *director* involves the application of skills and techniques in a deliberate way toward a goal, however unclear. The relationship with the compositional medium and representation systems is one of control over tools, where skills and experience are exercised to express the music in that medium.

Player - Instrument

At times the compositional activity might be characterised as improvisatory or intuitive, rather than deliberate or conscious. The *player* mode of compositional engagement can be, much like children’s play, apparently directionless but usually absorbing and enjoyable. Metaphorically it is similar to musical improvisation, and may even appear similar when real-time instruments are involved. It is this *player* mode of engagement in which I believe Stravinsky was operating when his activities caused such bewilderment in the two women on the park bench outside his house. Composers such as Hirschfelder and Reich made regular use of improvisation at the piano as part of the compositional process and the mode of engagement as *player* includes this activity but is not restricted to it. Engagement as *player* need not involve real-time feedback, it is more distinctively characterised by the depth of involvement and the reliance on intuitive knowledge.

Composers engaged in the *player* mode relate to their medium in a personal and intimate way not unlike a performers and their instrument. The composer as *player* considers the computing medium like an *instrument*. The medium becomes a vehicle through which they express their music, and as such, it becomes more than an efficient tool, rather it is considered a partner in the compositional process. The composer as *player* acknowledges the medium as contributor to the compositional process and works with it like partners in a dance where a developed understanding between the partners makes the collaboration appear effortless.

Through building and modifying his own computer music software over decades, Paul Lansky has developed an intimate relationship with the computer as his musical instrument. His absorption in the music and compositional process sustained him over the two years it took to complete *Things She Carried*. Toward the end of writing of that work he described his relationship with the low-level computer programming at the heart of his composition activity.

Well, I’ve learned to love it. [Laugh] Maybe out of necessity. I think there was a certain point about 20 years ago when I was about to throw in the towel, and I said ‘if I’m going to do this I have to like all aspects of it’. I developed a real love relationship with working at a very low level with materials like that (Lansky, 1997:135-139).

Lansky's compositional processes are far from real time. Yet this does not limit the opportunity to engage with the process as a *player*. In fact, Lansky likes the drawn out process of constructing a compositional process and waiting for the computer to respond with a result. He comments, 'It gives me a chance to think about what it is I've done. I'm not performing here, I'm sort of improvising in real-slow time.' (Lansky, 1997:74-75).

The intimate nature of the *player* mode of engagement seems to develop with the composer's familiarity with the medium, and with the discipline of composing. For Lansky, familiarity and experience with the medium make the engagement more playful and absorbing, rather than predictable and routine.

I find that as I get more familiar with the tools so the possibilities expand. You get really comfortable with the tools, and all of a sudden you can do a thousand times more things than you ever did before. Before you could only do a few things, so you'd really polish those and get them right and you'd know what to expect. Now I know all kinds of things and I don't know what to expect at all (Lansky, 1997:92-97).

The composer engaged in the mode of *player* treats musical materials intuitively and they are deeply involved in the making process. They treat their compositional medium as a *instrument* through which they express themselves and consider it a partner in the creative process.

Explorer - Model

A technological medium such as a computer music system and, more fundamentally, a theoretical music structure such as tonal harmony, serialism, or stochastic synthesis provide a conceptual musical space that a composer can explore. In the *explorer* mode of engagement the composer is involved in a predominantly conscious experimentation with musical materials in a semi-guided processes of seeking elements for inclusion in a composition. The goal of this exploration is often not a single point which can be clearly seen, but rather a loosely formed conception with relatively-clear boundaries. This process of compositional exploration within specific constraints is an enjoyable one characteristic of creative activities as Csikszentmihalyi concluded from his studies of creativity. 'Paradoxically, it is the abstract rules we invent to limit and focus our attention that give us the experience of untrammelled freedom' (1996: 250). The outcomes may not be preconceived, but the experienced *explorer* can identify a useful discovery when it arises.

The medium for the composer engaged as *explorer* is used as an externalisation of ideas. The composer uses the medium to build models of the exploratory space which can be traversed, the medium can simulate hypotheses, and can bring to life ideas. In this way the medium functions like a physical model does for an industrial designer or a CAD system does for an architect. The medium externalises musical ideas which can then be viewed from many perspectives, reflected upon, and further explored. The medium acts as a cognitive amplifier for the composer in its ability to leverage ideas by building upon the stored knowledge in its symbol systems and existing procedures, and by capturing concepts and freeing up the mind for new thoughts.

The Franco-American composer Bridgitte Robindoré worked in the *Explorer* mode as she collected sound materials for her piece for harpsichord and computer. Her general direction was to collect a variety of noisy timbres for the computer part. "I'm working on the noise spectrum, between pitch and noise" (Robindoré, 1998:515-516). In her pursuit of useful sounds she used both familiar and unfamiliar techniques. The familiar techniques included sampling harpsichord sounds (many of which are inherently noisy) and processing them using established processes such as granular synthesis, frequency modulation synthesis, and fragment looping with the UPIC system.

I have harpsichord sounds in loop form, some convolutions of them, some grain files and some UPIC work where a lot of it UPIC synthesis. But most is UPIC synthesis based on waveforms which I sampled originally. (Robindoré, 1998:447-449)

While these processes were efficient because of her experience with the UPIC system, her experiences were no less exploratory when working in the unfamiliar techniques of stochastic synthesis via the GENDY software. This technique, developed by Iannis Xenakis, was broadly suitable because it tends to produce noisy timbres. Robindoré's time with GENDY was both exhilarating and frustrating, not unlike riding a frisky pony. She achieved interesting results but was not always sure she was able to control the direction she was going, let alone retrace the paths she had followed.

The nature of exploring, even familiar territories, means that the composer is often confronted with the unfamiliar. The lack of previous exploration of noisy timbres in western music left Robindoré wanting when asked to articulate what she was seeking.

It would be nice to have some words to analyse the sounds so you could say, 'yes, this is what I'm hearing, it's a frequency band between 2K and 2.5K, its stronger, its noise content is da, da, da.' But what kind of noises contents are there? (Robindoré, 1998a:183-185).

The inability to adequately express what they have found, either verbally or in the medium in which they are composing means that while the intention to explore may be conscious the process of exploration is, to more or less degree, intuitive.

There are times though where I'm not quite grasping what the idea is that I need to be expressing, or that I feel. But I have certain sounds which lead me to them, it's not always from the ideas. For example, the tape piece I have here for you with harpsichord, there are sounds which I know I have to find but I'm not sure yet what the metaphysical idea is behind them is. I can feel that it's coming. (Robindoré, 1998:366-370).

The *explorer* mode of compositional engagement acknowledges that at times there is uncertainty or fuzziness in the mind of the composer about the direction the composition should go, and that a significant mode of activity is the searching for appropriate material and treatments of material in a loosely structured fashion.

Selector - Creator

The fifth mode of compositional engagement is one where the composer acts more as judge than as maker. Importantly, as *selector* a composer is not judging their own work but work created by the medium for inclusion into their own piece. This mode is perhaps the most reliant of all the modes on the computer as medium, because a computer can be automated to create new material for selection by the composer. However, processes such as aleatoric note selection or serialist processes would also be possible examples of the medium as *creator*.

One composer who actively seeks to have the role as *selector* as an available option during the compositional process is David Cope who has developed Composers Underscoring Environment (CUE) to achieve this end. CUE is music writing software based on a score metaphor using common practice notation, and is the only program of its kind and sophistication in the world at the time of writing. Cope can create music by manually entering notes to the on-screen score or ask CUE to suggest (compose) extensions to the score of a specifiable length.

CUE has a resident notational program in it that I've written in Common Lisp, but its quite a simple one. So if I'm writing a fairly simple passage I usually use the resident program, which immediately turns all of my notes into what I call events, or things that CUE reads. If I'm doing something very very complicated that requires a really intricate notational scheme then I simply bring up Finale and work in it and save the results as a MIDI file, and then load it as a MIDI file [into CUE] and go from there (Cope 1997 Interview 1:224-230).

[CUE] does two things, it allows me to notate music on a score and see it immediately and play it back through QuickTime musical instruments. The second thing that [CUE] does is that the program attempts to keep track of my musical style and when I want it to it produces, at present extensions, of what I want .

. . . the important thing about this one is that when it shows you something that's added onto what you've just done, it's not just something built on fractals or mathematical principles of any sort, it is based on the style of music you've been writing, and the music in the database which it's been using. It keeps track of form . . . so that it actually produces contrast and so forth (Cope 1998:671-683).

During the compositional process Cope uses CUE as a score device much of the time, but only uses the generative facilities of CUE when he gets stuck for ideas or thinks the stimulus of a suggestion would be useful. The suggestion options are in a menu at the top of the screen, and Cope comments on his reticence to make use of that menu.

My best day is never going up here [to the CUE menu]. My second best day is only going up [to the CUE menu] to see what's happening, and my worst day or worst nightmare is when I simply have to go up there because I have no other ideas about what should happen down here [in the score] (Cope 1998:707-710).

In the mode of *selector* the composer gives over responsibility for the generation of material to the compositional medium itself, and then engages as arbiter of taste through selection or rejection of the material generated. The partnership between composer and medium becomes most apparent in this mode as the composer shares creative responsibility with the medium.

Phenomenological perspective

The modes of compositional engagement are states with blurred boundaries, a particular type of compositional activity might show characteristics of two or more of the modes. Compositional activity usually oscillates between modes, at times frequently. However, as can be seen by the examples above, composers and mediums can be characterised as being more clearly in one mode rather than others. For this reason I believe it is reasonable to draw the distinction between them.

The modes are not sequential in any developmental sense, but they are arranged in the circular diagram according to a phenomenological progression. The modes at the top of the circle, *observer* and *selector*, are the modes where the composer takes a position of most distance from the work. They intentionally objectify the musical material in order to assess it. The processes of composition here are quite formal and abstract.

At the bottom of the circle is the mode of *player* in which the composer is most deeply involved in the musical material at an intuitive and emotional level. While engaged as a *player* the composer makes subjective judgements about the compositional direction, and feels most as-one with the medium and representational systems which are employed. The significance of the composers relation to their medium was also noticed more cautiously by Sloboda in his studies in composition,

I suspect that an important component of compositional skill is a degree of 'trust' in one's medium—a certainty that the habitual processes of generation will yield material which is richer than one first sees, and which, even if initially unsatisfactory, usually contains within it discoverable properties which can be used to profit (Sloboda 1985:138).

The modes of *director* and *explorer*, half way down the circle diagram, combine aspects of the analytical and intuitive. They are modes where compositional processes are both conscious and unconscious, and the relationship with the medium is at arms-length, its influence is acknowledged but controlled.

Conclusion

Descriptions of compositional process have been largely developmental, beginning with a musical

idea or theme followed by a process of extending and elaborating. The common conception seems to have been that the initial idea or theme provided direction for the work which was then articulated. In this presentation I have elaborated on that understanding. Firstly, to suggest that based on the composers in my study the initial idea, while it may involve a concrete theme, consists more often of a vague schema or plan often expressed in emotional or metaphysical terms. The process of composition following from that idea is one of clarification rather than realisation.

Secondly, and more central to this presentation, is the notion that the process of composition is a complex mixture of different relations between the composer and the musical materials, which I have called modes of compositional engagement. Five modes have been proposed which at times overlap and in which a composer may spend just seconds or many hours. Each of the five modes can be viewed from the perspective of the composer or of the compositional medium, which in my study was primarily the digital computer. Therefore each mode has a two part title reflecting the importance of the partnership between the composers and their mediums. The five modes are:

- Observer - Artefact
- Director - Tool
- Player - Instrument
- Explorer - Model
- Selector - Creator

The viewing of compositional practice from these multiple perspectives I suggest will assist in better understanding the compositional process and in particular the role of the compositional medium in contributing to that process. In addition it is not unreasonable, I believe, to hope that compositional curricula and pedagogy might benefit by clearer articulation of different models of compositional activity and practice. Also that the development of compositional mediums, including theoretical systems, music representations, and software environments, might be enhanced by better understanding the ways a composer might engage with them.

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