

Appendix C:

A table of significant cognitive events selected from my improvising journal

2016-19 Years I-III in study	Description of an emergent cognitive event.	The experience of this event. Text taken verbatim from my improvising journal (personal notes)	Effect upon learning and performance.
2nd January 2016	The division of work into controlled or free sessions (the first, consciously calculated and aiming for accuracy; the second, allowing physical movements to produce music, following this stream of music wherever it goes without trying to control or correct it)	<i>A sense of choice between two directions, two strategies. These two different approaches produced very different improvising experiences. Knowing which direction to choose was often difficult</i>	Each choice seemed to produce benefits but also problems. Allowing my fingers to run freely without correction was new to me and liberating in that I experienced a sense of fluency. On the other hand this freedom quickly become constraining as I felt out of control and out of touch with the improvising. The material though fluent soon became repetitive. The controlled approach allowed greater accuracy but the results were very slow and unmusical.
13th February 2016	Awareness that I could choose to focus on musical structure or the registrations of the organ:	<i>it's possible to change one's attentional focus, for example, to concentrate on sound/timbre rather than structure</i>	I became aware of my focus of attention as a learning tool. By consciously directing my focus to different features of the experience or music I could alter my perception and control over improvising.
29th February 2016	Awareness of my fear of errors, how this dominated my approach to improvising.	<i>I wince away from errors as if burnt. Thinking becomes restricted.</i>	Becoming aware of my emotions indicated a more objective sense of self; I began to understand myself as

			someone who brought strong emotions to the task
11th May 2016	The sensation of a direct link (cause-effect) between my knowledge and my performance.	<i>What is improvised represents a person's knowledge base at that time.</i>	Becoming aware of my improvising knowledge indicates the beginning of my interest in mental representation (of improvisation): the idea that the task is framed or represented in a particular way. From this point on I was able to study my representation of improvisation, also to consciously focus on this representation and note the effect on my improvising
2nd January 2017	A sensation of seeing different musical lines within a polyphonic (voice-leading) texture as separate elements. What had before been homogenous now became individual lines set in relation to each other.	<i>Each separate element can be executed discreetly - a process by which one 'sees' a solution.</i>	This event represents an emerging ability to generate two-part polyphonic lines.
18th January 2017	Awareness of how the musical texture of a Baroque dance movement could be constructed through expressive gesture.	<i>Practising Allemande - more according to rules/principles of rhetoric or imitation. There is an harmonic element, but it is one of several factors in the problem.</i>	Seeing the construction of form in this way signalled a departure from the purely abstract, theoretical approach (i.e., calculating phrase lengths and using a plan of modulations) I had been using.
19th January 2017	A new feeling of control over 4-part textures. Each voice now appeared as a separate element over which I could exercise control.	<i>Harmony: A deliberate approach - cognitive/intentional not led by feeling ... Intentionally move in 4 parts</i>	This event signalled a more purposeful, agentic approach within a complex texture. I felt I could now focus on each voice in turn and construct a short path forwards by selecting a

			voice as the lead. For example, I might focus on the tenor voice which rises in sequence of intervals; all the other voices then adjust themselves around this solo line.
23rd February 2017	A sudden notion to explore the use of figured bass notation	<p><i>[using figured bass notation] enables recognition of material - which facilitates memory of other relationships i.e., what is likely to happen.</i></p> <p><i>[it facilitates the] discrete encoding of rich material, and avoids calculating the relationships between voices</i></p>	The act of constructing the musical texture through numbers provided clearer mental representations of vertical chordal events within a complex, polyphonic texture.
11th March 2017	Feeling of enjoyment while harmonising.	<i>It is possible to enjoy - know - understand chordal motion. The reason I don't is a question of attention: If I am looking elsewhere, I cannot stop, enjoy/savour the richness, the rich experience of the chord I am playing.</i>	Focusing upon this new sense of enjoyment influenced my decision-making processes. I enjoyed making decisions rather than worried about them.
24th March 2017	An awareness that there are many, equally valid solutions to a problem, not just one (ideal) solution. Also, a new perspective on rules and constraints, which I had considered to be rather arbitrary, abstract and coercive reasons for selecting certain actions. Now I saw rules as a creative tool - a means of entering into and playing a game; being a par-	<p><i>A noticeable development:</i></p> <ol style="list-style-type: none"> <i>1. I don't seek the solution, but a solution (working within a margin for error).</i> <i>2. Figurations, solutions come to fingers unbidden.</i> <i>3. 'Play the game!' - each individual needs to create rules/constraints. Not just for feedback (comparison), but for feedforward - What do I try to do?. The attempt forwards is informed. By what?</i> 	What I understood in theory I felt for the first in terms of action or procedural knowledge. Understanding that there were numerous 'correct' possibilities to any given situation changed my approach to improvisation in two significant ways: (i) it widened my attentional focus to accept and be interested in more creative possibilities, (ii) it relaxed my critical evaluation of events as I stopped aiming for

	participant in a rule-bound activity.		perfection.
21st/24th May 2017	Awareness of learning occurring over time. That solutions, productions and clearer mental representations of the task emerge through practice and patience. The understanding that I frequently travelled from a state of not knowing to a state of knowing during practice sessions.	<i>It [the task] changes from something unknown to something known (when I know something it takes a recognisable shape in my mind - the shape itself is not important(?), it's the recognition which is the important element), from something not felt- an idea or a theory in words or a diagram - to something felt, which is more kinaesthetic, more 'in the fingers. As I progress, more solutions - related to larger structures emerge. These might be a more appropriate sequence, particularly at the beginning and the ends of phrases. I feel these deeply - an "Ah, yes" moment. Chromaticism solutions suggest themselves - which earlier would have been impossible within the mode.</i>	As a result of these meta-insights into my work, I became more patient, less frustrated at moments when I didn't have a solution. I also became more interested in processes of implicit learning as I realised that much of my learning development happened autonomously, without my direct influence or control.
22nd May 2017	A sensation of locating certain events in musical space while practising chorale variations. This relates to the harmonisation used for the theme which is then recreated in the variations.	<i>A changing landscape. As I start to routinely practise the variations, my work becomes more 'mapped' - I can (as it were) erect scaffolding on a structure, or pause and resume work in various mental locations. This is in contrast to the 'casting about' of previous months.</i>	Formerly I harmonised each note in turn using whatever notes were available at that point; I now began to harmonise more in phrases as I retained a sense of relationship between the chords I used. These relationships helped me to map the events of my improvisation to an inner space, a virtual landscape which I could use to orientate myself while improvising.
29th June 2017	After a long period of controlled, focused work, a sudden impulse	<i>Is this a passing phase? In some ways I expect so, as everything seems to pass to</i>	The reference to 'a split-sensation of divided control' recalls the earlier

	<p>to 'let go'to flow with the fingers without checking or correcting.</p>	<p><i>some extent. A couple of days ago I went into a 'playing fast' phase - like I found my fingers for the first time. Jürgen had already mentioned the importance of 'keeping going' when improvising a fugue, but I'd never been able to do this until recently. Strange, that after all those months of reticence and hesitation, suddenly I felt the need to move regardless of the consequences.</i></p> <p><i>With the need to move, I had to place the burden of work on the fingers. I think I discovered the use of unconscious processes, the letting go, which research records. But these descriptions were merely by-products of the experience: for me, the important conscious self-instruction was to go with the fingers - let them decide rather than me. A strange split-sensation of divided control.</i></p>	<p>emergence of choice between controlled and free approaches to improvising (see 22nd August 2015)</p>
<p>3rd July 2017</p>	<p>Awareness of balancing conscious constraints with forward motion, fluency and a sense of performance</p>	<p><i>A constraint should be manageable in the sense that one can obey the rule without losing all fluency. Sometimes one needs to relax the constraint and take an 'opportunistic' approach. This is seemingly against the advice of some tutors (Dupré, 1975) but concords with others (Whitmer, 2012, for example). This means that one simply follows the fingers, and looks for oppor-</i></p>	<p>Represents the achievement of a long-standing goal: to unite the two dichotomous approaches to improvising (free and controlled). Finding this balance between forward motion and conscious constraints brought my work closer to public performance, as I was now able to anticipate the conditions of performance in private practice.</p>

		<p><i>tunities to introduce the rule whenever possible.</i></p> <p><i>In general I find that only rarely should one really stop and progress solely through conscious construction. Why? Because this is rehearsing an approach which does not correspond to the reality of fluent improvisation. One should be always moving in improvisation.</i></p>	
12th July 2017	<p>Sudden vision of whole musical structure, a complete form contained in one mental representation.</p>	<p><i>I suddenly found myself aware of the whole shape - that is, I could see the whole piece before me, like a landscape - and this vision had never before been possible, in spite of many attempts to imagine it. Note, that the landscape image had no details, and contained no information as to what I might play. The image was simply available as a focus of attention, so that I might be aware of the narrative, or Form of what I was improvising; instead of stringing together, or constructing material according to various ideas held in my head, I was aware of my place in the overall scheme of things, while I was improvising.</i></p> <p><i>This enabled me to make new judgments as to length of phrase, timing of elements such as new voice entries or modulations - to keep track of my progress and feel the fitness of what I was doing through the subtle and highly in-</i></p>	<p>This emerging awareness of the whole musical structure gave me insights into the timing and placing of events. I felt able to exercise more creative control over the improvising, to steer my productions towards formal, structural points (such as key changes or thematic entrances) as well as being in touch with the dramaturgy, the expressive narrative of the form.</p>

		<p><i>formative interrelationships of elements - “a little more of this in order to balance that - now, for something new, that’s enough of that, time to bring in the new voice and stabilise the material with a referent point..”</i></p>	
7th August 2017	<p>The perception of underlying structure; a series of significant harmonic features emerging from the texture of the score (which I was using as a model) as points on which other, more decorative features depended.</p>	<p><i>‘My altered strategies were then:</i></p> <ol style="list-style-type: none"> <i>1. To stay with these models until new insights emerged.</i> <i>2. To repeat fluently smaller sections until the contrapuntal relationships had been understood and practiced correctly.</i> <p><i>Through the exercise of these strategies I began to perceive new musical elements in the models: how the music moved from harmonic point to point. These harmonies, which proceeded in the form of a slow procession through the piece provided the stability of a structure from which all the figurations could momentarily depart and decorate.</i></p> <p><i>My awareness of harmonic ‘points’ informed my improvising, which now focused on driving to the next point, and establishing such a point in my fingers and perception.</i></p> <p><i>As I increasingly perceived the harmonic ‘points’ of one model, I also began to</i></p>	<p>This event captures a moment when I perceived musical structure in terms of underlying concepts₁, these concepts₁ linking my existing theoretical knowledge to new functions: the musical decision or actions one could perform in improvisation.</p>

		<p><i>perceive the harmonic relationships in another, more contrapuntal model. It does not seem to matter whether it is Two voices, three voices or four voices, they never depart from this harmonic framework, jumping only from point to point and describing/constructing the harmonies which characterise this style.</i></p> <p><i>While I already knew this to be the case, I now saw it with different eyes, and also felt it in a new way, as if it emerged in 3D like a holograph, from the texture of the score. These new perceptions also motivated me to improvise with a different purpose; my attention was now focused on constructing these new elements in a similar way to my perception of them in the original compositions. I think that I had perceived a functional element in the score, one that corresponds not only to musical/theoretical analysis, but also to the generative thinking of the composer. One senses the constraints, and responds by following similar pathways as the composer.</i></p>	
6th September 2017	Emerging awareness of increasingly varied focal points of attention. These are now extended from the musical task to aspects of motivation and goals.	<i>Different focal points: one can focus on aspects of the music, or of oneself (movements); one can follow an abstract (metaphorical) goal such as leaning, aiming, high voice (the term itself would be</i>	An emergent awareness of different points of attentional focus is a recurrent feature of learning, see for example an earlier occurrence (13th February 2016) when I realised I could fo-

		<p><i>meaningless to a third party, but rich in experiential meaning for the user). One could focus on the goal itself, rather than the music: in this way the music is perceived through the filter of a goal (what is important is what is relevant to the goal). In this way, by changing the goal, one could (theoretically) steer an individual's perception of the music towards different salient points.</i></p>	<p>cus on the characteristics of organ registrations in contrast to the musical structure. In each case, this awareness leads me to consciously direct my attention to new features of the environment or task, affecting the cognitive flow of improvising, but also functioning as a learning tool as I perceive new relations in the texture. After a while, these new points of focus are absorbed into the general knowledge base.</p>
17th September 2017	<p>Awareness of posture and physical address of the organ (approach) during performance.</p>	<p><i>Am increasingly aware of role of posture and the influence of conscious correction of posture. (After the talk in Reykyavik about sports injuries in rowing, I was anxious to correct the presence of stress in my lower, lumbar region, of my back.) I realise that I revert to a withdrawn, slightly hunched posture whenever improvising; this, when corrected to a straighter, more upright posture results in a definite and significant change in cognition and intention.</i></p>	<p>This awareness served to prepare me for performance, but also instigated a new, agentic feeling of control over the task.</p>
19th February 2018	<p>While studying Partimenti scores I gained a more unified perception of harmonic and contrapuntal elements in the musical texture.</p>	<p><i>Originally I separated harmony from counterpoint as a separate discipline. It concerned me how the two might be related and this doubt also translated into practice and even methodology. Should one focus harmonically (on the chord) or linearly-contrapuntally. In the second</i></p>	<p>The use of Partimenti scores helped me to create a more unified mental representation of Baroque keyboard textures. This can be compared to an earlier experiment with figured bass (see 23rd February, 2016) and is symbolic of many such forays I made</p>

		<p><i>method, the harmony is a by-product of the texture; in the first method one establishes a rule (the chord) from which all the music emanates.</i></p> <p><i>Partimenti exercises however bring the two together. The harmonic outline, functions and structure are ever present - it seems that these are the basis on which everything else emanates, i.e. a first or principal step; yet the bass line is not so independent as this suggests - it also seems to be influenced by the voice leading textures. The principal difference seems to be one of notation. The bass line is notated, the figuration is not. The music is present as figured bass, in which bass line, contrapuntal texture, gesture (idiomatic to genre and occasion) are all thought of together.</i></p>	<p>into treatises and literature of improvisation. In each case I felt compelled to search for this literature for answers to questions I hadn't clearly formulated. Only afterwards did I realise what I had been looking for, through articulating the insights I had gained.</p>
28th February 2018	Awareness of creative agency while following constraints (rules)	<p><i>Improvising of skeleton scores. Yes, it begins with rules - counterpoint rules as defined by Fux for example. Proceed with care; not just following rules, but gradually becoming aware of results - choices take on new meanings, they result in different sounds. With birth of agency, very gradually one learns to exercise one's will - choices not according to (principally) rules but to whim (based on rules).</i></p>	<p>I was learning to appreciate my own agency within a structured task. I sensed flow because the rules or constraints of the task were known and obeyed. I was exercising agency - creative will - within the task itself; I felt part of the creative process, part of the music, rather than standing outside and excluded.</p>

12th March 2018	Awareness of relationship between productions and the whole musical structure..	<p><i>Occurred to me to emphasise the difference between sense of overall form, facilitated by learning of modules - sequences - units such as Regole. There are many different processes of learning, skill, execution of elements. The perception of diminutions is different from the decision-making necessary to execute larger forms, paragraphs in which modulations occur.</i></p> <p><i>Took J.S.Bach opening bass line. Improvised over the top, mainly sequences. Transposed: was a very good feeling. A new key with new ideas. Strange to follow the bass line like a map through an unknown landscape. One's footsteps sure, but knowledge of the 'route' unfolding as I go..</i></p>	This event recalls the earlier sense of overall form or schema1 for an improvisation (see 12th July 2017). Having practised the patterns (rules or regole) of the partimenti school in an abstract way to acquire voice-leading productions, I know had a sense of using these patterns more creatively to generate musical form.
16th March 2018	An impulse to speak and sing the notes of a bass line as degrees of the scale, in order to better understand the relation of the melody to the root and the possibilities for harmonisation.	<p><i>Composed my own Prelude bass lines. Tried to control modulations - noted these - modulations to III, to V, to VI, to IV. Spoke and sung out loud the degrees of the scale within the root key. Also tried improvising similar material, again speaking and singing out loud the degrees of the scale.</i></p> <p><i>This speaking is useful for staying in touch. It keeps the mind focused always on the functional movements of the bass</i></p>	This technique greatly increased my knowledge for harmonisation. Speaking aloud the notes as degrees of the scale helped me to place each note in relation to the tonic key; it conjured up mental images of related and appropriate chords for harmonisation.

		<i>and the significance of these movements.</i>	
6th April 2018	Awareness of harmonic image (partly constructed through figures) as concept ₁ for generating a Prelude - <i>plein jeu</i> in the French Baroque style..	<i>More success was found through figuring the chords; this means identifying, and thus picturing, the chord through it's figures. I could also reduce a complex or unknown chord to its basic position, or another more familiar position which revealed clearly the constraints of resolution and the options for the next step(s). The effect of figures is to produce a known quantity or element: one recognises the moment and acts consciously and with decision. The figures create an abstract function - abstracted from the moment. They exist independently of the composer and of the improviser.</i>	The act of writing out the original model as a figured bass highlights the relationship of dissonance to consonance which is generic characteristic of the style. By conceptualising the texture through these underlying relationships a mental representation is created which serves to generate improvisation within the constraints of the style.
18th May 2018	Awareness of two approaches (points of focus) while harmonising a Gregorian chant.	<i>Harmonising [Gregorian chant] Ave Maria chord-for-chord. Is a jigsaw motion using two basic techniques or points of focus. One is the family of harmonies to which the melody note belongs; the other is the hand motions learnt through other experience in harmonising which avoids parallels, and offers solutions to recognised 'corners'. When solutions are known then the landscape unfolds before one, rich and certain.</i>	This event illustrates the emergence of automatic productions at this stage. The physical movements learnt through many different harmonisation exercises now guide my imagination while improvising.
6th June 2018	An objective sense of the mental representations used for improvisation.	<i>When I move forwards it is through inclination, will, desire; but I need knowledge to show me how to move. Without knowl-</i>	One of many impressions of the knowledge needed to improvise (see also 6 th April, 2018, 12 th March 2018,

		<p><i>edge I must work it out, or do something else. Knowledge is a possession; either I have it or I don't. Without knowledge there is nothing - just a gap or space. Without knowledge my desires are thwarted, turned back on themselves, frustrated. I must find knowledge to give voice to my desires.</i></p>	<p>11th May 2016). Each time my focus is drawn to the mental representations I'm using to improvise, this focus motivating me to clarify my knowledge and improve the link between my performance and the representation used.</p>
19th June 2018	<p>An exploration of phrase lengths through speaking aloud leads to greater clarity of mental representation and control over the musical structure.</p>	<p><i>Counting out aloud the phrase lengths - discover that phrase can be divided into 4 bars/each key. Modulations conscious and planned (written down). Mental imagery used as accidentals of approaching key are held as goal; also perfect cadence necessary. Phrases are then inserted into chorale, which appears as cantus firmus.</i></p>	<p>It's interesting that this ad hoc exercise in structuring longer sections of music should so exactly replicate the phrase-length exercises of Dupre (1975) and Schouten (1955) which I criticise in Chapter 5. That I gain insights through my own version of the exercise indicates how the act of creating an exercise in response to a problem makes the exercise itself considerably more effective.</p>
22nd June 2018	<p>Emerging awareness of harmonic solution to a chorale as I use practice strategies to strip away decorative elements and uncover essential voice-leading elements.</p>	<p><i>Harmonising [Chorale melody] 'Nicht so traurig' with view to variations. Feels more like problem-solving than expressive improvising. Find a harmonisation that's appropriate. Make embellishment version etc. Took at least 30 minutes before I started to understand how the harmony might work (which chords to use and how the voices would be disposed) and arrived at</i></p>	<p>This event indicates how, by this stage, I am increasingly using strategies to generate insights into the task.</p>

		<p><i>real harmonisation - i.e., something simpler, more fitting.</i></p> <p><i>Simple + strong relations can be perceived and used, by stripping away complications and distractions. This is good to do, and nothing to be ashamed of. Repeat many times.. explore all options that occur, even wrong solutions as these occur for a reason - they are still a perceived connection or relationship.</i></p>	
14th July 2018	Through a strategy of continuous playing (without pausing or reflecting) I gain a sense of simplicity and control over larger sections of music while improvising free Prelude structures.	<p><i>I use the command/idea of lazy fingers. This is a kind of strategy to keep things simple. It has consistently occurred to me that many problems stem from attempting complexity. Also that many problems (personally) have stemmed from being ashamed and avoiding simplicity. Listening again to composers such as Stravinsky, and even Bach on the radio yesterday, I was struck at how simple some of the ideas were. I know that in improvisation, once simple ideas are established then complexity blossoms quite naturally.</i></p> <p><i>So this has been a period of acceptance, fluidity and experimentation 'on the hoof' - learning through playing rather reflection.</i></p> <p><i>I note that through this process I am de-</i></p>	This event indicates how through greater automaticity and fluency I was beginning to construct mental representations of whole musical forms (in relation to schemas ₁ , see Chapter 8)

		<p><i>veloping a sense of structure to the preludes - of journeying through chord progressions and keys. This is at a tentative stage as yet - as I develop the instincts I need (like the homing instincts of animals) to head for appropriate keys at the right time. I think it is a clearing process - it's really hard to see these steps and moves in the bustle and demands of the moment, until more things become automatic.</i></p>	
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