RATIONAL AND INTUITIVE APPROACHES TO MUSIC COMPOSITION: THE IMPACT OF INDIVIDUAL DIFFERENCES IN THINKING/LEARNING STYLES ON COMPOSITIONAL PROCESSES

Carina Dingwall

A thesis submitted in partial fulfilment
of the requirements for the degree of
Bachelor of Music (Music Education) (Honours),
Sydney Conservatorium of Music,
University of Sydney.

2008

Abstract

This study explores the idea that there are two different types of composers, those that use a rational process of composition involving pre-planning and use of external systems and those that use an intuitive process that involves trial and error or other exploratory means for composing. It focuses on further understanding these patterns of thought as they are found in the compositional processes of student composers as well as investigating their learning preferences. The study examines the compositional processes of five composition students from the Sydney Conservatorium of Music selected using their results on the SOLAT (Style Of Learning And Thinking) measure (Torrance, McCarthy & Kolesinski, 1988). After interviewing the five participants, a model was developed that explained how rational and intuitive patterns of thought were used at different levels. The macro-processes of participants were found to sit on a continuum between rational and intuitive whilst at the micro-level participants were seen to use a mixture of both processes. The interview participants were also asked to comment on their preferred activities for learning composition. It was found that the participants believed their compositional processes were something that they developed themselves and they wanted a more personal approach to learning. The findings have implications for both teachers of composition and their students.

Acknowledgements

Thankyou hardly seems like a big enough word to cover my gratitude to all of the people mentioned below, but I it's the best the English language had to offer.

The first thankyou goes to my amazing supervisor Dr Anthony Hood, who not only read my drafts but was always patient, encouraging and understanding as well. Thankyou for the three years of being a great teacher, always believing in me and always looking out for me. I couldn't imagine a better supervisor for my project; I couldn't have done it without you.

A special thanks to my fellow composition students for inspiring the study in the first place and for all the enthusiasm and hugs that kept it going. I would also like to thank those of you who participated in the study for your insightful comments and willingness to share your work with me.

Thanks also to all my lecturers at the con for the things you've taught me and encouragement you've shown me and particularly for your understanding with my nearly impossible workload. And to my family and friends who were also a great support.

Table of Contents

List of Figures

Chapter 1 ~ Introduction

As a student of composition at the Sydney Conservatorium of Music, I made my own informal observations of two distinct approaches to composition. Often a conversation would begin at the lunch table discussing different processes being used for a current composition or highlighting the way that a particular subject or assignment suited one student more than it suited the other. These experiences were not necessarily linked to the ability of different students but might be explained as different styles of thinking and learning.

The notion of two types of compositional thinking began at least as early as the 1930s when Bahle identified two types of composers: a working type – who would use preconceived plans and use rational processes, and an inspirational type – who would be more reliant on improvisation and emotional impact (Bennett, 1976). Swanwick and Tillman (1986) also noted the phenomenon when they characterised the two sides of their development spiral as reflecting emotive and exploratory aspects compared to strategic and structural aspects. The terms "rational" and "intuitive" were first used by Moore (1990) to describe the two musical "abilities" involved in composing. Moore describes them as:

> Intuitive musical ability (IMA), primarily an intuitive, spontaneous process, involved the creation of germinal musical ideas through exploratory means such as improvisation. In contrast, rational musical ability (RMA) was a more logical, rational process that involved the conscious reshaping, extending and developing of germinal ideas … (p. 25)

This study follows on from this idea and uses the terminology of Moore (1990) as it seems to best describe the two different approaches to composition that have been observed.

In the field of psychology, there has been a plethora of different theories of thinking and learning styles and just as many different names and categorisations for the "variety of seemingly different yet similar styles" (Zhang, 2002a, p.25). Different terminology has been used to describe the phenomenon of rational vs. intuitive thought patterns. They have been labelled logical vs. emotional, thinking vs. feeling, analytic vs. holistic, cognitive vs. associative or sequential vs. special (Kemp, 1981, 1982, 1996; Sternberg & Grigorenko, 2001; Zhang, 2002a, 2002b). One such theory that may be useful in understanding the concepts is that of Torrance (1977, 1979, 1988). His SOLAT measure (Torrance, Reynolds, Reigel, & Ball, 1977) has been used in many studies particularly those that investigate the style of thinking used by creative people.

For educators the study of thinking and learning styles is important for understanding how students learn and how best to cater learning experiences and instruction to suit students from a range of styles.

Significance of the Study

Many researchers have tried to build up a profile of what personality traits including thinking styles are common to musicians in general or to musicians specialising in fields such as composition or performance (Bell & Cresswell, 1984; Goncy & Waehler, 2006; Kemp, 1981, 1982, 1996). The problem with these studies from a music educator's point of view is that they only stand to prove that there are specific personalities. They do not account for variations or examine how these inherent traits affect music learning.

Other studies have compared students' thinking and learning styles with their preferences for and success at different music listening tasks and instruction in music appreciation classes (Lewis & Schmidt, 1991; Zalanowski, 1986, 1990). Little research has looked into the effects of thinking and learning styles on other musical activities especially composing.

In terms of looking at compositional processes some studies have looked at the cognitive development of music composition (Swanwick & Tillman, 1986), the effect of task design on compositional experiences (Burnard, 1995), the format of composition learning activities (Barrett, 2006) and more generally the sequencing of events and processes involved in the compositional process (Bennett, 1976; Burnard & Younker, 2004; Emmerson, 1989).

The work of Moore (1990) assumes the existence of rational and intuitive musical processes but labels them as abilities and looks at how other thinking and learning styles affect them. The test design for rational and intuitive abilities is based on the ability to succeed in set tasks.

This study is aimed at further understanding the thought processes of composers while also examining how this affects the experiences and learning preferences of composition students. The study will identify rational and intuitive thinking and learning styles amongst student composers and explore effects of these using a qualitative approach that allows for an in-depth study of a small number of cases. The findings should suggest ways in which compositional learning activities can be

better designed to cater for the needs of students with varying thinking and learning styles.

Research Questions

RQ1. In what ways do the compositional processes of composition students align with the categories of rational and intuitive?

RQ2. In what ways is there a parallel between thinking/learning styles and compositional processes?

RQ3. How does a composer's thinking/learning style influence their preferences for learning how to compose?

Chapter 2 ~ Literature Review

Two Types of Composers

The concept, which began with Bahle in the 1930s (Bennett, 1976), that there are two types of composers has been noticed by many other researchers. Each of the following studies has added further to the conception of this dichotomy in working styles.

One of the most discussed and central investigations into the cognitive development of music composition is that of Swanwick and Tillman (1986). They collected and analysed examples of the music explorations of children. The outcome of the study was the creation of a development spiral. The spiral included levels of development with each side of the spiral also representing a different way of looking at things. One side of the spiral was characterised by emotive and exploratory aspects whilst the other focused more on the strategic and structural aspects. It was noted that the development of composition in children required the pendulum to swing from one side of the spiral to the other with each level of the spiral showing a greater depth or more developed approach.

Wiggins (1994), in her study of students engaging in compositional activities within her classroom, made an interesting observation about two different processes that were taking place. She uses the terms planning versus random exploration. She defines exploration as the time when the student did not appear to be engaging in planning but just randomly exploring on their instrument. There seems to be the suggestion that planning is a higher order compositional process that is used by

children who are more experienced and more knowledgeable whereas random exploration is the means by which the less experienced students worked.

Finally, one author who has investigated the learning styles and preferences of composers with contrasting compositional styles is Moore (1990). Moore designed a compositional activity that tested for Rational Musical Ability and Intuitive Musical Ability that he called the Ability to Compose Music Exercise. In his study of year 11 and 12 instrumental students, Moore compared the results from the Ability to Compose Music Exercise with results from two other instruments that measured students' learning preferences, the Gregorc Style Delineator and Edmonds Learning Style Identification Exercise. He found that some students with an abstract random style, as defined by the Gregorc Style Delineator (Moore, 1990; Sternberg and Grigorenco, 2001), had a higher Intuitive Music Ability but was unable to find significant relationships between other learning styles and rational or intuitive musical ability. The author comments on the difficulties involved in investigating the learning styles and processes involved in music composition and he recommends the need for more studies to find a better way to test intuitive and rational musical abilities amongst composers.

Styles in Educational Psychology

The difficulty with any study into thinking and learning styles is the abundance of different, theories, classifications and measures. Research into styles was quite popular during the 1950s-70s but there became so many different models and definitions that the field became overwhelming (Zhang, 2002a). Recent work by Sternberg and Grigorenko (2001) has revived interest in learning style research.

These authors reviewed the background of research into thinking, learning and cognitive styles as well as an overview and critique of some of the major theories organised into three categories – cognition-centred styles, which are based on the way subjects think and perceive information, personality-centred styles, which focus on the impact of an individual's personality, and activity-centred styles, which are formed on the basis of activities people engage in. As well as this useful classification system, these authors make the point that styles are not to be confused with abilities.

Personality Profile of a Musician

There has been curiosity regarding the personality profile of a musician and research has tried to discover what this might be (Bell & Cresswell, 1984; Goncy & Waehler, 2006; Kemp, 1981, 1982, 1996). Various studies have used measures such as Cattell's 16PF Personality Questionnaire (Kemp, 1996) to find the personality traits of musicians in various fields of music as well as of non-musicians. Kemp reported (1982) a distinct difference in the personality traits displayed by musicians and non-musicians particularly in the form of higher scores for introversion, pathemia and intelligence for musicians. Differences were found between the personality traits strongest in musicians of different instrument families, with such findings as brass players and singers tending to be less introverted than other instrumentalists.

The greatest level of variance in the results, however, was found when comparing the traits of musicians that specialised in performance, composition, or classroom teaching. This was covered further in Kemp's (1981) study on the personality characteristics of creativity in music as distinguished from performance in music.

Despite the possible distortion from an unbalanced sample, the results show that personality traits of composers are much the same as for musicians generally but composers are seen to display these traits at far more extreme levels than performers.

In the 1970s particularly, there was particular interest on finding the personality traits of composers and others described as “creative types”. It was thought that this was the key to understanding creative talent (Kemp, 1996). Based on this idea that there are specific personality traits common to musicians that are similar to the specific personality traits common to creative types, Goncy and Waehler (2006) designed and tested the Creative Personality Scale (CPS). This was a somewhat difficult task due to lack of an operational definition of creativity and resulted in a measure that predominantly tested the problem-solving component of creativity. A second measure that was designed and tested for the study was the Scale of Musical Experience (SME). Results from the application of these scales to 150 students found a significant correlation between creativity traits and musical experience. Especially high correlations were found between creativity traits and musical experiences involving composing or improvising. It is yet to be investigated whether musical activities are able to encourage creative thought or whether creative thought is inherent and has implications for a person’s ability to learn music.

Many personality studies, such as these, tend to describe the traits found in musicians and do not look at how this affects the way they think about or learn music. In fact, it is often not known whether these traits are the cause or effect of a person being a musician. From a music educator’s perspective, the focus is more about how individual differences in the form of thinking and learning styles may influence the

way that students learn music and go about completing musical tasks. This is why many music education studies investigate variations in thinking or learning aspects of students' personalities and compare these with their preferences for musical learning activities and the actions that can be taken by teachers to enhance learning for students with different styles.

Studying Music Learning with the MBTI

The Myers-Briggs Type Indicator (MBTI) resembles a personality trait inventory but tells researchers more about how individuals process information and approach learning tasks (Sternberg & Grigorenko, 2001). Subjects answer questions in a self-report questionnaire that give them a ranking along one of four scales. Extroversion-Introversion is a scale that characterises people who are outgoing from those with more of an inward focus. Intuitive-Sensing represents the difference between seeing things holistically, concentrating on meaning and perceiving things realistically and precisely. Thinking-Feeling separates people who are logical, analytical and rational from those that are more emotional and intuitive. Judging-perceiving is the difference between making interpretations of the environment as opposed to depending on the information supplied by it. The indicators can be used to make a composite score of personality but the individual scales can also be used separately, as they have been in some music education research.

Suchor (1977) has investigated the educational implications of learning style on music composition in a collaborative situation. She focused on the interaction of styles according to the Myers-Briggs Judging-Perceiving dimension in group composition activities. The twenty-four participants in her study were divided

according to their MBTI results into groups of four in one of three group types: predominantly Judging (JJJP), predominantly Perceiving (PPPJ) and equal (JJPP). It was found that the Judging predominate groups interacted more with each other, and the piano, during a set compositional task than the Perceiving predominate groups did. Problem solving processes were used differently between the groups though in no particular pattern. It was found, through a questionnaire on the students' attitudes towards the group and how successfully they worked together, that in the groups with higher levels of interaction, JJJPs, participants rated their groups much higher than the members of the JJPP and PPPJ groups did. It was seen from these results that the personality composition of groups affected the student-student relationships within the groups as well as affected their group compositional processes as a whole. The author makes suggestions for how these can be accommodated within the classroom such as the need to encourage interaction or structure the task into stages.

A common area of research in the field has investigated the learning styles involved in music listening, particularly in the setting of music appreciation classes (Lewis & Schmidt, 1991; Zalanowski, 1986, 1990). One such study, by Lewis and Schmidt (1991) used the Myer-Briggs Type Indicator in combination with the Music Listener Response Scale (MLRS). The MLRS was developed by Hedden and asked questions aimed at identifying responses to music in five categories: associative, cognitive, physical, involvement and enjoyment. The study aimed to find whether results on the MBTI could predict a listeners' response to music. It found that the participants score on the Sensing-Intuition scale had the strongest relationship to scores on the MLRS with Intuitive types having higher scores than Sensing types did. This was contrasted with the existing data from a previous study that found that the participants' score on

the Thinking-Feeling scale had the strongest relationship with their response to music. Although both studies had different findings, both showed that there were connections between listener responses and their preferences for thinking.

Music Learning and Brain Dominance Theory

In similar research to that of Lewis and Schmidt (1991), Zalanowski (1986, 1990) also investigated individuals' learning styles in music appreciation classes. Her choice of measure for cognitive style was that of cerebral hemisphere preference. She cites literature that suggests that the left and right sides of the brain have different specialised functions and that individuals have a preference for using one side or the other, resulting in different cognitive styles. A left hemisphere orientated person is seen to prefer analytical, sequential and logical thinking whilst a right hemisphere orientated person is seen to prefer conceptual, spatial and creative thinking.

Zalanowski uses a particular measure originally developed by Torrance, Reynolds, Reigel and Ball, (1977) called the Style of Learning and Thinking (SOLAT). The instrument measures brain dominance in terms of left and right hemisphere preference. Although it has been suggested (Zhang, 2002a, 2002b) that thinking should no longer be described as being directly related to the physical side of the brain in which it occurs, research using the instrument still contributes usefully to the body of knowledge on learning styles.

The SOLAT measure has been used many times (Chesson, Munday, Tunnell, & Windham, 1993; Keinholz & Hritzuk, 1986; Torrance & Mourad, 1979; Torrance, 1988) to investigate the styles of thinking required for creative thought. Though

carried out on a variety of different disciplines, all the studies have reported similar results in that creative processes involved both styles of thinking.

Zalanowski's (1986) first study into listening and appreciation of music investigates the impact of instructions given prior to music being listened to and the effect of these on the subjects' perceived attention, enjoyment, understanding and memory of the piece. She assigned the subjects instructions prior to listening, that required participants to involve themselves to different extents in imagining images associated with the listening. She then related the subjects' preferred instruction to their cognitive style as tested by the Your Style of Learning and Thinking test (an earlier version of the SOLAT test used in this study), which calculated the participants' hemisphere preference along a scale. This found that there was a higher rate of enjoyment amongst the right hemisphere preferrers who had received imagery instructions, especially so with programmatic music. Those with a left hemisphere preference benefited from an abstract program. This highlighted the need for listening instruction to be matched to the purpose of the task as well as the learning style of the student.

In a later study, also into listening and appreciation of music, Zalanowski (1990) chose instructions that were more closely related to the left and right hemisphere preferences. In this study subjects involvement was encouraged by asking them to a) follow the music mentally, b) create a visual representation, hypothesised to benefit those preferring right hemisphere thinking, or c) write a verbal description, hypothesised to benefit those preferring left hemisphere thinking. Subjects in this study were categorised for hemisphere preference using the Herrmann Participant

Survey Form. Again, the cognitive style of hemisphere preference was determined to be a critical variable in the attention, understanding and enjoyment of music. Right preferrers did indeed respond better to visual involvement and left preferrers to verbal. Through her studies, Zalanowski showed that the effect of different types of instruction prior to listening to music was related to the cognitive learning style of each individual.

These and other studies have shown that music listening can be described as occurring either analytically or emotionally, rationally or intuitively. It has been suggested that:

> …if it is possible to theorise that certain types of listener are attracted to various musical styles on the basis that their personalities reflect particular states of mind and a predilection to think in particular ways, might not these differences apply to composers who created music in the first place? (Kemp, 1996, p.214)

Studies of Composers and their Processes

Burnard (1995) investigated the effect of task design on the compositional experiences of Yr 11 students. Students were set a variety of tasks that were classified as either a prescription task that made specific demands, a choice task that allowed students to choose from a number of specified options or a freedom task that specified a minimum of parameters. Analysis of data from student reflections showed that students reacted differently to the types of tasks set. Some students worked better in a restricted environment where they were given more constraints and problems to solve while others preferred the freedom of being able to create their own constraints and explore their individuality. This highlights the need for task design to be matched to individual students. Further research may be able to

determine the reasons why different students react differently to tasks and whether this is related to their learning styles.

Using previously collected case study data Burnard and Younker (2004) profiled six styles of compositional thinking. The styles are activity centred styles (Sternberg & Grigorenko, 2001) as they are based on the activities undertaken by the individuals whilst composing. The resulting pathways were floater to linear, serial to staged and recursive to regulated. The study is limited in that it looks only at how students compose and not why they work in that way. What the study does highlight is the variety of methods that different students use to problem-solve in music composition.

Other recent studies into the learning of composition have also been far more focused on activities undertaken during the learning process. A case study by Barrett (2006), looked in detail at the relationship between a student-composer and composer-teacher as the student was working on the completion of a composition. This one-on-one set-up is a common teaching and learning situation in tertiary music institutions. While the study does not attempt to look at the thinking or learning styles, it usefully describes many teaching strategies that occur and highlights the collaborative nature of composition.

In the previously mentioned study by Wiggins (1994), the author used observational techniques in the form of video and lapel microphones on selected students to gather data on the strategies used by the students during various different collaborative compositional activities within her classroom. She found that the strategies fell into three consecutive stages: initial planning, development of motivic ideas and

reassembling and practising. Contrary to previous studies that Wiggins discusses, students in this had more of a focus on planning holistically that in random exploration, which only occurred during parts of the second stage. The suggestion is made that students should learn music and composition in a way that encourages them to move from the whole to extracting parts and then relating these parts back to the whole.

In an article by Emmerson (1989), composition is suggested to be a primarily aural act. The author suggests that although ideas can come from any number of processes it is human taste that makes decisions based on what it hears and this should not be removed from the process of composing. He suggests a model of composition in which ideas are tested and accepted or rejected. The composer would use an action repertoire, a list of possible actions and outcomes, to make decisions. According to the author the role of teaching composition is to teach tools that the composer can use but it is the exploration and shared testing of these tools which should be the focus of composition.

Chapter 3 ~ Methodology

Qualitative research

The research undertaken utilises a qualitative paradigm as the data collected aims to investigate the realities of individuals as they see themselves and not to discover facts or test a specific theory (Burns, 2000). Qualitative research design lends itself well to a study, such as this, where the focus is on a person's experiences and it can look at intricacies that are beyond the scope of quantitative methods (Strauss & Corbin, 1990).

Strauss and Corbin (1990) identify that "Qualitative methods can be used to uncover and understand what lies behind any phenomenon about which little is yet known." (p.19). As research on the rational and intuitive processes of composers is still at an early stage and is quite speculative, this approach has been applied in this study to explore the phenomenon further.

Multi-case Study

A multi-case study involves the study of more than one case (Burns, 2000) where cases are selected to investigate different individual realities. Despite the fact that a multi-case study requires more time and effort (Burns, 2000) the benefit is the ability to engage in cross-case analysis.

The multi-case study approach is appropriate to this study as it is assumed that each student has a different thinking style and different experiences. The approach allows

for exploration and comparison of participants with different thinking and learning styles.

Measure

The instrument used was a questionnaire based on the work of Torrance et al. (1977). The Style of Learning and Thinking (SOLAT) measure was originally designed to measure brain dominance. Although the idea that each physical side of the brain is used for a different kind of thinking has been contested, the measure is still used to categorise individual learning styles (Zhang, 2002a, 2002b). Torrance (1988) admits that although there is no proof of a connection between the test results and brain dominance "this does not diminish the value of the instrument for studying styles of human information processing" (Torrance, 1988, p.17).

Zhang (2002a, 2002b) casts the SOLAT in this light. She suggests that the test measures modes of thinking which she terms analytic for what was previously known as left-brained dominance, holistic for what was previously known as right-brained dominance and integrated for the use of both types (previously known as whole-brained dominance). For the purposes of this study, it is suggested that rational approaches are seen to be characteristic of the left-brain dominant category and intuitive approaches of the right.

The youth version of the form (Torrance, McCarthy & Kolesinski, 1988) was used because it was more easily available. It is not considered to be inappropriate to use this form for undergraduate students, as they are so close in age to the age range for

which the form was designed. Previous studies by Zhang (2002a, 2002b) have also used the youth form on university-aged students.

SOLAT is a self-report measure with 28 items (Appendix 4, p.57). For each item, respondents are asked to choose one or both of a pair of statements that best describes them such as:

I am good at using logic in solving problems.

I am good at using feelings and intuitions in solving problems.

One of the items counts towards the left scale and the other towards the right scale while selecting both in the pair scores on the whole scale.

Torrance (1988) points out that while there is little data on the validity of the SOLAT youth form due to a lack of studies using it, it can draw on the validity of earlier versions of the measure that have been tested and developed. The manual lists many studies that point towards the validity of earlier forms including studies by Kaltsounis in 1979, Cody in 1983 and Torrance with Mourad, Ball, Reynolds and Fraiser (Torrance 1988). He also reports on studies that have shown good reliability statistics.

Based on their results in the SOLAT measure, participants in the study were categorised as being dominant in a Left, Right or Whole overall thinking style. These results were used to identify potential interview participants that were the most likely to use rational or intuitive processes.

Participants

Participants were students from the Sydney Conservatorium of Music, University of Sydney. All students were enrolled in undergraduate courses in which they studied Composition as their Principal Study.

The SOLAT forms were distributed at the beginning of one of the weekly composition seminars, which are compulsory for all undergraduate composition students to attend. Whilst attendance on the day was not comprehensive, this could be considered a cluster sample (Denscombe, 1998); a fairly representative sample located in one place at one time. Participant Information Statements (Appendix 1, p.53) and Consent Forms (Appendix 2, p.55) were also distributed along with an invitation for interviews. A short introduction was given about the project as well as instructions for the completion of paperwork. Students were allowed approximately 20 minutes of the seminar time to complete the forms and most forms were returned immediately following this.

Sampling for the case studies was purposive (Burns, 2000). Survey participants were given the opportunity to express interest in participating in interviews. Out of the volunteers, interview participants were selected according to their results in the initial testing phase.

Three initial interview participants were chosen. The cases chosen included the most extreme cases on the Left, Right and Whole scales to maximise the chances of contrast and variation between rational and intuitive processes being used. Two subsequent participants were chosen from the remaining pool to provide comparisons

including one that was chosen from those that were more difficult to categorise as being dominant in any one form of thinking. For these subsequent interview participants, their stage in the degree was also taken into account as it was considered necessary to have a range of experience to answer the third research question about preferences for learning experiences.

Potential interview participants were contacted to determine a mutually convenient time and location for a 45-minute interview to take place. Participants could reserve the right to withdraw from this phase of the project at any time.

Interviews

Interviews are one of the major tools used by qualitative researchers to collect data. They provide an insight into what the informant feels, perceives and how they behave (Burns, 2000). The decision to use interviews for a research project should be based on the desire to get a more in-depth understanding even though it involves fewer informants (Denscombe, 1998). This study is suited to the use of interviews as it recognises the diversity and individual nature of personal experiences and styles.

The interviews were semi-structured interactions between the researcher and participant; a copy of this structure is provided in Appendix 5. The interview protocol contained questions to be asked in any order as dictated by the flow of the conversation with the participant encouraged to express their own point of view. Prompts and encouragement were given in the form of non-verbals and minimal encouragers from the interviewer (Burns, 2000).

The interviews began with a general discussion of how students would describe their thinking and learning styles in general and specific to composition. It is recognised that although a person may be overall dominant in a particular thinking style the specific style they use for different activities may vary.

Results of the SOLAT measure were not disclosed to interview participants. Participants were encouraged to share their own conclusions as to their preferred learning and thinking styles and asked to reflect on whether they thought they were rational or intuitive, a combination of both or something else.

The first section of the interview also asked general questions about preferences for certain compositional learning activities. Participants were asked to describe activities that they identified as being helpful or not helpful.

Interview participants were asked to bring copies of a recent composition and any pre-compositional materials and drafts that they may have made whilst working on it. These were discussed during the second section of the interview. The participants were encouraged to describe their compositional processes with particular reference to thought processes behind their works. This section also looked briefly at the learning that took place in order for the work to be completed.

Copies of all materials brought to the interview were kept by the researcher. Actual works by the composers acted as a focusing point for discussion with participants asked to show how they turned their inspiration and ideas into the final composition.

Using the composition to provide examples, participants were able to more accurately describe how they made particular decisions.

The final section of the interview was aimed at answering the third research question about students' preferences for certain learning experiences. This discussion was aimed at building on previously discussed preferred learning activities, relating them to specific experiences of learning composition at the Sydney Conservatorium of Music. It also tried to determine whether there was an awareness of different learning styles amongst the students.

Interviews were recorded using a handheld audio recording device to allow for transcription at a later stage. The interviewer also took notes during the interview on the content of responses in case the recording device failed. Special note was made of non-verbal communications including gestures and references to the music score.

Data Analysis

The transcribed interview data was analysed and coded to discover common themes and patterns. This followed the grounded theory approach as outlined by Strauss and Corbin (1990). In this approach, interview data is coded into categories that are derived from the data not predetermined. Each step of the coding process, open coding, axial coding and selective coding represents a deeper and more abstract level of coding. Eventually the process leads to the formation of conclusions and findings that are grounded in the research.

The researcher is herself a student of composition at the Conservatorium. She is familiar with the setting and has had learning experiences similar to the other participants. As this research is qualitative in nature, it is expected that some of this background knowledge will be drawn on when analysing the data (Strauss & Corbin, 1990; Denscombe, 1998). Many of the participants in the study are also known personally to the researcher. It should be noted that this might play a part in the participation in and interaction during interviews.

Chapter 4 ~ Results

Results of SOLAT

The SOLAT scores of participants in the first phase of the study reflected a range of different thinking and learning styles present in the sample. Each participant was given a place along one of the three scales Left, Right and Whole according to the scale on which they scored the highest. These are presented in the diagram below.

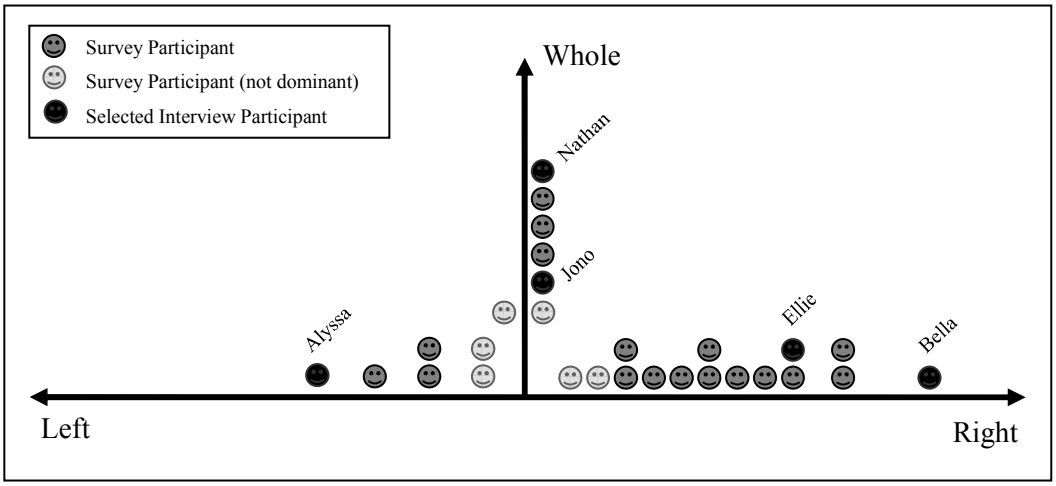

Figure 1: Diagrammatic representation of SOLAT Results

Overall, more participants displayed a right-dominant profile. The higher scores on the Right scale can also be seen to be higher than the higher scores for left and whole.

Interview participants are shown in the diagram in black and labelled. These participants are described in further detail below.

Participants

Bella

Bella is a female composer in her early years of studying at the conservatorium. She believes that her thinking style and her compositional process are both very much intuitive. This is consistent with the fact that she scored the highest SOLAT right-brained score in the sample.

Alyssa

Also in her early years of study Alyssa was chosen to be interviewed in the project as she had the highest left-brained score on the SOLAT measure. Whilst displaying some rational tendencies, including a lot of analysis and planning, she believed that her thinking style, particularly when composing, was somewhere in the middle but a little on the side of intuitive.

Jono

Jono was not able to describe his thinking and learning style as rational or intuitive, consistent with his SOLAT scores which did not show him as dominant in any style. He brings a different perspective to the study as he is in the latter half of the degree at the conservatorium. Jono was able to identify processes he used when composing as being one or the other.

Nathan

Nathan is a fairly young composer in his first year at the conservatorium. He is able to see the benefits of both rational and intuitive thought processes especially when

composing and does not see why he should choose one or the other. This may be accounted for by his high whole-brain score on the SOLAT measure.

Ellie

As the results of the SOLAT were weighted towards the right-brained style it was thought that another right-brained participant should be interviewed to balance the sample of thinking styles. Ellie had a high right-brained score and identified herself as having a mostly intuitive thinking style particularly when composing. As a student in the latter half of her degree she saw the need to develop as a composer by trying new ways of working.

Rational vs. Intuitive

The participants had some very clear ideas about how composers could catgorised according to their thinking style. Several examples of their own (unprompted) definitions of rational and intuitive patterns of thought are presented below:

> Nathan
> Some people compose entirely intuitively, "I like that sound and I like that sound then I'll do that sound because I like those two sounds" and that's cool, and then some people compose entirely rationally like some serialist guys in my class that just put together stuff and get some numbers and go and that's cool too I guess.

> Ellie
> I felt as though it was very much there were two sides/two types of composers, the sort of like more intellectual structured … number sequences based composer and then there was the impulsive kind of "I think of something I write, I play the piano" - you know there is like two different schools of thought on composition.

From these and other observations made during the interviews, an intuitive pattern of thought is characterised by the initial use of trial and error and listening back and

decisions are often made based on what the composer feels like, whereas an initial use of planning and thinking through characterise a rational pattern of thought. Rational decisions may be made according to the use of an external system, set of rules or pattern. There are many examples of these among the composers interviewed. Rational and intuitive patterns of thought could be seen at two levels of the compositional process, macro-processes and micro-processes.

Macro-Processes

Macro-processes refer to the stages involved in the over-all process of writing a piece of music. Despite the range of models of the compositional process already present in the literature, none of them were found to be suitable for this study. For the purpose of clarity here, I have designed a model of compositional process that is flexible and reflects the interview responses of the participants in this study.

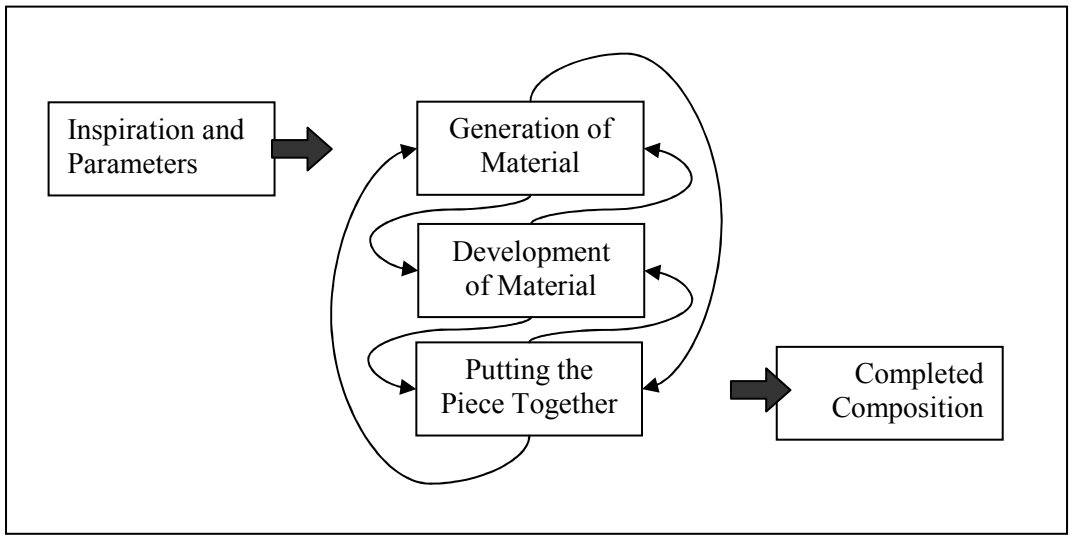

Figure 2: Model of Composition

The process involves an input which is the initial inspiration and/or task design that prompted the composition and set some of the parameters. The output of the process is a completed version of the composition itself.

In between there are three stages:

Generation of material – This stage involves turning inspiration into musical ideas. This can be in the form of a melody, a cell, a structural plan, a pitch set, a sample (in the case of electroacoustic music) and so on. It can be approached in either a rational manner such as using the letters of a character's name or mapping out a star sign on manuscript (Jono) or intuitively by stringing some notes together on a piano (Ellie) or having an idea "just pop into [one's] head" (Alyssa).

Development and exploration of that material – This involves exploring how the musical ideas might be used, worked together and how they can be extended and changed, in other words how they are developed throughout the piece. A composer using a rational approach may do this step first using systematic approaches such as permutation (Alyssa) whereas an intuitive composer is more likely to do this as they go along using trial and error and listening (Bella).

Putting the pieces together to make a piece – This is where the musical ideas are assembled and joined together so that they work coherently as a piece. An intuitive approach would involve working by ear and the composer using their own personal judgements and emotions to make decisions (Bella). On the other hand rational decisions could be made using a set of rules, the most extreme examples of which include serial and algorithmic compositions.

In reality these are not distinct stages. They overlap, rarely occur in order and often occur simultaneously with composers frequently moving backwards and forwards between them.

To demonstrate further how the model works, I will describe how each of the five composers in this study describes their process and suggest how this reflects a rational or intuitive thinking style.

Bella – The Intuitive Approach

Personal experience was always a factor in the inspiration for Bella's pieces. She talked about the need to base her compositions around one central experience possibly with a visual stimulus attached such as a childhood memory. This really highlighted her intuitive style, something which then continued throughout her compositional process. Bella would begin writing by going straight to the final score, in this case in a notation program, and writing and developing material as she went.

> I would put the sound into Finale and then listen back to it and then modify it. So I sort of go to the score first I suppose, but then throughout writing it there would be whole like minutes worth of music that I'd just end up cutting because I was just like "nup that's not where it's supposed to go". So I suppose in that sense, I don't have the pre – like I said I don't plan anything before I hit the wall but once I get to the score I'm quite happy to delete stuff if I don't think that it's where it should be.

This process jumps very quickly down to the *putting the piece together* box in the model and as Bella revises her work she revisits the other boxes. Bella cites time and her lack of organisational skills as factors which influence her compositional process.

> I tend to leave things til the last minute so when I do get to them I go "aah I don't have time to plan through all this" so I generally just end up going on gut reaction.

Alyssa – the Rational Approach

Alyssa had very distinct stages of composition. She would begin finding inspiration by listening to works by other composers and conducting research into the style she wanted to work in. She also needed some kind of personal inspiration that might take the form of some extra-musical idea; in the example she discussed it was things that distracted her in her room.

> Usually before I write anything there always has to be some idea that just pops up in my head.

The next stage in Alyssa's process involved planning and coming up with ideas starting with the structure.

> … and then I would sit down and say I would plan the structure of the piece what I want the piece, roughly the length not really the entire length but just a general idea … and I build this kind of structure of how the piece should be. And then I would think "okay what ideas do I have?" and I just write them down and I just do a list of ideas.

Following the model through, she will move to a stage of development:

> … and from there I would think "okay, so what can I do with these ideas". … and sometimes you'll be like, "this is an interesting idea I'm not quite sure what instrument it's going to go on at this point".
> And then you can see what you can do with these ideas and develop them. Different ways of doing that from basic augmenting and diminuting, phrases or rhythms or whatever.

All of these stages of development occur before Alyssa begins to write the piece. This very rational approach is consistent with the SOLAT description of a left-dominant profile as a person who discovers things systematically, sequences ideas, creates outlines and solves problems logically (Torrance, 1988). Whilst Alyssa used

this rational approach to govern her macro-process of composition, she takes a much more intuitive approach to making decisions at the micro-level.

Jono – the Rational Approach Modified

Jono summed up his compositional process in the following way:

> Find the inspiration, work out some ideas and motifs based on that, juggle the motifs around until I've got a good structure and each structure's got its own little ideas, and then try and turn that into a coherent piece.

This approach closely aligns with the stages in the model moving from top to bottom. However, an additional stage was added that Jono referred to as "juggling". This stage was situated between development of material and putting the piece together and it consisted of all three stages mixed together and occurring in rapid combination. Jono demonstrated the juggling stage by showing me sketches which he described as "composition by sticky note". It was the means by which he could take his ideas and try them in different combinations and sequences and then use that to form the final score.

The nature of working this way meant that there was a lot of pre-planning occurring. Jono had a large collection of pre-composition sketches and ideas and a well documented process to support this.

Nathan – Rational then Intuitive

Nathan also had a lot of sketches and pre-planning. He would pre-plan the structure and the accompaniment by generating material, developing it and then writing out music according to rules he had designed. Again this process appears to align itself with the model in sequence up until this point but he then proceeded to add to the

composition using an intuitive approach that included creating more material and developing it as he went revisiting all of the stages.

> I did all of the accompaniment first in pre-composition, all the functional bits what chords I was going to use and where how long will each section go for, what notes the melody will consist of and even the texture … When I went to write I wanted it to be really intuitive as far as the melody … so once I had all my rationale and structure I then just painted like a kid over the top of it all.

Ellie – The "I want to try the other way" approach

Initially Ellie presented herself as an intuitive person with intuitive compositional processes. When asked to describe her normal compositional process she began by saying:

> Prior to this degree, I was only a writer of tonal music and it was very much, it was very intuitive, I never wrote anything, like no structure or anything like that, down. I would just sit and I'd think and I would play and then when I really liked it and I thought it was finished I would then write it out.

Ellie felt that her compositional style had changed greatly due to her experiences at the Conservatorium and that there was a certain amount of pressure to compose according to a more structured process.

> Nowadays because of the education I've received here, I've decided it's probably a good idea to have some idea in writing on what you want in a piece.

Bella shared similar sentiments in her interview:

> I think we are taught to be very structural and we're taught to be very logical and to do a lot of planning, which I think to some extent has its place and perhaps my piece could have benefited from having a little bit more structure and knowing what I was going to do.

Ellie also saw the benefits of a more structural and planned approach to compositional processes. In the piece that she brought along to discuss, she had made

a particular effort to try and pre-plan and use a rational thinking style going against what she thought came more naturally. She explained why by saying:

> This was me attempting to do something completely out of my comfort zone so it's completely different to how I would compose. … 'Cause I was at a stage in my learning where I felt I needed to try something new because I think in order to become a better composer you've got to embrace all the different styles of composition even if you've got one area that you're specifically kind of attuned to, it's more natural for you.

Micro-Processes

Micro-processes are the decisions that are constantly being made about musical parameters particularly during the middle three stages of composition. These decisions are being made using either rational or intuitive patterns of thought or a combination of both. Many of these have been described earlier. They are not necessarily consistent and do not always match the thinking style used to determine the compositional macro-process. Each does affect the other, for example someone who is pre-planning pitch sets is more likely to generate and develop the material before writing. Similarly someone who goes straight to the putting the piece together stage, developing the piece along the way, is more likely to make intuitive decisions based on trial and error.

Examples of intuitive patterns of thought at the micro level include participants who described using trial and error or listened for a particular "feel".

> Bella
> The first movement was very lively and you could almost dance to it, it was sort of very alive I suppose. And the second movement I cut the tempo in half and I introduced this really dissonant harmonic quality. Not because I went "ooh I'm going to use a different mode" or whatever, but because I was just, hey, just trial and error and when I put that natural in there it was a really disconcerting sound and at first I was like "ooh that was really hard", it's not hard to listen to but it's not what I expected and I really like that, that I didn't expect it but that it grew on me the more I listened to it.

> Ellie
> I just created a chord on the guitar that I thought sounded really nice or really interesting.
>
> Why did I decide to put them in? because I thought it created a very interesting tone colour. And also just an interesting sound in the piece.

There were also several examples of planning and thinking through amongst interview participants. Rational decisions using external systems, sets of rules and patterns were evident.

> Jono
> I took images of constellations and basically laid them out on manuscript paper with different arrangements and used those to determine pitches that I used. So I ended up with little motifs related to different star signs and then that kind of governs the whole structure of the work as well as the motivic thing inside.
>
> …because I was drawing on a text I said "well, I'm going to take the letters of this character's name and use those to create a musical motif and as the structure of the whole piece and to guide the harmonies that I've used".

> Alyssa
> … that's the whole thing that holds the piece together, that just one rhythmic idea. Whether or not it's permutated, moved around, augmented, diminuted, it's there.

> Ellie
> I assigned a number to a note and then when I went through the notes that didn't have a number I'd just go "okay this note can share this number".

The Balancing Act

In practice the two categories of rational and intuitive are not as defined and separable as they seem. Often decisions that are made intuitively are justified later using rational processes or may be analysed and applied again in a rational manner.

> Bella
> So I suppose I like to have a musical idea and I like to back it up, I don't like to have just a straight idea out in the ether. I do like to put it in different parts and

> transform it and harmonise it different ways and develop it and that's my way of justifying it.

In the same way, when material has been developed or pre-planned rationally, composers will balance the process by exercising a certain amount of freedom and intuitiveness when applying it.

To illustrate this it is useful to look at some of the musical parameters that composers are making decisions about and compare the different approaches taken by some of the composers in the study.

Metre and Rhythm:

Bella had a very intuitive approach to metre originally. Using Finale as a compositional tool she could have immediate auditory feedback. As she listened back to her music she felt the need to change time signature when she intuitively reached a point where she had felt it had "run out of fuel". Through a process of trial and error and listening back she discovered what she liked. As the process continued though, she was able to analyse what it was that she was doing and used that information to guide further decisions.

> … the deal with the time signature changes was, I have a seven-eight bar and it's divided 3-2-2 and so each of the time signatures that it changes to are derivations of that seven eight. So the five-eight was just 3-2 and then the six-eight is kind of like 3-3 and then there's like more and more and more over here [refers to score] etc.
>
> *Interviewer: How did you decide?*
>
> It sounded right. I would put it in and I would get to the point where I'd be listening to it and I'm like "yep I can feel where the beginning of the bar is; yep I can feel where the beginning of the bar is; yep now this is starting to get old; okay, I need to throw something in there". The five-eight was really great for me because it's just sort of one lot of two so it sort of has a feeling of skipping over itself, which I really liked the sound of. And then the six-eight bars were really good too because the first set of 1-2-3 is what you expect and

> then the second set of 1-2-3 feels okay until you get to the last quaver and by the time you've realised something's wrong you've gone into the next bar. So it's sort of like displacing the accent by one quaver. But to me it just had a really lilting feel and I really liked that. But I can understand why it worked as well, I suppose.

Ellie approached metre from a rational pattern of thought by using a system to pre-plan the metric changes, but she soon felt herself slipping back into the intuitive style of thinking that she felt more comfortable with to develop the rhythms.

> I used pi, the number sequence, not all of it obviously. I used about 50 of the decimal point in it just to help create pitches and also ideas and also some metres which is just like every bar has a different metre change.
>
> The rhythm just came – I find time signatures do give a sense of pulse so if you're in 7/8, 1-2,1-2,1-2-3, so you could say that the time signatures in a sense shaped - I'm not the most rhythmical person, I don't come up with a rhythm that's going to be used later. I usually come up with it on the spot.
>
> There was a lot of pre-planning but it ended up being quite intuitive in the end anyway. There's still basic notes and the different time signatures for pi remain there but I just can't stick to something like that.

Pitch, Melody and Harmony

Jono had many interesting methods for generating pitch material (some of these have been mentioned previously such as using letters from a character's name). In the work that he brought to the interview to discuss, Jono found his pitches using a rational approach by transcribing sounds but harmonised them intuitively.

> So there you've got little traces of things that I've taken from the audio recording, and then played at the piano, worked out pitches for and then tried to harmonise or tried to put together in ways that will work for a whole section.

Jono did however admit to using the alternative strategy sometimes, making the point that the same composer may not always be consistent in the way that they make decisions at the micro level, sometimes taking one approach and sometimes the other.

> Other times I might get stuck and I might say "okay, I need a melody and then we can see where we go with that". So it might be an intuitive approach just creating a melody to start off with but then I use a more rational approach to how I deal with it later.

The Influence of Technology

Creating music using a computer often had an effect on the use of rational and intuitive processes at the macro and micro levels.

When writing an electroacoustic piece the macro-process often has to be sequenced rationally: collect samples, modify samples then put samples together. But at the micro level the decisions have to be made using intuitive processes. Bella described her frustration at having to work this way:

> … but I find with electroacoustic sometimes I'll stick a sound in the computer and I'll be like "I don't know what this is going to sound like" and I'll listen to it and it's bad and I don't know how to fix it and I just feel like I'm just shooting in the dark.

On the other side is the process used to create an algorithmic composition on Max MSP. Although at the macro level a composer must start with putting the piece together and then let the piece generate the material Jono described how the process required a lot more rational thinking at the micro level:

> When you're dealing with something like Max MSP, so algorithmic composition, then it really is a mental planning out, rational thing which I enjoyed a lot … It's the sort of thing where you have to sit down beforehand and really think about how you're going to plan out how the piece, or how the object it is that you're making, is going to work. Because otherwise, if you just go in blindly, yeah you can get something that works but a lot of the time it will just be a real big mess.

Finding the Balance

It seemed to be that it was actually necessary to use both rational and intuitive patterns of thought during the composition process and that the act of composing involved finding the balance. The composers who participated in this study seemed to be aware of the fact that they were balancing the two patterns of thought and conscious of the fact that they needed to use both.

> Nathan
> I set up parameters for my composition using a rationale and then as I go through my composition I just write what's intuitive around the parameters. Sometimes I'll favour the parameters because they yield good things, sometimes I'll favour intuition but not at expense of overall rationale.

> Ellie
> Part of my intuitiveness did come through towards the end of when I was writing it because I did kind of break a few of the rules that I had so carefully set up. I was going "this is going to be a very structured piece with pi and I'm going to be very strict" but in the end I was like, "you know what? this sounds cooler, I'm just going to put this in, it's still kind of using the concept I have." I think a piece shouldn't be halted, not if something sounds really good or you really like the sound of something that is not quite what you planned. Like if it's a serial piece but you've reached a point in the serial music where you're like "I could go somewhere else and it would sound really cool but it won't be strict to my twelve tone orderings" – if that's how it is I don't think it should be stopped. I think you should just keep writing like that, you should become intuitive.

Bella went a step further and referred to a comment that one of her lecturers had made:

> One of the Stockhausen pieces that we looked at was marked out into specific segments of time and he sort of held it up more or less as a model. And he was like "look, it's dangerous, you've got to have an audio idea because you've got to have something to put into that time", but he was very set on having a structure in the piece.

Jono summed up the difficulties that composers had finding the balance and their constant struggle between using rational and intuitive processes by saying:

> You've got to consider what is it that is going to make this piece function well but [also] what is it that's going to make this piece sound good? So it's like brain versus ear, passions? I don't know, brain versus heart?

The Learning and Teaching Environment

One on One

With each individual student having a different approach to composition and using different processes it must be difficult to find a learning and teaching environment that can support all of them. This is where the students indicate that one on one teaching is most helpful. It allows the teacher to adjust to each individual's thinking style.

> Alyssa
> I think the staff are quite flexible depending on student to student, they can adjust.

It is also seen as useful because it allows for interaction and direct and relevant feedback.

> Jono
> Composition major lessons where you've got one on one lessons, again really useful because you've got someone who can provide hopefully objective feedback.

You can't be taught how to compose

Ellie made the comment that "Composition is also a very personal thing." Other participants similarly felt that their compositional processes were not something that was taught, that it was in fact an innate ability.

> Jono
> So in that sense perhaps the general concept of playing around with your motivic material is something that's intuitive something that's I suppose inherent in your reaction to listening to music and trying to emulate it or trying to create something of your own that functions in a similar way.

> Alyssa
> The way that they work, I think that varies from person to person. It's something that you can't learn, it's more of something that you develop and everyone does that in different way.

What can be taught are the skills and tools that are needed to create music. Students found that some formal instruction was useful in learning the theory but they were able to apply it to their own composition themselves.

> Ellie
> However, there are many different elements of composition, so for example I'm doing orchestration this semester. I'm finding that very daunting because I've never composed for that before. So in that regard I like having a teacher there to give me pointers on orchestration. So it's not so much really about the composing but then again you can say orchestration is composing - I would say that it is - but it's more the technical almost theory side really that I don't mind having help with but regularly I very much like to work by myself with composition.

Formal instruction was also used as a means of students being able to identify and label the processes that they were already using as well as learn new or more efficient ways in which to use them.

> Jono
> but then having started with the university study, and actually studying composition you learn terms like stem material so how composers have said well here's an idea here's a statement, let's chop it up into bits and let's rearrange it let's mix it with that fragment lets try and put it against itself or put it backwards or upside down.

> Alyssa
> Perhaps if I didn't speak to someone about it I wouldn't know that it was called permutating but I kind of aurally heard and saw that.

Self-discovery

Particularly in analysis tasks, students expressed a desire to discover things for themselves. They didn't want to have a teacher just tell them but wanted to look through and draw their own conclusions.

> Nathan
> I had two teachers before this that I used to study one on one with. We did a lot of analysis. But one on one analysis so it's different, where the teacher would get me to go through and find patterns in the work. And then my assignment was then to go home and reproduce that pattern but in a different way, or go home and analyse the whole piece and say what's intuition and what's structural if it is that way or if it's all functionable. Something like that it's more yeah it's just analysis really. So it's not class analysis where "oh here, this is that", you're making discoveries yourself.

This increased their sense of ownership and would allow for interaction with the content.

> Alyssa
> There's something about it when you go out and you do your own research there is always something that you can't learn from anyone else, something that your mind goes "ooh this is a great idea. What can I do with this?" it's not something anyone can teach you I think.

Jono made a pertinent observation about the general learning preferences of composers, for wanting to take ownership of learning and relate to the content, in his interview whilst talking about Compositional Techniques and Analysis classes:

> Compositional Techniques and Analysis is one that is probably mixed as well. You're studying different techniques and in that respect you're definitely going to treat things rationally. But because it's a course designed for composers, and composers who probably want to try and put their own spin on things, they will probably also try and – I'm projecting here on other people, but from experience - you'll want to put your own spin on it. Which means that you'll want to think how can I relate to this technique and how can I make it work. And something that's functionally using these techniques but really is my own expression of them. And that requires a bit of an intuitive approach.

Task Design

During interview discussions one of the common topics that came up in relation to the learning of composition was the effects of different tasks set by their lecturers and the students' preferences for these tasks to be designed in certain ways. Nathan

talked about how particular assignments might make you work in a way that was less natural:

> … the way you think and learn is going to be the way you compose, I think. I think? Yeah, I don't imagine it could be any other way. Unless you were doing an assignment where you had to do it a certain way but when I'm composing for myself it's different.
>
> There was no parameters for the assignment so I got to decide it all. Had that been a parameters assignment I don't think I would have brought it in because if you're following rules then you've got to do specific things.

In many classes at university students are asked to engage in composition activities. Many students, for example, had memories of being asked to write compositions using a limited number of prescribed pitches by one of their first year lecturers. Bella reported finding the activity good because it made her think through what she was going to do with it but still allowed plenty of freedom.

> …[one lecturer] last year he would sort of give us boundaries, like he gave us a set, set of pitches that we could write for on cello and we could write however we wanted but we were only allowed to use this set, set of pitches. And that was really good because it meant that I had to have some kind of structure for how I was going to use the pitches but it wasn't like you must use them in this way.

In a similar task Ellie saw the task as placing restrictions on her compositional process but, rather than making her think more rationally as it did for Bella, she felt that it helped to develop her intuitive processes.

> … my teacher in first year, made us write a few one-minute or two-minute compositions each week and they would just involve one pitch and he would give us the instrumentation, just with one pitch you could change octaves but that was it. And I found that really helped me. And then after a while as the semester progressed he'd put two pitches in or three. … It was almost like an epiphany really I was like "wow I don't need to have so many notes in there to make it sound interesting". So that kind of did help me become more intuitive.

Another frequently mentioned learning task was that of Composition through Improvisation classes. Several interview participants mentioned enjoying the intuitive and collaborative nature of the tasks set.

> Ellie
> I think the most intuitive subject I'm doing at the moment is composition through improvisation, that's just "here you go play". And I love that course I think it's great fun. Just because it's complete freedom you can do whatever you want. [The Lecturer] will give you a point to start from she'll say like "daisy" and you'll have to play a piece about daisies, flowers or something. But that is, I feel it is pure intuition.

> Alyssa
> The class that I do enjoy is impro class. It allows you to adjust your own concepts of composition and apply them as well and allow for creativity and working with others.

In their composition major classes students had a bit more freedom to set their own parameters. So even though class tasks that involved set parameters and tasks were accepted, freedom to work their own way was generally seen to be a positive thing when writing major works.

> Alyssa
> I like the whole freedom thing, you can kind of pick your own style provided it's within your elective which sort of limits you to a certain extent but it's not really very limiting at all.

> Jono
> Generally I think it's been very positive because I've tried different techniques. The trial of different techniques is obviously something that's encouraged.

Chapter 5 ~ Conclusion

This study aimed to investigate how composers' compositional processes could be described as rational or intuitive. Hopefully the study has led to a better understanding of compositional processes and how student composers use different thought processes when composing. The study also investigated composition students' preferences for learning and the learning activities that they found helpful for learning composition.

Five individual cases were chosen from a sample of undergraduate composition students at the Sydney Conservatorium of Music. To ensure that cases were chosen with the highest possibility of contrast, interview participants were chosen according to their results on the SOLAT youth form (Torrance, McCarthy & Kolesinski, 1988). Through interviews that allowed for an in-depth exploration, the compositional processes and learning preferences of participants were discussed.

Discussion of Findings

Rational and Intuitive compositional processes

Rational and intuitive processes of composition can be found at two levels of the compositional process. Although the macro- and micro- processes involved in composing are linked and influence each other, the rational and intuitive aspects for each can be described and seen to be used differently.

At the macro-level composers worked through a number of stages between the initial inspiration and the completed composition. Depending on the order and

distinctiveness of these stages composers' macro-processes could be described as sitting somewhere on the continuum between rational and intuitive. Composers working rationally at this level had distinct stages that aligned sequentially with the stages in the model whereas intuitive macro-processes involved jumping around the model with stages occurring simultaneously.

On the other hand composers in this study used both rational and intuitive thought processes at the micro-level. They would often use rational processes to make decisions about some parameters and intuitive processes to make decisions about others. It was also discovered that there was often a crossover of processes with rational ideas being applied using intuition and composers who were using intuitive processes feeling the need to analyse and justify what they were doing. In fact, the study found that composers were consciously engaging in a balancing act to find a combination of rationale and intuition that worked for them.

Parallels to Thinking Styles

Results from this study suggest that someone who is identified by SOLAT as having a left-dominant profile that prefers to "discover systematically … and will sequence ideas … to solve problems logically" (Torrance, 1988, p.21) would display a rational approach to composing at the macro level. In the same way, someone who is identified as having a right-dominant profile and prefers to "discover through exploration … to solve problems intuitively" (Torrance, 1988, p.21) is more likely to use intuitive processes.

The number of participants in this study was too small to be able to come to any generalisations about a parallel between the thinking and learning style of a composer and the processes they used when composing. At the macro-level the place of each participant in this study on the continuum between rational and intuitive was found to be similar to their place on the SOLAT scale. With more data from a greater range of composers it may be possible to suggest that a composer's general thinking and learning style is reflected in their compositional processes.

Similarly at the micro-level it may be possible that individual composers are more likely to use one set of thought processes than another or rely more heavily on one in certain circumstances. Again, a study that investigated the processes of many more composers, including composers at different stages of development, which looked at their use of rational and intuitive thought processes in different circumstances, would be needed to draw up trends.

Learning of composition

Regardless of the students' thinking and learning styles or compositional processes all students interviewed expressed the desire for their learning to be personal. This sort of student-centred, individualised approach is one that is able to cater for individual needs and allows the students space to explore ideas themselves and take control of their own learning and development. The most obvious example of this is their preference for learning in a one on one environment. Students expressed their desires to work one on one because it allowed them to develop their individual style by getting direct and relevant feedback from supervisors that were able to adjust to individual needs.

Also because of the personal nature of composition learning, the students felt that composition was not something that they could be taught by a teacher, it was something that they had to learn themselves. Teachers were seen to have their place in teaching the skills and tools as well as explaining and modelling different techniques but the process of composition was something that the students developed according to their own application of those skills and tools taught.

Linked to that idea is the preference for students to learn analysis by self discovery. It was evident that most students were not averse to the idea of analysing pieces as a means of studying composition but they wanted to be able to personalise it and work things out for themselves. This preference of participants for self discovery is consistent with the fact that the SOLAT results were weighted towards the right-brain style of learning. A right-dominant student is one who "prefers open ended assignments in which one can discover through exploration" (Torrance, 1988).

It is important to recognise that the findings of this study are based on the student composers' own descriptions of their thinking style, compositional processes and preferred learning environments through the SOLAT measure and interview techniques used. It can not be assumed that these are necessarily accurate representations of what is actually occurring during the compositional process or whether the preferred learning activities are the most effective strategies for promoting the learning of composition. The findings are, however, a useful account of student perceptions of compositional processes and learning environments.

Implications

One of the outcomes of this study was the development of models of rational and intuitive, micro- and macro- processes of composition. Not only are these a useful tool for educators in understanding the processes that individuals use when composing but the models presented may also be of use to composition students as they try to better understand their own processes of composition. It must be noted that these models were not designed to be a "how to" manual; they should not be used as a step by step guide to writing a piece of music. Rather, the models can be used to explain the existing processes being used by composers, helping them to better understand the ways in which they are thinking and find more efficient ways of working and finding the right balance between thought patterns.

Educators also need to recognise the personal and innate aspect of composition. Where possible, particularly at a tertiary level, students should have the opportunity to meet one on one with a teacher to discuss compositional ideas and processes they are using and receive feedback. Students in this study have indicated that they prefer teachers to provide them with the tools and skills they need to create music and encourage them to explore their own styles and processes. One way to do this is through open-ended tasks that prescribe a minimum number of processes or parameters to be used. Along side these open-ended tasks, tasks that are highly prescriptive may be used as a starting point or as a means for developing different styles of thinking and provide students with new ways to find a balance of processes in their own work.

Listening and analysis tasks are also useful learning experiences that teachers can provide for their students. However, findings from this study show that students prefer these activities to be more interactive and student-centred. Students should be given the opportunity to self-discover concepts being taught and then to explore how they can relate to the ideas presented. Again, these sorts of tasks are able to equip students with tools and skills as well as provide them with ideas and give them an insight into different compositional processes and ways of thinking used by more experienced composers.

It is clear that the findings of this study are limited to the small number of participants included and the particular institutionalised setting and experiences they were involved in. However, many of the outcomes of the study are potentially transferable to other situations and further study of a greater number of composers in different settings and of different levels of development could explore these ideas further.

The research could also be extended by investigating the way that individual composers develop their own compositional processes over time and how this is affected by the way that they are taught and the environments in which they are learning. The findings of this study have the potential to change not only the way that composition is learnt and taught, but also the way that composers view their own compositional processes and ultimately the way that those composers continue to develop their processes in the future.

References

Barrett, M. (2006). 'Creative collaboration': an "eminence" study of teaching and learning in music composition. *Psychology of Music, 34*, 195-218.

Bell, C. & Cresswell, A. (1984). Personality differences among musical instrumentalists. *Psychology of Music, 12*, 83-93.

Bennett, S. (1976). The Process of Musical Creation: Interviews with eight composers. *Journal of Research in Music Education, 24*, 3-13.

Burnard, P. (1995). Task design and experience in composition. *Research Studies in Music Education, 5*, 32-46.

Burnard, P. & Younker, B. A. (2004). Problem-solving and creativity: insights from students' individual composing pathways. *International Journal of Music Education*, *22,* 59-76.

Burns, R. (2000). *Introduction to research methods* (4th ed.). Frenchs Forest, NSW: Pearson Education Australia.

Chesson, D., Munday, R., Tunnell, J. W. & Windham, R. (1993). Hemispheric Preferences for Problem Solving in a group of Music Majors and Computer Science Majors. *Journal of Instructional Psychology, 20*, 145-150.

Denscombe, M. (1998). *The good research guide*. Buckingham, England: Open University Press.

Emmerson, S. (1989). Composing strategies and pedagogy. *Contemporary Music Review, 3,* 133-144

Goncy, E. & Waehler, C. (2006). An empirical investigation of creativity and musical experience. *Psychology of Music, 34*, 307-321.

Keinholz, A. & Hritzuk, J. (1986). Comparing students in architecture and medicine: findings from two new measures of cognitive style. *Psychological Reports, 58,* 823-830.

Kemp, A. (1981). The personality structure of the musician: II. Identifying a profile of traits for the composer. *Psychology of Music, 9*, 69-75.

Kemp, A. (1982). The personality structure of the musician: IV. Incorporating group profiles into a comprehensive model. *Psychology of Music, 10*, 3-6.

Kemp, A. (1996). *The musical temperament: psychology and personality of musicians*. Oxford: Oxford University Press.

Lewis, B. E. & Schmidt, C. P. (1991). Listeners' response to music as a function of personality type. *Journal of Research in Music Education, 39*, 311-321.

Moore, B. R. (1990). The relationship between curriculum and learner: music composition and learning style. *Journal of Research in Music Education, 38*, 24-38.

Sternberg, R. J. & Grigorenko, E. L. (2001). A capsule history of theory and research on styles. In R. J. Sternberg, & L. Zhang (Eds.), *Perspectives on thinking, learning and cognitive styles* (pp. 1-21). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.

Strauss, A. & Corbin, J. (1990). *Basics of Qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage.

Suchor, V. (1977). The influence of personality composition in applied piano groups. *Journal of Research in Music Education, 25*, 171-183.

Swanwick, K. & Tillman, J. (1986). The Sequence of Musical Development: A study of children's composition. *British Journal of Music Education, 3*, 305-339.

Torrance, E. P. (1988). *Style of Learning and Thinking (SOLAT®): Administrator's Manual*. Bensenville, IL: Scholastic Testing Service, Inc.

Torrance, E. P., McCarthy, B. & Kolesinski, M. T. (1988). *Style of Learning and Thinking (SOLAT®): Youth form*. Bensenville, IL: Scholastic Testing Service, Inc.

Torrance, E. P. & Mourad, S. (1979). Role of Hemisphericity in Performance on Selected Measures of Creativity. *The Gifted Child Quarterly, 23*, 44-55.

Torrance, E. P., Reynolds, C. R., Reigel, T. & Ball, O. (1977). Your style of learning and thinking, Forms A and B. *The Gifted Child Quarterly, 21*, 563-573.

Wiggins, J. (1994). Children's strategies for solving compositional problems with peers. *Journal of Research in Music Education, 42*, 232-252.

Zalanowski, A. (1986). The effects of listening instructions and cognitive style on music appreciation. *Journal of Research in Music Education, 34*, 45-53.

Zalanowski, A. (1990). Musical appreciation and hemisphere orientation: Visual versus verbal involvement. *Journal of Research in Music Education, 38*, 197-205.

Zhang, L-F. (2002a). Thinking styles and modes of thinking: Implications for education and research. *Journal of Psychology, 136*(3), 245-261.

Zhang, L-F. (2002b). Thinking Styles: their relationships with modes of thinking and academic performance. *Educational Psychology, 22(3)*, 331-348.

Appendices

Appendix 1: Participant Information Statement

The University of Sydney

SYDNEY CONSERVATORIUM OF MUSIC

PARTICIPANT INFORMATION STATEMENT
Research Project

Title: Rational versus Intuitive approaches to Music Composition

(1) What is the study about?

This study will investigate the impact of individual differences in thinking/learning styles on the methods of composition and compositional style. It will centre around the idea that there are two different ways of thinking and learning that can best described as rational (logical) and intuitive (emotional). The study will examine the preferred composition learning activities and the experience of learning composition at the Sydney Conservatorium of Music as related to students' thinking and learning styles.

(2) Who is carrying out the study?

The study is being conducted by Carina Dingwall and will form the basis for the degree of Bachelor of Music (Music Education) (Honours) at the University of Sydney under the supervision of James Renwick, Lecturer in Music Education, Sydney Conservatorium of Music.

(3) What does the study involve?

If you wish to participate in the study, you are asked to complete the Your Style of Thinking and Learning test. At the end of the form, you are given the opportunity to volunteer to participate in an interviews and/or focus group. These stages will involve talking with the researcher one-on-one or in a group situation about your thinking, learning and compositional styles and experiences at the Conservatorium. They will be audio recorded and later transcribed for analysis. Interview participants will be requested to bring a copy of a recent composition and any pre-compositional materials and drafts to their interview.

(4) How much time will the study take?

The Your Style of Thinking and Learning test will take approximately 20 minutes to complete. You may complete the survey without any obligation to participate in interview or focus group sessions.
Interviews and focus group sessions will occur at the Conservatorium and will take 45 min each.

Postal Address:
Building C41
The University of Sydney NSW 2006

Telephone: +61 2 9351 2222
Facsimile: +61 2 9351 1287
http://www.music.usyd.edu.au

PARTICIPANT INFORMATION STATEMENT
Research Project

Title: Rational versus Intuitive approaches to Music Composition

(5) Can I withdraw from the study?

Participation in this study is entirely voluntary: you are not obliged to participate and - if you do participate - you can withdraw at any time without prejudice or penalty. You have the right to withdraw part or all of the information from interviews or focus groups during or at the end of the session. Should you withdraw from the study, you may request that any data collected be destroyed.

(6) Will anyone else know the results?

All aspects of the study, including results, will be strictly confidential and only the researchers will have access to information on participants. The study will be published as an honours thesis but individual participants will not be identifiable.

(7) Will the study benefit me?

It is expected that this research will add to the understanding of the thinking and learning styles of student composers and the impact of these on compositional styles and the learning experience of these students. Research of this kind may be used in the future to help better cater compositional learning to students with different thinking and learning styles.

(8) Can I tell other people about the study?

Yes, you may.

(9) What if I require further information?

If you would like to know more at any stage, please feel free to contact Carina Dingwall or James Renwick, Lecturer in Music Education, on 9351 1235. The researchers are happy to discuss your involvement in the project with you further and answer any questions you may have.

(10) What if I have a complaint or concerns?

Any person with concerns or complaints about the conduct of a research study can contact the Senior Ethics Officer, Ethics Administration, University of Sydney on (02) 9351 4811 (Telephone); (02) 9351 6706 (Facsimile) or gbriody@usyd.edu.au (Email).

This information sheet is for you to keep

Appendix 2: Participant Consent Form

The University of Sydney

SYDNEY CONSERVATORIUM OF MUSIC

PARTICIPANT CONSENT FORM

I, ..., give consent to my participation in the research project
Name (please print)

TITLE: Rational versus Intuitive approaches to Music Composition.

In giving my consent I acknowledge that:

1. The procedures required for the project and the time involved have been explained to me, and any questions I have about the project have been answered to my satisfaction.
2. I have read the Participant Information Statement and have been given the opportunity to discuss the information and my involvement in the project with the researcher/s.
3. I understand that I can withdraw from the study at any time, without affecting my relationship with the researcher(s) now or in the future.
4. I understand that my involvement is strictly confidential and no information about me will be used in any way that reveals my identity.
5. I understand that interview and focus group sessions will be audio recorded.

Signed: .....

Name: .....

Date: .....

Postal Address:
Building C41
The University of Sydney NSW 2006

Telephone: +61 2 9351 2222
Facsimile: +61 2 9351 1287
http://www.music.usyd.edu.au

Appendix 3: Ethics Approval Letter

The University of Sydney

NSW 2006 Australia

Human Research Ethics Committee
www.usyd.edu.au/ethics/human
Senior Ethics Officer:
Gail Briody
Telephone: (02) 9351 4811
Facsimile: (02) 9351 6706
Email: gbriody@usyd.edu.au
Room 313A, Level 3, Old Teachers College – A22

Human Secretariat
Telephone: (02) 9036 9309
(02) 9036 9308
Facsimile: (02) 9036 9310

28 February 2008

Mr J Renwick
Sydney Conservatorium of Music – C41
The University of Sydney

Dear Mr Renwick

I am pleased to inform you that the Human Research Ethics Committee (HREC) at its meeting on 18 February 2008 approved your protocol entitled **"Rational versus intuitive approaches: The impact of individual differences in thinking/learning styles on compositional style and the experience of studying composition".**

Details of the approval are as follows:

Ref No.:	***02-2008/10585***
Approval Period:	***February 2008 to February 2009***
Authorised Personnel:	***Mr J Renwick***
	Miss C Dingwall

The HREC is a fully constituted Ethics Committee in accordance with the *National Statement on Ethical Conduct in Research Involving Humans-March 2007* under *Section 5.1.29*

The approval of this project is **conditional** upon your continuing compliance with the *National Statement on Ethical Conduct in Research Involving Humans.* We draw to your attention the requirement that a report on this research must be submitted every 12 months from the date of the approval or on completion of the project, whichever occurs first. Failure to submit reports will result in withdrawal of consent for the project to proceed.

Chief Investigator / Supervisor's responsibilities to ensure that:

(1) All serious and unexpected adverse events should be reported to the HREC as soon as possible.

(2) All unforeseen events that might affect continued ethical acceptability of the project should be reported to the HREC as soon as possible.

(3) The HREC must be notified as soon as possible of any changes to the protocol. All changes must be approved by the HREC before continuation of the research project. These include:-

- If any of the investigators change or leave the University.
- Any changes to the Participant Information Statement and/or Consent Form.

(4) All research participants are to be provided with a Participant Information Statement and Consent Form, unless otherwise agreed by the Committee. The Participant Information Statement and Consent Form are to be on University of Sydney letterhead and include the full title of the research project and telephone contacts for the researchers, unless otherwise agreed by the Committee and the following statement must appear on the bottom of the Participant Information Statement. *Any person with concerns or complaints about the conduct of a research study can contact the Senior Ethics Officer, University of Sydney, on (02) 9351 4811 (Telephone); (02) 9351 6706 (Facsimile) or gbriody@usyd.edu.au (Email).*

(5) Copies of all signed Consent Forms must be retained and made available to the HREC on request.

(6) It is your responsibility to provide a copy of this letter to any internal/external granting agencies if requested.

(7) The HREC approval is valid for four (4) years from the Approval Period stated in this letter. Investigators are requested to submit a progress report annually.

(8) A report and a copy of any published material should be provided at the completion of the Project.

Yours sincerely

Professor D I Cook
Chairman
Human Research Ethics Committee

Cc: Miss Carina Dingwall, 23 Glenbrook Rd, Glenbrook NSW 2773

Encl: Copy of Approved Participant Information Statement, Copy of Approved 'Your Style of Thinking and Learning' Test, Copy of Approved Participant Consent Form

Appendix 4: SOLAT Youth Form

Style of Learning and Thinking (SOLAT®)

Youth Form

By: Torrance, McCarthy, & Kolesinski

Name: _____ Age: _____ Sex: _____

School: _____ Grade: _____ Date: _____

Directions: Place a check mark in the blank if the statement is true of you. You may check one or both of the statements in a pair or neither—whatever fits you.

1. _____ I like to read explanations of what I am supposed to do.
   _____ I like to have things explained by showing them to me.
2. _____ I am good at body language.
   _____ I am not good at body language; I prefer to say what I think and depend on what people say.
3. _____ I enjoy classes where I listen to the teacher.
   _____ I enjoy classes in which I move around and try things.
4. _____ I tend to solve problems with a playful approach.
   _____ I tend to solve problems with a serious, business-like approach.
5. _____ I use only the proper materials to get a job done.
   _____ I will use whatever is available to get a job done.
6. _____ I like class or work to be planned so I know exactly what to do.
   _____ I like class or work to be open-ended with opportunities for change as I go along.
7. _____ I like to play hunches or guess.
   _____ I would rather not guess or play hunches.
8. _____ I like to express feelings in plain language.
   _____ I like to express feelings in poetry, song, dance, or art.
9. _____ I like to learn about things we are sure of.
   _____ I like to learn about hidden possibilities.
10. _____ I like to take ideas apart and think about them separately.
    _____ I like to put a lot of ideas together.
11. _____ I am good at using logic in solving problems.
    _____ I am good at using feelings and intuitions in solving problems.
12. _____ I like to see and imagine things when I solve problems.
    _____ I like to analyze problems by reading and listening to teachers who know.
13. _____ I learn easily from teachers who explain with words.
    _____ I learn easily from teachers who explain by movement and action.

14. _____ When I remember or think about things, I do well with words.
_____ When I remember or think about things, I do well with pictures and images.

15. _____ I like to see something that is finished or completed.
_____ I like to organize and complete something that is unfinished.

16. _____ I am intellectual.
_____ I am intuitive.

17. _____ I am good at learning details and specific facts.
_____ I am good at learning from a general overview, the whole picture.

18. _____ I learn and remember those things specifically studied.
_____ I learn and remember details and facts I pick up from things happening around me.

19. _____ I like to read stories about things that really happen.
_____ I like to read stories about made up things.

20. _____ It is fun to plan what I am going to do.
_____ It is fun to dream.

21. _____ I like listening to music while reading or studying.
_____ I like total quiet when reading or studying.

22. _____ I enjoy copying and filling in details.
_____ I enjoy drawing my own images and ideas.

23. _____ It is exciting to invent something.
_____ It is exciting to improve something.

24. _____ I learn well by exploring.
_____ I learn well by examining.

25. _____ I like ideas presented in order.
_____ I like ideas presented with relationships.

26. _____ I am good at remembering verbal materials.
_____ I am good at remembering sounds and tones.

27. _____ I am absentminded often.
_____ I am almost never absentminded.

28. _____ I enjoy summarizing.
_____ I enjoy outlining.

Published by Scholastic Testing Service, Inc., Bensenville, IL 60106-8056

Printed in the United States of America.

Cat. #SC-142802

Appendix 5: Interview Outline

Interview Questions:

Can you explain to me what you think your thinking style is?
Would you describe it as Rational, Intuitive, or something else?

How do you prefer to learn composition?
What specific activities have you participated in that you thought helped you with your compositions or were not helpful?

How would you describe your compositional style in terms of the way that you think when you're composing?

You were asked to bring along a copy of a recent composition and any pre-comp and drafts that might belong with it. Can we have a look at what you've brought?
How typical is this composition of your compositional processes?
How much time did you spend in pre-compositional activities?
How did you learn the processes you used?
Were you working with a teacher on this and how did that affect your processes?

How do you think that the way you compose is effected by the ways that you think and learn that we were talking about before (if at all)?

Do you think that the way you are taught composition at the Con suits the way you like to think, learn and compose? In what ways?
Are there students in your class that you've noticed think in the opposite way to you?
Are there some subjects that you take that you think are better suited to your learning style?
Do you think the teaching staff are open to students who think in different ways?