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## Multimedia Composition As Research

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### Presented at

Electroacoustic Music Studies Network International Conference Series: EMS05 19-22 October 2005  
Montreal, Quebec, Canada.

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Abstract

This paper presents an unorthodox solution to issues surrounding the validity of practice as research within the field multimedia composition. Firstly, it evaluates the process of multimedia composition leading to findings that the practice is similar to action research. Results are presented in the form of a model entitled The Multimedia Realisation Spiral, developed with the aid of Soft Systems Methodology. The purpose of the model is to be used as methodology in validating the practice of multimedia composition as action research. Secondly, the paper presents methodologies for multimedia composers to undertake evaluation of practice, practice-led research, and practice as research. Each methodology specifies the type of research output, ranging from papers to creative works and is tested for validity against extant literature from the research community. In summary, the paper presents some interesting findings; namely, that practice as research is not a valid form of research, along with several other points of discussion including a broad definition of multimedia composition and a useful model for teaching and learning purposes.

Multimedia Composition As Research

This paper is in response to real pressure for Composers and Artists working in academic settings to undertake traditional research, as defined by peer-reviewed text outputs such as books, book chapters, journal articles, and conference papers. The study aims to uphold the right of the artist to pursue creative excellence, without being manipulated into false outcomes, by providing a range of options for undertaking multimedia composition and research simultaneously.

Multimedia composition is a term that is difficult to define. The name implies that a range of interdisciplinary craft practices will be employed in the creation of unified works of art that exhibit specialist sonic characteristics. Furthermore it implies a departure from the traditional and well-established craft of musical composition and gravitation towards a conceptual or aesthetic framework that operates irrespective of specialist craft practice or media type. More specifically, it implies a creative working process that can respond to the changing requirements of multimedia materials within any given work. As Wishart (1996) states, “good sound composition [the principle extends to multimedia composition] always includes a process of discovery, and hence a coming to terms with the unexpected and the unwilling”. In the author’s case, the practice of multimedia composition incorporates the following disciplines: musical composition, electroacoustic composition, video production, film production, animation, graphic art, interactive installation, performing arts, dance and kinetic sculpture. This list does not exhaust the possible sub-disciplines under the banner of multimedia composition, and as such is not intended to define the genre; however, for the purposes of this study, this sub-set will be referred to as multimedia composition.

Multimedia composition may also be described as a process – a process that may be further defined as creative practice, and further still, as a process similar to action research – as Gilbert (1994) explains: “reflective practice is a process of research through which the development of professional knowledge and the improvement of practice occur together (in much the same way as in action research)”, while Ferguson and Coubrough (2002) extend on Gilbert’s findings as follows: “A common feature of both action research and reflective practice is that both are based on the four stage cycle described by Kolb (1984), although common before his description. The plan, act, observe, reflect stages of what Kolb calls the experiential learning cycle underpin both action research and reflective practice, which leads to an easy transition to understanding this research approach by those who are already reflective practitioners.” Dick (1993) simplifies Kolb’s four stage cycle by presenting three primary categories as follows: “The action research cycle consists at least of intention or planning before action, and review or critique after” (Figure 1). This provides a logical starting point for the study, as it forms the basis to the argument that practice (and thereby multimedia composition) is research. To state this position clearly, the task at hand is to evaluate the process of multimedia composition with the intent of drawing similarities to action research methodology.

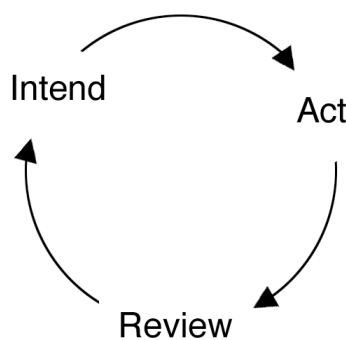


Figure 1: Action Research<sup>1</sup>

The process of evaluation requires a rigorous methodology - one that can withstand high levels of participation as well as remain flexible enough to adapt to the changing requirements of the project and the discoveries made throughout the process of evaluation. Here too, action research methodology presents many benefits. However, a condition of the original action research cycle proposed by Kemmis and McTaggart (1988) is “collaboration [involving] as many as possible of those affected by the practices

<sup>1</sup> Data for figure 1 obtained from Bob Dick (1993) *You want to do an action research thesis?* Available on line at <http://www.scu.edu.au/schools/gcm/ar/art/arthesis.html>

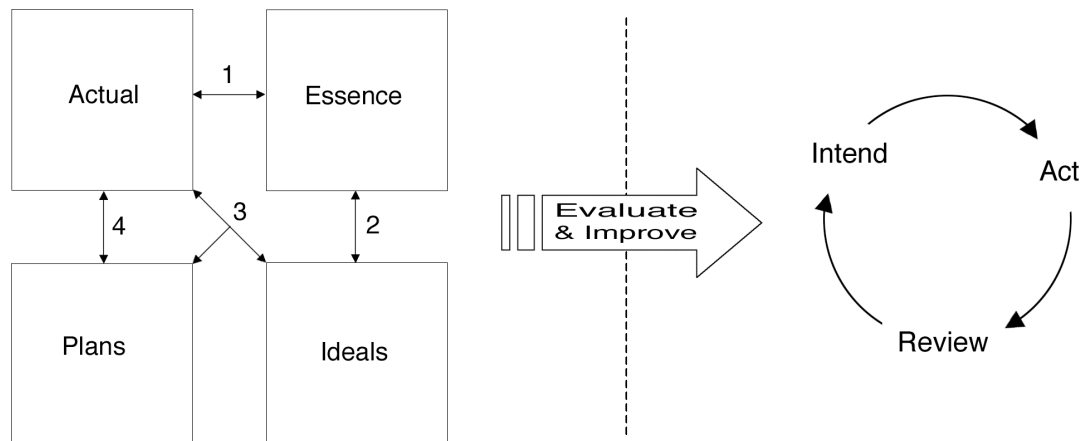
concerned” – a condition that it clearly not met by this project. This raises the issue of interestedness, which, in the opinion of various research communities, threatens to disqualify the research. Supporters of more traditional research methodologies argue that only quantitative research can ensure objective disinterestedness and that qualitative research almost always results in subjective conclusions. However, quantitative research also has its disadvantages - as Dick (1990) states, “numbers are more easily achieve reliability, but sometimes at the cost of validity” whereas qualitative research brings many benefits - as Patton (1990) explains: “Approaching fieldwork without being constrained by predetermined categories of analysis contributes to the depth, openness and detail of qualitative enquiry”. Participant research may also be of value to the practitioner concerned in terms of professional development as Dick (1990) explains: “When practitioners use action research it has the potential to increase the amount they learn consciously from their experience. The action research cycle can also be regarded as a learning cycle”. Patton (1990) describes the dilemma associated with participation research as follows: “Experiencing the program as an insider is what necessitates the participant part of participant observation. At the same time, however, there is clearly an observer side to this process. The challenge is to combine participation and observation so as to become capable of understanding the program as an insider while describing the program for outsiders”. This debate continues to rage across many research communities. McWilliam (2003) summarises the interested-versus-disinterested argument surrounding practitioner research metaphorically as “whoever discovered water, we can be sure it was not the fish [and] nobody knows the water like the fish”.

Soft Systems Methodology is a form of action research developed by Peter Checkland (1981) of Lancaster University and later by Checkland & Scholes (1990) that combats interestedness by applying systems analysis concepts to qualitative research. It is particularly fit for the purpose of this study, as Dick (2002) explains, “it serves well as a process for process evaluation [and] it can be used easily and effectively with very high levels of participation”. It is hypothesised that the use of Soft Systems Methodology to evaluate the process of multimedia composition will produce a model that will define the practice as research.

#### Method

The Soft Systems Methodology cycle involves a rigorous seven-stage process containing four dialectics and multiple cycles within cycles, beginning with the problem situation being experienced by the researcher as fully as possible. The second step is to express the problem as a “rich picture” (most often diagrammatically) using both logic and culture as twin streams of enquiry. The third step is to define the essence of the system using systems concepts (the mnemonic CATWOE analysis). In the fourth step, the researcher develops an ideal systems model, disregarding the actual situation. The fifth step is to compare the ideal model with the actual situation, leading to the sixth step, which is to identify feasible and desirable changes in both systems (the system is designed to operate both forwards and backwards). Finally, the seventh step is to implement and test changes to the systems. This represents one cyclic phase of the method. As Dick (2002) explains, “the model also contains four dialectics between immersion (the rich picture) and essence (the root definitions), between the essence (the root definitions) and the ideals (the conceptual models), between ideals (conceptual models) and reality and between plans and implementation” (Figure 2).

Patching (1990) describes the multiple benefits of using Soft Systems Methodology as follows: “Systems models provide the analyst with a template to expedite the process of orientation in strange circumstances, albeit a template that may have to be modified as the study progresses... [this] leads to increased understanding and helps to clarify potential areas of weakness.... [It also] encourages an analyst to take an overview of situations.... [and] helps to ensure that improvements to one part of an organization are made in full recognition of all the influencing circumstances”. The practical implementation of Soft Systems Methodology to the research project involved an ongoing process of conceptual modelling, analysis, systems modelling, comparison and re-working over several months resulting in the generation of prolific data that was eventually distilled into a model representing the practice of multimedia composition. The research was carried out in parallel with the structural development phase of *Shifting Ground* a work that combines electroacoustic music with experimental 16mm film footage to achieve the double outcome of a multimedia composition, and an art film. Several discoveries were made throughout this process that combined to significantly improve and extend the original representation of the process of multimedia composition as illustrated in Figure 1.



**Figure 2: Soft Systems Methodology Dialectics<sup>2</sup> Used to Evaluate the Process of Multimedia Composition**

### Results

Notwithstanding the simplicity and elegance of the original action-research-like cycle, in the process of evaluation, significant discoveries were made. The categories of *intend*, *act* and *review* were replaced with the narrower substitutes of *conceptualise*, *produce* and *analyse*, with each category revealing its own complex system as follows:

The category of *conceptualise* is subject to the natural constraints of the composer's imagination as well as limitations governed by the environment. The process begins with a good idea; however, not all ideas are pursued, as they are filtered by the limitations of the project. Namely: The context of materials used in any given work; the context of the intended outcome for the work (for example, the context of producing a pop video clip for television broadcast will be far more constraining than the context of producing a multimedia art work for its own sake); time and budgetary constraints; human resources (skills); technological infrastructures and administrative support. Filtered ideas that emerge from this process will generally concern specific multimedia craft practices.

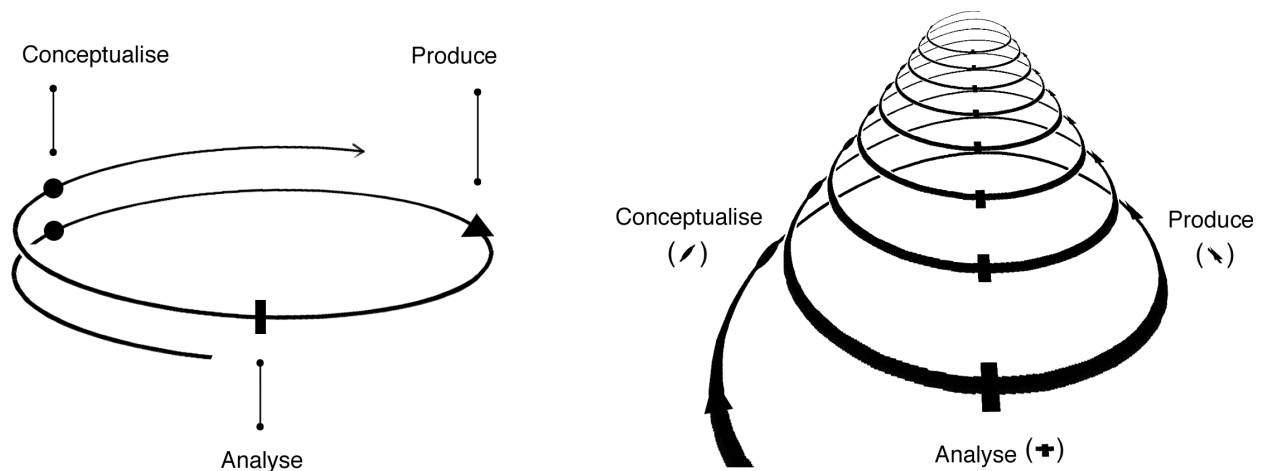
The category of *produce* relies on knowledge and skills acquired across multiple creative disciplines including compositional techniques and experimental procedures developed through experience. Practical skills of individual practitioners are reinforced with technical knowledge and experience gained over many years. The skills necessary to undertake a multimedia project can be provided by a single individual, or can arrive through collaboration with other artists and organisations. Technological convergence in multimedia production provides a multitude of hardware and software options for production, such as audiovisual editing applications and modular programming environments that allow the integration of diverse media types in any given work. Due to this phenomenon, the majority of these skills are transferable. For example, the skills in constructing a musical cadence may be metaphorically transferred to the process of pacing a video sequence.

The category of *analyse* is concerned with the practitioner's level of awareness with regard to responses evoked by materials within any given work. In practice, this involves the ability to change between operating as the actor (the producer) and the client (the analyst). More specifically, it involves the ability to judge ones own work objectively while remaining sensitised to the media under scrutiny. The analysis criteria can include multimedia semiotics, psychoacoustics, high and low-level vision, and musicology. To summarise succinctly, this three-stage cycle will continue until the work has been completed.

The cycle of *conceptualise*, *produce* and *analyse* applied over time, may be represented in its most simple form as a continuous spiral; (Figure 3) however, there are differences in the quality of cycles at the beginning, middle and end of any given project. Namely, the frequency of cyclic rotation is dramatically slower at the beginning of a project, where time-consuming tasks, such as the acquisition of

<sup>2</sup> Data in figure 2 obtained from Dick, B (2002) *Soft systems methodology*. Session 13 of Areol - action research and evaluation on line. URL [http://www.uq.net.au/action\\_research/areol/areol-session13.html](http://www.uq.net.au/action_research/areol/areol-session13.html)

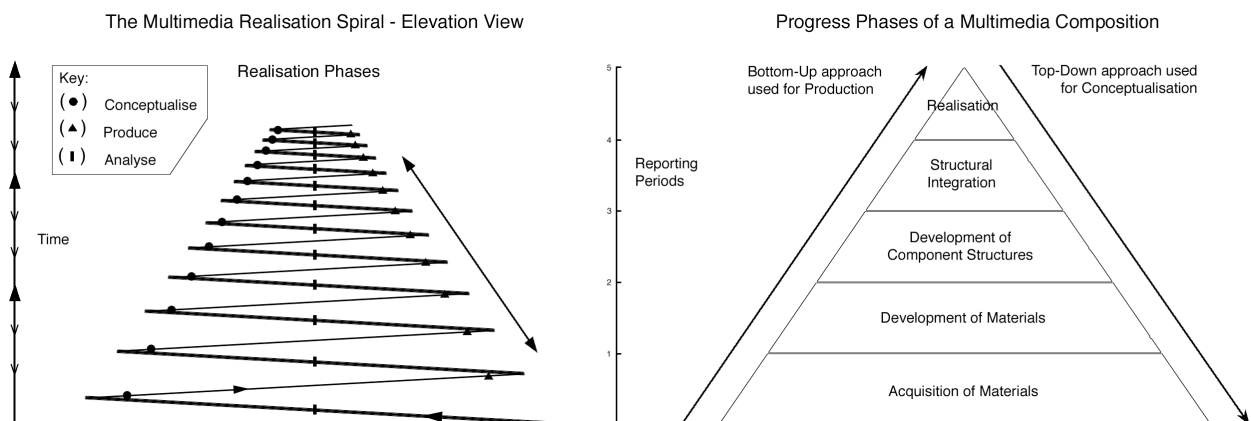
materials, are prevalent. Here, the period of a single cycle may be measured in days, weeks or months. In contrast, in the latter stages of a project, where real-time software tools may be employed, cyclic frequency may be as rapid as 1-5 cycles per second. Represented geometrically, this model takes the form of a rapidly diminishing spiral entitled *The Multimedia Realisation Spiral* (Figure 3).



**Figure 3: The Multimedia Realisation Spiral**

Various milestones can also be drawn from the process as it occurs over time. A single cyclic rotation constitutes the smallest possible period, whereas larger structures may also be imposed for planning and/or reporting purposes. In the process of evaluation, five distinct progress phases emerged: Materials Acquisition – the assembly of materials used in any given work; Materials Development – application of mechanical or digital transformation using a range of techniques and technologies; Development of Component Structures – application of aesthetic principles in establishing component structures that will be extant in the final work; Structural Integration – the assembly of component structures to form a first draft of the final work; and Realisation – a unique quality that springs from the context of materials used in an individual work (Figure 4).

The five phases outlined above may also be described as divisions of a continuum between production and conceptualisation that stretches from the beginning to the end of any given project. Concepts (which exist in the minds of composers) reside at future positions further up the spiral, whereas production tasks (which manage the concrete materials in any given work) reside in the present, at points further down the spiral. In this regard the model presents a top-down approach for conceptualisation, and a bottom-up approach for production. Production tasks may also contain a “process of discovery” (Wishart) that may adapt or completely transform the original concept. However, as the process evolves, concepts tends to solidify, placing greater emphasis on task-driven processes and less emphasis on the process of discovery.



**Figure 4: The Multimedia Realisation Spiral; Realisation Over Time**

To illustrate the working nature of the Multimedia Realisation Spiral, in the following scenario, a composer imagines a particular result (conceptualise) from a task-driven process. She undertakes the process (produce) and presents the developed materials to her peers (analyse), only to find that in the opinion of the group, her concept is not represented in the materials [preventing her from continuing up the spiral]. Disappointed but not defeated, she decides that the problem stems from an earlier decision in the process (conceptualise), and decides to re-undertake a series of task-driven processes [forcing her several cycles back down the spiral]. On completing the tasks (produce), she again presents the developed materials to her peers. This time, [armed with the benefit of comparison] the group unanimously reports a successful realization of materials (analyse) as well as a new quality [realized through a process of discovery] that adds strength to the work [which allows her to continue up the spiral].

The model further serves to passively define the boundaries of the process of multimedia composition by presenting the framework in which any given project may be realised. Each of the three internal components (Conceptualise, Produce & Analyse) house sub-level models may be focused widely to include all projects, or narrowly to include specific projects or tasks being undertaken. Due to this variability, it may also be focused on singular disciplines such as: musical composition, electroacoustic composition, video and film production, theatre and sculpture.

The Multimedia Realisation Spiral as illustrated in Figures 3 & 4 draws similarities to two models presented by Nalin Sharda of Victoria University, Australia. Firstly, *Combining the Art, Science and Technology of Multimedia with the Multimedia Creation Circles Paradigm (2003)*, which presents an action research model based on concentric circles, and secondly, *Creating Meaningful Multimedia with the Multimedia Design and Planning Pyramid (2004)*, which presents a pyramidal (MUDPY) model that is very similar to the pyramid shown in Figure 4.

#### Discussion

To formulate the argument that multimedia composition is research, we must first qualify the Multimedia Realisation Spiral (a model of practice) as a form of action research, similar to that described by Dick in Figure 1. However, according to Kemmis (1988), practice (and thereby the Multimedia Realisation Spiral) lacks an essential quality that defines action research. He states (in relation to teaching) that “it [Action Research] is not the usual thing teachers do when they think about their teaching”. Rory O'Brien (1998) provides further insight to the nature of action research in stating “What gives action research its unique flavour is the set of principles that guide the research”, while Richard Winter (1989) provides a comprehensive overview of six key principles as follows:

##### 1) Reflexive critique

An account of a situation, such as notes, transcripts or official documents, will make implicit claims to be authoritative, i.e., it implies that it is factual and true. Truth in a social setting, however, is relative to the teller. The principle of reflective critique ensures people reflect on issues and processes and make explicit the interpretations, biases, assumptions and concerns upon which judgments are made. In this way, practical accounts can give rise to theoretical considerations.

##### 2) Dialectical critique

Reality, particularly social reality, is consensually validated, which is to say it is shared through language. Phenomena are conceptualized in dialogue, therefore a dialectical critique is required to understand the set of relationships both between the phenomenon and its context, and between the elements constituting the phenomenon. The key elements to focus attention on are those constituent elements that are unstable, or in opposition to one another. These are the ones that are most likely to create changes.

##### 3) Collaborative Resource

Participants in an action research project are co-researchers. The principle of collaborative resource presupposes that each person's ideas are equally significant as potential resources for creating interpretive categories of analysis, negotiated among the participants. It strives to avoid the skewing of credibility stemming from the prior status of an idea-holder. It especially makes possible the insights gleaned from noting the contradictions both between many viewpoints and within a single viewpoint

4) Risk

The change process potentially threatens all previously established ways of doing things, thus creating psychic fears among the practitioners. One of the more prominent fears comes from the risk to ego stemming from open discussion of one's interpretations, ideas, and judgments. Initiators of action research will use this principle to allay others' fears and invite participation by pointing out that they, too, will be subject to the same process, and that whatever the outcome, learning will take place.

5) Plural Structure

The nature of the research embodies a multiplicity of views, commentaries and critiques, leading to multiple possible actions and interpretations. This plural structure of inquiry requires a plural text for reporting. This means that there will be many accounts made explicit, with commentaries on their contradictions, and a range of options for action presented. A report, therefore, acts as a support for ongoing discussion among collaborators, rather than a final conclusion of fact.

6) Theory, Practice, Transformation

For action researchers, theory informs practice, practice refines theory, in a continuous transformation. In any setting, people's actions are based on implicitly held assumptions, theories and hypotheses, and with every observed result, theoretical knowledge is enhanced. The two are intertwined aspects of a single change process. It is up to the researchers to make explicit the theoretical justifications for the actions, and to question the bases of those justifications. The ensuing practical applications that follow are subjected to further analysis, in a transformative cycle that continuously alternates emphasis between theory and practice.

On rare occasions, the practice of multimedia composition may naturally satisfy the principles of action research as listed, however, in the vast majority of situations, deliberate adherence to these key principles will be necessary to convert practice to research. This raises the issue of integrating a research agenda to the practice of multimedia composition without disrupting or manipulating the creative process. In this regard, several points of discussion emerge:

Like Winter (1989), Bob Dick (1993) specifies reflective critique as an essential quality of action research. He states: "Further conversation reveals that in their normal practice they [practitioners] almost all omit the deliberate and conscious reflection, and sceptical challenging of interpretations. To my mind, these are crucial features of effective action research (and, for that matter, of effective learning)". Dick (2000) also states that "each cycle" must be reflective. "One crucial step in each cycle consists of critical reflection. The researcher and others involved first recollect and then critique what has already happened. The increased understanding which emerges from the critical reflection is then put to good use in designing the later steps." However, in the opinion of the author, this approach interferes with the creative process by demanding "deliberate and conscious reflection" after every production task. An experienced artist relies on a well-developed and unrestrained intuitive process, and as such will be resistant to, and suffer from, interference of this magnitude. To illustrate this point metaphorically, a concert pianist is not consciously aware of all the keystrokes that make up the repertoire in any given performance. The techniques necessary to deliver such a performance have been developed over weeks, months and years of repetition in rehearsal. These techniques have subsequently become part of the performer's implicit memory system. For him/her to become consciously aware of each keystroke would not only require a considerable amount of effort, but would undoubtedly result in a disastrous performance. As such, under the constraints of Dick's principle, it is not possible to convert artistic practice into research in any setting due to the necessity of rigidly adhering to reflective critique after every cycle.

Periodicity is the key issue in solving the intuition-versus-reflective-critique argument. While Dick (1993) states that "every cycle" must be reflective, Winter (1989) does not specify a period. Wadsworth (1998) illuminates the issue in the context of participation action research in the following statement:

In participatory action research, while there is a conceptual difference between the 'participation' 'action' and 'research' elements, in its most developed state these differences begin to dissolve in practice. That is, there is not participation followed by research and then hopefully action. Instead there are countless tiny cycles of participatory reflection on action, learning about action and then new informed action which is in turn the subject of further reflection. Every minute of every hour may see participants absorbing new ways of seeing or thinking in the light of their experience, leading to new related actions being taken on the spot. Often these will pass unnoticed and unrecorded, but with practice these too become the subject of further reflection and group self-understanding. Change does not happen at 'the end' - it happens throughout.



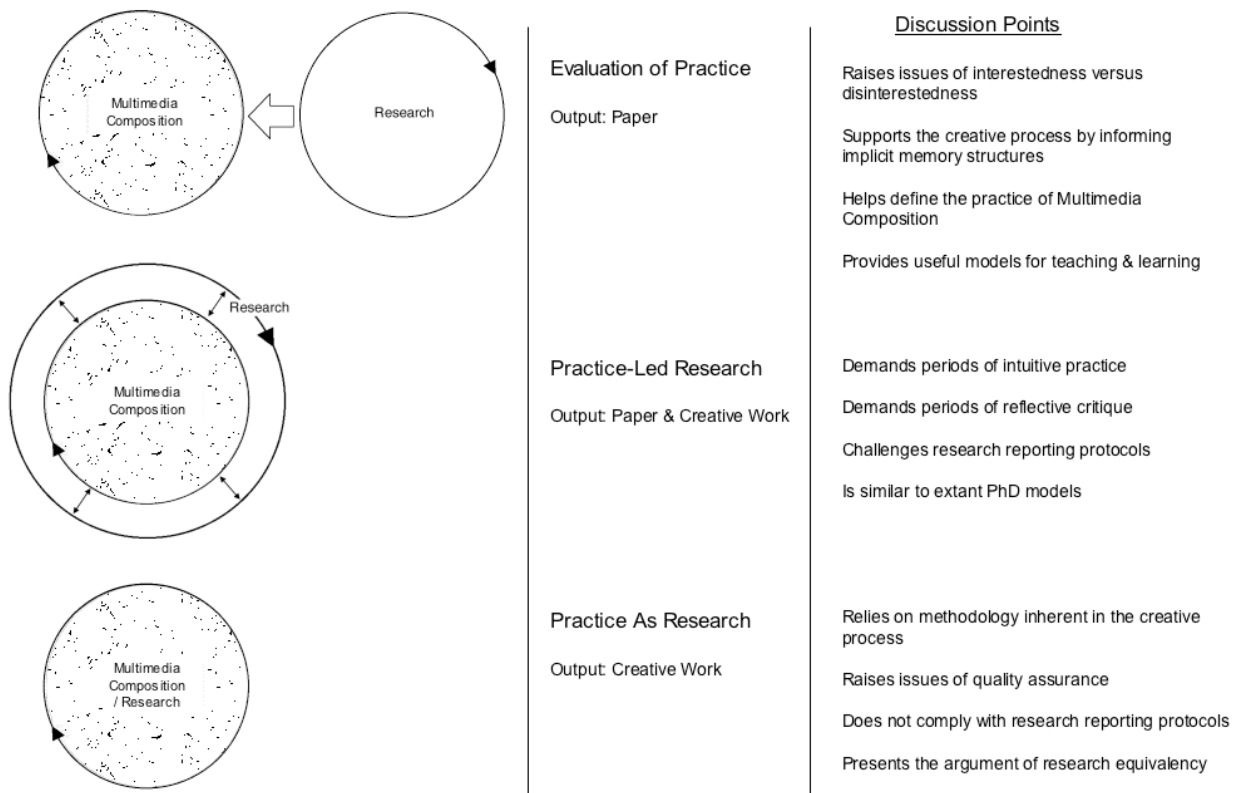
In the context of the practice of multimedia composition, Wadsworth offers the most logical solution to the issue of reflective critique periodicity by stating that “it happens throughout”. However, as part of normal practice, composers will often seek the advice of colleagues, friends, or family concerning components within a given work, occasionally even organizing public concerts specifically to test developing ideas. This constitutes larger temporal divisions within the creative process that operate as in-depth periods of evaluation with the aid of collaboration. As part of this engagement, a natural process of dialectical critique emerges – a process that can be further aided with the deployment of qualitative research techniques. As such, the principles of reflexive critique, dialectic critique and collaborate resource as stipulated by Winter, are well represented.

This final point of contention with regard to principles of action research is that of reporting. Winter (1989) states that the research must embody “a multiplicity of views, commentaries and critiques... [and that the] plural structure of inquiry requires a plural text for reporting”. In this regard, the output of the Multimedia Realisation Spiral (a creative work) is clearly inappropriate as a “plural text”. However, numerous tertiary institutions around the world have established creative PhD programs by successfully arguing that in combination with text, creative work is admissible as a research report. It is this model that serves the purposes of this study in forming the argument that that multimedia composition is research.

To pause for reflection at this point, research findings have determined that, in isolation, the practice of multimedia composition as defined by the Multimedia Realisation Spiral is not research; however, in combination with the principles of action research as presented by Winter (1989) the Multimedia Realisation Spiral is converted into action research methodology. The six principles of action research provide the framework for research to be conducted, while The Multimedia Realisation Spiral provides the methodological detail for the project to be carried out.

### Conclusions

In summary, the research findings present two qualified methodologies for undertaking multimedia composition and research simultaneously and a third methodology that fails to meet the conditions of action research as specified by the research community (Figure 5).



**Figure 5: Methodologies for Undertaking Multimedia Composition and Research Simultaneously**

For the purposes of this study, the term evaluation of practice refers to a research model that serves to investigate the process of multimedia composition (an example of such research is this paper). Although the research output is limited to text, the model brings many benefits to the multimedia composer. Firstly, in the process of evaluation, the practitioner/researcher becomes acutely aware of his/her own creative process. This leads to a sense of confidence in the process itself, which in turn supports the intuitive process. In the opinion of the author, it is this intuitive process that is at the heart of multimedia composition. Secondly, the evaluation process can help to define the medium under scrutiny. In this case, the Multimedia Realisation Spiral illuminates the boundaries of multimedia composition by offering a globally relevant process by which multimedia compositions may be realised. This defines the medium not by media type or by the role of collaboration in the process, but by the process itself. Thirdly, the process of evaluation may lead to additional discoveries. In this case, the Multimedia Realisation Spiral contains milestones that may be easily transformed into pedagogical methodologies. Student composers may enjoy the benefits of a guided creative process to assist them in the early stages of multimedia composition. The five milestones presented in the model: Acquisition of Materials, Development of Materials, Development of Component Structures, Structural Integration and Realisation may also prove to be an accurate means of monitoring student progress and assessing the quality of student works. To undertake such research, one needs only to adopt the principles of action research in combination with an evaluation methodology; however, in situations where collaboration is not possible, the methodology must also serve to combat interestedness (an example of such a methodology is Soft Systems Methodology).

Practice-led research is a term that traditionally encompasses a much larger range of research possibilities associated with practice; however, for the purposes of this study it refers to a model that upholds both creative work and text as research output. The model demands both periods of intuitive practice and of reflective critique, and adopts reporting protocols similar to those found in extant creative PhD programs. To undertake such research, one needs only to adopt the principles of action research in combination with a model of practice that may be used as methodology (such as the Multimedia Realisation Spiral). Although this research model is widely accepted, the research community is slow to accept research outputs in forms other than text, and as such, in many contexts, submitting creative work as research remains problematic.

For the purposes of this study, the term practice as research refers to a model that upholds only creative work as research output. Research findings have determined that the hypothesis, (that the use of Soft Systems Methodology to evaluate the process of multimedia composition will produce a model that will define the practice as research) is incorrect, and that multimedia composition as research is not a valid form of research. Although many similarities have been identified between reflective practice and action research, it is clear that, in isolation, the Multimedia Realisation Spiral is not a form of action research, as it fails to comply with the principles of the discipline and with traditional research reporting protocols.

In conclusion, this paper provides Composers and Artists working in academic settings with two useful methodologies for undertaking practice and research simultaneously. The first (evaluation of practice) is suited to traditional research outputs, while the second (practice-led research) embodies a range of outputs from traditional to creative work. Both methodologies uphold the right of the artist to pursue artistic excellence, without being manipulated into false outcomes.

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