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ARTICLE

Composer-composer collaboration and the difficulty of intradisciplinarity

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Research and practice involving parties from different disciplines is of increasing importance in many fields. In the arts, this has manifested itself in both increasing attention on established collaborative partnerships – composers, for example, collaborating with writers, choreographers and directors – and a move towards more overtly cross-, multi-, inter- and/or trans-disciplinary forms of working – a composer working with a physicist, philosopher or psychologist. Composer-composer partnerships are far less common, meaning intradisciplinary collaboration is little explored in relation to practice research in music.

This article takes the collaborative music theatre composition *I only know I am* (2019) created by the authors – Litha Eftythmiou and Martin Scheuregger – as a case study, outlining the issues and opportunities that arise through combining two compositional practices in an effort to create a single artistic output. Ways in which the composers managed this process are detailed in the context of communication, technology, and the issue of tacit knowledge (of both individual compositional process and the working of intradisciplinary collaboration). In particular, reflections on their experience during a week-long residency, in which they collaborated on a single musical work, is discussed in order to understand to what extent two aesthetic approaches can be reconciled to create work satisfactory to both parties.

Notions of composition as an inherently collaborative process are used to contextualise the means by which composer-composer collaborations might be understood. The authors reflect on an understanding of intradisciplinarity in the context of their practice as composers in order to draw conclusions that will allow them, and others, to approach composer-composer collaboration in an informed manner.

Keywords: Collaboration, composition, intradisciplinarity, interdisciplinarity, contemporary music, tacit knowledge, practice research

Introduction

Working with others is, for the most part, essential for musicians: performers need to work in groups of other performers, and also with conductors, in order to perform chamber music, and composers work with performers to realise their scores. Furthermore, the wider process of music creation involves working with many individuals and organisations. A number of well-established working processes which are, mostly, the result of long held classical music-making traditions are in place to enable the smooth running of these working partnerships, and the rules and norms around these processes are well understood by the musicians taking part. Members of an orchestra

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working with a conductor, for example, understand and adhere to the hierarchical structures and tacit rules of engagement that frame their rehearsal process (although more democratised working processes within orchestras exist, for example from Whittle (2017)). Musicians also undertake work with practitioners and academics from different disciplines. These sorts of interdisciplinary collaborations have been widely documented and theorised (as discussed below) and conclusions drawn on the particular methods adopted. In contrast, composer-composer working is not an essential practice for the creation of music and is, therefore, far less common. Consequently, this working partnership, in which practitioners from the same discipline come together to create work, does not have an established working structure, and little tacit knowledge about how to negotiate such working exists amongst composers. By taking the example of the authors' working process in composing *I only know I am* as a case study, this article seeks to understand the ways in which collaboration can work when operating within a single discipline.

Composer-composer collaborations

The single authorship of compositions (in a primarily western context) is pervasive, and although collaboration and co-creation is relatively common in theatre making (Sigal 2017), dance (Mulvihill 2018), and film (Sellors 2007; Gerstner and Staiger 2013), in contemporary classical music the author works on their own. Or at least this is the impression from documented practice where composer-composer partnerships appear rare, and likely to be less common than those involving composers and practitioners from different disciplines (a composer working with a theatre maker, for example). Documented examples are few and focus mainly on composition in the education sector, popular music, or composition that is generated through new and emerging technologies.

Savage and Challis outline a project whereby student groups produced work together through a process of consultation and the use of a range of technologies through which notation and collaboration is mediated (2001, 139). In other studies Harrison (2009/10) documents a similar setting, and Seddon (2006) describes a project involving the sharing of ideas and work via email. In each of these cases, the process involved student groups adding to or changing their ideas based on feedback by fellow students or professional composers, building their music progressively through a process of consultation and composition. This type of working may be more related to peer learning than collaboration, but the overlap of the two areas is acknowledged and increasingly relevant to the education of musicians (Lebler 2008; Reid and Duke 2015), and serves as a useful benchmark for our collaborative process, documented below.

There are also examples of collaboration in some popular music practices (Bennett 2012), such as band members co-creating songs or multiple songwriters working together (c.f. Bennett 2011). Bennett suggests that the tightly constrained form of some UK and US hits provides a comfortable model within which groups of experienced song writers can work (2012, 165–66). However, where traditional categories of genre blur and, for example, popular music practices are blended with contemporary classical ones, authorship and levels of collaboration may change. Such examples are worth examining in more detail, but the focus here is notated, instrumental practice within contemporary classical music; the domain in which the authors primarily operate[1].

Cipriani et al. (2004) describe the collaboration between four composers at Edison Studio working on the soundtrack for two silent movies. The authors are concerned with how individuals with the same roles and skills can work together (262), describing a process of interconnected composition in which all composers worked on every sequence and every frame. The process involved the composers presenting ideas, which were judged by the rest of the group and eventually accepted or rejected, before being reworked or re-processed by another member. The authors conclude that audio technology and being able to communicate "on the basis of direct audio-visual perception" (268) ultimately made their collaboration successful. More recently, Kosmas Giannoutakis (2019) has

[1] Other areas within contemporary classical music, such as improvisation or electronic music, are equally not the focus here, although we acknowledge that the practice of many composers may blur boundaries in a more radical way than is reflected by our focus.

discussed a project that involves software and internet communication as a means to enable democratic, collaborative composition involving a similar continuous peer review process. Such work is at an early stage but will provide an interesting development of composer-composer practices, especially in the context of collaboration as overtly mediated by technology.

In each of the above examples, the nature and depth of collaboration between the different composer groups varies considerably, but there are two constants. First, shared embodied or tacit knowledge (Polanyi 1966) gives a common frame of reference through which collaboration is made fluid; second, each partnership relies on a form of music technology. In the case of the latter examples above, these are computational and information communication technologies. Where notation is used, technology – notwithstanding notation software – is not seen to be involved: in fact, notation should be understood as a technology in itself. Timothy Taylor suggests that "[a]fter a period of use, most technological artifacts are normalized into everyday life and no longer seen as 'technological' at all" (2001, 6). This may be the case with staff notation for many composers, but by understanding it as an advanced technology in itself, we might be better placed to conceptualise notation-based composer-composer collaborations as mediated by technology in a similar way to that described by Cipriani et al.

The impacts of the technologies of music notation come in stages: staff notation evolves and allows music to be communicated to anyone who can read it; printing leads to mass dissemination to players of music; and eventually performances and recordings lead to mass consumption. Taylor expresses this neatly as "a trio of features that have proved to be so important historically: production, storage/distribution, and consumption" (2001, 3). Most importantly for us, the 'consumption' made possible by playback on notation software, opens up communication more directly through the sonic, rather than the score-based, form of music, which was an important aspect of our working process, as discussed below. The issue of notational technology (discussed in more detail by Magnusson 2019) is, therefore, crucial to understanding how we executed our composer-composer collaboration.

Learning to collaborate

For our collaboration to be effective, we had first to learn how each other works and how we might work together. A model for disciplinarity is useful in understanding how collaboration takes place, and in this context, we must consider the scales of disciplinary distinctions. On one level disciplines can be conceived as distinct parts of an overarching field, for example cognitive, developmental, and biological psychology; equally, they may refer to far more distant fields, as in the collaboration of theatre makers and scientists discussed in the context of the 'Sci-Arts' movement by Dowell and Weitkamp (2011). Alexander Jensenius (2012), following Marilyn Stember, defines five types of disciplinarity, arranging them in a model of increasing integration of different disciplines: intra-, multi-, cross-, inter- and transdisciplinary. Although Jensenius' discussion is relatively cursory, the acknowledgement of intradisciplinarity is important: considering composer-composer collaborations as examples of *intra*disciplinarity is appropriate and frames such work as related to, but not the same as, interdisciplinarity, which is in itself documented more widely[2].

In the context of this article, understanding disciplines as individual areas *within* music (performance, composition, production, and so forth) is important. At this scale, intradisciplinarity is perhaps the most common form of working: the five members of a wind quintet working together, for example. (Multidisciplinary working would be involved were the quintet to commission and work with a composer.) For such intradisciplinarity to work, the parties have to share certain tacit knowledge[3]: the members of the quintet can walk into a rehearsal room, take out their music, sit in the correct configuration, tune and proceed to begin the process of 'making' chamber music without saying a word. Indeed, this process of 'musicking' goes beyond the interaction of players and is further

[2] Barry, Born & Weszkalnys write about this (2008) and follow it up more extensively later in a wide-ranging collection that expands on many of the issues related to this article (Barry & Born 2013).
[3] See McCaleb (2014) for an extensive discussion of the embodied and tacit knowledge used by performers.

seen in the ritualised nature of all elements of the concert performance, as Small notably tells us (1998). From here on, even the more nuanced ways of working are carried out through a shared understanding of process. Two composers beginning a process of collaborating with each other are highly unlikely to have the same tacit knowledge of collaborating within their discipline. Although they are likely to have this experience when working with performers, they must create a working process from scratch when working in a composer-only context, as we discovered.

Julie Mulvihill (2018) asks – in the context of dance – whether collaboration is taught, proposing that a "pedagogy of collaboration" (112) should be developed and used by teachers. Composers might ask themselves the same question. We are taught to collaborate in the most abstract sense: we learn the skills needed to communicate with our co-workers through notation, common practices and shared historical knowledge, and in doing so develop a vernacular of contemporary music working. We learn to use common ground with our colleagues to make communication as straightforward and efficient as possible in an environment where rehearsal time is limited, time is money and ambiguity is the enemy. We are not taught how to collaborate with others, simply how to work with them. When a composer decides to collaborate with another composer, we must work out how best to do this, often un-learning the engrained processes that lead many of us to create musical texts without needing any dialogue with others[4]. In attempting to collaborate with others, we are no longer required to deliver a fully-formed work derived from internalised creative processes, but to make the creative processes external, dialogic and open to our collaborator(s). As we discuss below, through communication and use of musical technologies, we began to learn how this distinctly intradisciplinary process could work for two composers.

Having established a context for composer-composer collaboration, we turn now to the practical case study of a composition project which we worked on together. The project was initiated with research aims related to musical silencing alongside further artistic concerns. Although we were aware that collaboration would pose certain challenges, it was not until after the project's performance, that we decided to investigate how we had worked in the context of intradisciplinarity. Although approaching the project with an autoethnographic mindset would have generated different resources upon which we could draw at this later stage, our approach – which was focused on the final product not the working process – allowed a pragmatic and more genuine collaborative method to emerge. Had we self-consciously sought to explore intradisciplinarity, a more rigid working framework may have been established, restricting our fluid and natural process, and resulting in less useful results both artistically and in terms of the research issues of this article. In the following sections we first outline the project and its genesis, before reflecting on issues of communication, language, and tacit knowledge in the context of the literature explored above.

Background to I only know I am

I only know I am is a music theatre work by composers Litha Efthymiou and Martin Scheuregger. The piece was inspired by the history of the Lawn in Lincoln, during its operation as an asylum in the early nineteenth century (it continued to operate in a mental healthcare capacity into the late 1980s). It had its first performance at the Blue Room, Lincoln (part of the Lawn complex) by the Bristol Ensemble conducted by John Beswick, actor Ian Harris, and soprano Susan Parkes in September 2019. The piece was created through several distinct stages. First, we embarked on joint ideation to formulate a project proposal for the St Hugh's Foundation for the Arts. During this time, we were both colleagues at the same institution and lived in the same city: ideas were discussed at both formal meetings and informally as part of our working days. The funding bid was successful, leading to further joint decision making regarding the practicalities of the project, including instrumentation, venue, musicians to engage and timescale. Next, individual composition at a distance commenced, with technology-mediated exchanges related to

[4] The dialogic nature of lone working is dismissed by Taylor as not truly collaborative (2016, 563–64), although he cites others who understand this internal dialogue with their prior work and the work of others as collaborative.

practical and artistic issues taking place in a manner related to those described by Seddon (2006). Following a further successful bid, we embarked on a week-long residency at The Red House, Aldeburgh (Benjamin Britten and Peter Pears' house) facilitated by Wild Plum Arts and the Britten-Pears Foundation. (The appropriateness of working collaboratively in the shadow of one of the twentieth century's most significant musical collaborative partnerships did not escape us.) Following the residency, two rehearsals took place in the lead up to the performance itself, which was followed by a post-concert discussion between the creative team (composers, actor, singer and conductor).

In addition to the artistic team, we worked with Katherine Fennelly, an academic in the field of history and heritage, who has written on the subject of asylums in England and Ireland. The aural environments of early-nineteenth-century asylums, and the practices developed in the pursuit of silence – such as encasing door locks in leather to muffle their sound (Fennelly 2014) – were used as a point of departure as we considered the musical and aesthetic means by which silence and isolation could be created in our work. The poetry of John Clare was also influential: his sonnet 'I am' and a separate poem 'I am' provided the title and text for the work, alongside a letter sent by Clare from Northampton General Lunatic Asylum on 8 March 1860. These academic, poetic and autobiographical texts informed the dramatic narrative and provided inspiration for the setting and characterisation used in the final show.

Beginnings

We came together as two colleagues, similar in age, with similar musical backgrounds, and with a shared willingness to collaborate on the project. Notwithstanding these parallels, there were significant differences in our individual attitudes to composition, including our technical approach to pitch, harmony, structure, as well as our working methods and preconceptions of collaborative practice, formed by our respective past experiences. Efthymiou prefers to work systematically with pitch and rhythmic material (Efthymiou and Hornby, 2019), whereas Scheuregger's focus is on developmental approaches applied to gestural, often fragmented, material (Scheuregger, 2016). There was, therefore, a need to consciously and intuitively negotiate a strategy that attempted to reconcile these differences as we both acknowledged that neither of us would be able to (or desired to) radically change our compositional language to fit neatly with the other. The twin desires for creative autonomy and to create a coherent whole was a constant tension in the project.

The week-long residency represented the most integrated part of our collaborative process and the most illuminating in terms of generalisable observations of intradisciplinarity. As such, this period forms the focus here. The residency took place on 5–12 August 2019 before the premier of the work on 26 September 2019. A community of composers (resident in the various houses on the estate) each worked towards separate projects. The nature of the residency was relaxed and involved 'quiet hours' of 9am to 4pm, during which we would work (although composers often worked outside of these times), communal dinners (organised by Wild Plum, our hosts) in which the composers would come together to share their experiences of the day (musical or otherwise), and social interactions such as walks along the beach and even communal running. Our hosts encouraged us to use the days as we wished, with no requirement to produce a certain amount of work and, instead, a gentler encouragement to engage with Britten and Pears' heritage through the surrounding environment. Indeed, we both found this environment to be highly conducive to productive work, which no doubt helped make the process as positive as it was.

We arrived in Aldeburgh with a clear sense of the practical nature of our project: the ensemble was set, the source texts were largely decided upon, and the overarching concept was fixed. We decided relatively early on in the process to create two individual compositions which we would aim to bring together in the final version of the work. This decision was a natural one for us, taken in light of previous collaborative projects that we had each undertaken.

Efthymiou has a long history of working with her twin sister and fellow composer, Effy Efthymiou, on joint composition projects, which include concert works and large-scale projects involving artists from different disciplines. Despite their close relationship (they are twin sisters who studied composition at the same time, at the same conservatoire and, on occasion, with the same tutor) they do not collaborate bar by bar on a work. An example of their process is demonstrated in a joint commission they undertook for the International Guitar Foundation's New Music series in 2012, for which they composed one movement each of a two-movement work for solo guitar (*States of Ice*, 2012). During their process they discussed details such as the intended structure, the harmonic soundworld, and some influences the work would draw upon: with this information, they set about composing individually. A working partnership between twin sisters involves a deep personal connection and shared musical experiences that come together to form a detailed web of tacit knowledge and understanding. Yet, in such a partnership a desire to maintain individual control and give voice to independent ideas prevented an all-out sharing of the work: composing a work together, even as twin sisters, proved to be difficult.

In contrast to Efthymiou's close intradisciplinary collaboration, Scheuregger was working on an interdisciplinary project with visual artist Danica Maier (*Score: Mechanical Asynchronicity*, 2018–20) concurrently with work on *I only know I am*. Here, working with a visual artist to create sonic works – as installations and performance events – involved a negotiation of interests, motivations and methods. Unlike Scheuregger and Efthymiou's work, this project's defining characteristic is the tension that exists between different artistic practices. But, as with the Efthymiou sisters' collaborations, the project involved the creation of discrete works primarily 'by' one of the collaborators. These are ultimately presented as co-authored elements of an overarching project, but many of their technical and aesthetic characteristics point towards the work of one author. The experience here maintained a degree of artistic autonomy so that creative processes could be followed through in meaningful ways for each partner.

Having both had positive experiences of such 'side-by-side' collaboration, we decided to create individual scores for *I only know I am* with the confidence that our past experiences would help inform a process that would ultimately lead to an integrated work. Although the aim was never to produce a work in which our two voices were indistinguishable, we nonetheless wanted to find a balance that would give the work a singular identity. Indeed, some composition work had been undertaken by each of us before the start of the residency: the first draft of Efthymiou's piece was almost finished, while Scheuregger was still working with fragmented sketches. The residency was therefore both a practical time to focus on individual composition and an opportunity to weave together our musical results based on the collaborative ideation and planning that had happened in advance.

Language and communication

One issue that surfaced early on in the residency was that of method, which was connected to language. How would we collaborate on this residency? What methods would we use to share ideas and create an integrated work? And what would be the consequences of the methods we adopt? Dowell and Weitkamp (2011) explore the collaborations between scientists and theatre makers, looking at eight such partnerships in which scientists are integrated into the team. The authors discuss the inherent difficulties:

> Negotiating the sharing of meaning, knowledge and responsibility involves taking risks and trusting others (Hara et al., 2003) and obstacles arise in the form of contrasting communication styles, working processes, priorities and temperaments (Pearce et al., 2003). More fundamentally collaborators may need to shed powerful beliefs in the independent self and individual achievement (John-Steiner, 2000). (Dowell and Weitkamp 2011, 892)

Although these tensions arise from the difference in disciplines inherent in such a collaboration, such issues are also relevant to understanding the intradisciplinarity of the seemingly singular world of two collaborating composers. With scientists and theatre makers, the gulf in disciplinary norms plainly requires substantial adjustments. Two composers doing the same thing surely requires little such adjustment? In fact, with two people fundamentally trying to do the same thing there is a danger of – compositionally speaking – treading on one another's toes. As a result of this, much of our collaboration was about communication, dialogue and, ultimately, language. The working process of collaborators highlighted by Dowell and Weitkamp is highly dialogical, relying on the discussion of ideas rather than necessarily practically working things out together (2011, 897): this chimes with our experience.

In addition to the issue of discipline-specific (verbal) language, there is also the issue that the artform (whether music, dance or sculpture) is not verbal, but the language of any collaborators will, to some extent, have to be. Taylor suggests that "a difference between the language of the art and that used in discussion will be an impediment to collaboration" (2016, 571). This was not borne out in reality during our residency. A composer communicating with a dancer in a medium that is different from that of both art forms (i.e. through words) is not the same as two composers discussing composition. In this instance, the composers have likely developed, through their education and musical experiences (of composition, conducting, and likely of solo and ensemble performance) a shared technical language which enables them to communicate facts and feelings about music with precision and clarity. We found that it was relatively easy to share our thoughts and ideas through words, focusing on the sonic aspects of our work. This was complemented by using the technology of staff notation to impart ideas about technical issues. These two approaches proved to be beneficial in different ways, as we discuss below.

Often, sharing through words came hand in hand with listening to each other's music whilst following the score, and describing what the music was doing. The software-mediated nature of this process is not dissimilar to that discussed by Savage and Challis (2001) in the educational context discussed above[5]. We would sometimes focus on small sections of our respective scores and on one occasion we focussed on the opening ideas of each work, discussing our individual approaches in terms of our sonic intentions, rather than our technical approaches. Scheuregger wanted to create a sense of suspended time reflecting the text, whilst Efthymiou aimed to convey a sense of the silence experienced in eighteenth-century asylums, as described by Fenelley (2014). After brief verbal introductions, we listened to one another's music while following the scores, before offering feedback, which the other could choose to take on board or not. As we fed back we focussed, mainly, on how to integrate our respective musical languages in such a way as to enable coherence on both a musical and conceptual level. For example, it was clear on listening to each other's music that our opening sections were similar in structure and pace – each displaying static devices, before rapidly progressing to more active material – despite our contrasting aims. Efthymiou suggested that Scheuregger could expand his static opening material, dwelling in this soundworld for longer, so as to contrast with Efthymiou's work. In contrast, Scheuregger suggested that Efthymiou could focus on the pacing of some of the gestural activity in her work, as a way of bringing her soundworld closer to Scheuregger's. Discussions of this nature took place frequently and were characterised, early on in the process at least, by a focus on sonic rather than technical intentions.

Over time, we found that the method we had adopted – the combination of listening, looking and describing – was essential for each of us to gain a grasp of each other's work, and it soon began to have a direct impact on the way our music would sound. The process resulted in an increasing desire to ensure that our work could be quickly dissected (on a technical level) and communicated clearly through words and observation; therefore, our music

[5] The ease through which composers can now share ideas aurally through software such as Dorico and Sibelius is likely to generate different working patterns to those of composers sharing ideas at the piano and on paper. This difference is worth further exploration but is beyond the scope of this article.

became ever more embedded within precise structural and gestural restrictions. For Efthymiou, this manifested itself in harmonic and rhythmic material that had clear mathematical organisation involving expanding and contracting cells, whilst for Scheuregger, an emphasis on block-like structures, repeated and static material, and a relatively gestural language resulted. The new direction that our music began to take, in turn, had an effect on the ways in which we would discuss it. We started off communicating solely through discussion of sonic properties, but as the residency progressed, and each of our pieces became increasingly more structured, we increasingly discussed aspects of technique. This promoted a deeper understanding of each other's music, thereby facilitating a clear path to a more joined-up musical sound.

The incorporation of this technical analysis was structured in such a way to maintain autonomy over our work. We found that it was appropriate to pursue communication through discussion of the sonic when providing feedback on each other's work, whereas it was more beneficial to discuss aspects of our own work in more technical terms, since the process of listening, looking and describing promoted clearer structural ordering in our music. The technical descriptions provided a quick and effective way to communicate aspects of our individual soundworld to one another, enabling us to gain a thorough grasp of each other's compositions. However, when commenting on each other's work, we found discussing the sonic aspects to be much more beneficial and, indeed, easier to navigate. This was not for a lack of experience in critiquing technique – we both teach composition in higher education, after all – but came instead from the lack of separated knowledge domains in our collaboration. Whereas in interdisciplinary work collaborators bring distinct expertise (even when there is some overlap), in intradisciplinary work, expertise is shared, and so disciplinary authority is unclear. In addition to this, there is an unspoken social prohibition of criticising a colleague's work, which is an issue that is mirrored in all kinds of musical co-working in contemporary classical practice. In a scenario in which a composer hears their work for the first time, for example, it is often difficult to comment in detail about any aspects of a performer's interpretation that does not appeal to them.[6] There is a tacit understanding that this is the domain of the performer and, as such, a composer should not interfere. Our reaction to this issue was to comment on each other's work in mostly sonic terms where we would have to attempt to *describe* sounds without recourse to compositional technique. This translation of sound into words created an ambiguity which was beneficial, as it left decisions of compositional technique open to us individually. Put simply, by discussing sounds, rather than technical detail, we did not feel we were trying to change *how* we each wrote: this allowed us to maintain the degree of autonomy that we aimed for at the start and prevented us from treading on each other's toes.

Discussions regarding the dramaturgy of the work were far less fluid than those which focussed on musical matters. Despite each having collaborated on various interdisciplinary projects, it became clear that we did not share a sufficient frame of reference. Efthymiou's music has often involved staged and theatrical elements as part of the fabric of the work (for example, the multidisciplinary opera *Myisi* involved dancers and film (Efthymiou 2017)), whilst Scheuregger's experience comes from producing and curating projects which tend to involve the music of other composers (from an English-language theatrical staging of *Pierrot Lunaire* to a performance of Ligeti's *Poème Symphonique* for 100 metronomes). Whereas we could apply technical knowledge in the implementation of our musical ideas (and communicate about each other's work through reference to the sonic and the technical), we found the difference in experience and expectation of the theatrical nature of the work less clear cut. When discussing theatrical material, then, we found we had to travel beyond language to assist our communication. We drew pictures of our staging ideas, showed photographs of lighting states and costumes, and described these matters in minute detail to facilitate clear communication. We found that our contrasting cultural references and experiences made it impossible to have fluid discussions and our lack of shared knowledge meant that one person's idea had to be fairly well formed in order for the other to understand it. Unlike our communication about our

[6] In more overtly collaborative practices between composer and performer this may not be the case as both parties share an authorial role.

compositions, conversations around the non-sonic elements of our work took a lot of time to navigate and we could never be sure that our various points were clearly communicated and comprehended until we tried them out in practice.

Our collaboration was enabled by aural communication both verbally and through sonic renditions of our music. When employing verbal language, however, the varying levels of shared experience impacted the precision and ease with which we could communicate: communication about sonic ideas was fluid thanks to substantial experience in speaking about such issues; discussion of technical elements was similarly fluid, although made more difficult as we strove to avoid overly influencing each other's technical approach; and negotiating non-sonic elements was the most difficult due to having less shared expertise and less precise language immediately available to us. Technology mediated our communication, be it through its overt employment in Sibelius playback, or more covertly in our use of staff notation, with varying impacts. Lastly, our communication in all forms was coloured by certain social norms, a mutual respect for artistic difference, and an underlying desire not to drastically alter our individual compositional voices.

Tacit knowledge

We comment above that performers entering a rehearsal room have the know-how needed to work together immediately: in Nelson's terms, performative knowing, tacit knowledge and embodied knowledge (2013, 37–44). Such know-how for us as composers is primarily utilised in the lone act of composing: ours is not a tacit knowledge about how to *collaborate* (although this exists in reference to composers working with performers and others) but about how to *compose*. Our lone compositional processes can, without conscious reflection, become habitual (Nelson 2013, 46). Where this is the case, individual working is also impermeable, making collaboration in the process of composition more difficult to embark on, and something that must be nurtured and practiced as much as our personal compositional approaches.

Although not extensive enough to develop complete fluency in collaboration, through our week-long residency we did develop certain tacit knowledge as we began to naturally formulate a structure for our working process. This partly came about due to the working hours and intentionally loose structure of the residency, but mostly as a result of the overall structure of the day's activities that developed as the week went on. By the end of the residency, we had established a method of working which involved a solitary period, a period of coming together to discuss individual work, a further solitary period, and a second period of coming together to discuss broader concerns, such as narrative thread and overarching structure. By the last two days of the residency, this process was so strongly embedded that we did not need to stipulate our intention for the day's work; we simply conformed to the established structure. In particular, the manner in which we communicated through both sonic and technical means (as described above) developed across this time and began to become normalised (if not yet tacit).

Within this structure, further nuanced forms of tacit knowledge began to develop as we understood how to get the best from each other and how and when to critique, praise, offer suggestions or share work. For example, we found that adaptation of musical material often occurred when suggestions were met with silence or a change of subject, forcing a reconsideration of planned passages of music or narrative structures. On no occasion did Scheuregger comment negatively on Efthymiou's harmonic language, but he did briefly describe the particular chord and pitch collection which was to form the basis of his own music. As a result, Efthymiou began to think more carefully about her harmonic language and made changes in accordance with what Scheuregger had described, bringing the respective soundworlds of each piece into closer alignment. These communications were not in themselves particularly remarkable but learning to read the meaning behind each other's silent reactions and mild deflections across a whole week had significant impacts on our creative processes and the resultant compositions. It was not

until the end of the residency that we realised the extent to which we had developed a working method that relied on non-verbal communication in a manner reminiscent of our performer colleagues.

Verbal and non-verbal communication about sonic and technical aspects of the piece formed a crucial part of our working process, but it was the practiced development over time of when to use one or other such approach - when to stay quiet and when to offer more explicit feedback - that represents a developing knowledge of *how* to work together. With this nascent tacit knowledge, we can now enter a shared studio and know how to start working together. We are not yet as well practiced as our performer colleagues, but we are able now to rely on and further develop this know-how as our collaboration moves to its next stage.

Integrating music and future steps

The performance in September 2019 marked the culmination of the first phase of development of *I only know I am*. It is our intention to embark on a second phase of development in which we will build on knowledge gained from the residency and the performance at the Blue Room to strengthen the unity of the work. The tacit knowledge that developed during the residency, and the detailed sharing of our work through notation technology and discussion, started to enable our music to come closer together. However, there is still a need to formulate a more robust method of merging our scores to create a unified whole.

One strategy developed during the residency was to overlap harmonic sections from Scheuregger's piece with melodic sections from Efthymiou's. Although this process worked in theory, largely due to the changes we had each made to our individual pieces, it did not form the overall strategy for more closely integrating our work. Another idea that emerged, but was not executed at the time, was to exchange scores and each undertake solitarily work on the other's score for an extended period of time. This method of composing collaboratively could only happen after the residency, due to the increased depth of knowledge of each other's work acquired across this time and in subsequent rehearsal/devising sessions. This knowledge has allowed us to become immersed in each other's work, giving us the confidence to take control of it as if it were our own. We hope to experiment with this as the project moves on.

The last strategy discussed was to undertake a process whereby each of us would insert passages from the other's music into our respective scores. Again, this kind of practice could not have been applied effectively before or during the residency. Having shared our work and reshaped it, we are now in position to embark on this more radical collaborative strategy to facilitate the further coming together of our music. Whether this collaboration will be less effective if not facilitated through the intensity of a residency is something we will actively reflect on as the project develops (although a further residency may indeed take place).

Conclusions

We have outlined an understanding of intradisciplinary collaboration between two composers based on ideas of disciplinarity, examples of collaboration from other fields, studies of composers' collaborations with performers and others, and the limited selection of composer-composer collaborations that exist in the literature. Through this, we have drawn on discussions of collaboration, particularly Taylor (2016), Hayden and Windsor (2007), and Dowell and Weitkamp (2011), forming our own understanding of collaboration as experienced in the co-creation of *I only know I am*.

Overall, we found the problem of language which Taylor (2016) brings to light, to be absent in our process of composition, because as composers with similar backgrounds and experiences, we have developed a shared technical language that made it possible to adequately describe our ideas and processes. Indeed, discussion was at the heart of our process. Discussion of sonic issues verses discussion of specific technique was linked to our

relationship with notational technologies. The conspicuous technology of notation software allowed us to hear a version of each other's work as we went along, whilst the more covert technology of staff notation enabled us to communicate with precision with reference to pitch, rhythmic, dynamic and other notated material. The strong link between the notated music and our compositional techniques meant that discussing our work solely through notation was too tied to our autonomous compositional voices to be useful. We, therefore, found that the combination of sonic descriptions when commenting on one another's work, and technical descriptions when communicating aspects of our own work, to be the most productive process.

Communication in relation to the non-sonic aspects of our work was not as easy to navigate. Our lack of shared experiences in this arena led to some confusion about staging and narrative, which took time to rework. However, through an intense period of collaboration and co-habitation, we developed a relatively fluid method of working that suggests the early development of tacit knowledge in relation to intradisciplinary collaboration. This tacit knowledge may be best summarised as a balance of social and musical understanding.

Despite the common ground implicit in intradisciplinary work, we have demonstrated the difficulties of such working in the context of composition and acknowledge the overlap between intra- and other forms of disciplinarity. Having made the first steps in learning how to collaborate within composition, we reflect the need for more focus on training in how to collaborate, proposed by Mulvihill (2018). Our hope here is that further composers will attempt to collaborate with each other in meaningful and integrated ways that allow them to maintain their creative voices and generate work which they could not produce as individual composers. Through reflection and analysis of such working, intradisciplinary compositional practice may be theorised to a greater extent in the future and become more common as its practices are better understood and embedded within the composer's toolkit.

We value – and will continue individually to practice – composition as a solitary act; nevertheless, we have experienced collaboration as involving a positive change of creative process. In particular, some elements of what are often internal and individual processes, become external and multiple. Rather than seeing this as a loss of control, we follow Mulvihill in "approaching collaboration from the perspective of *relational being*", as a process that "can elicit growth or enlightenment among collaborators" and one that "is not about loss or even compromise... [but] about discovery" (2018, 113; emphasis in original). No one version of collaboration can exist, but with further composer-composer working, we may all learn to work in this way more effectively.

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