

Amalgam – Collaborative techniques within cooperative spaces

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Abstract

This paper describes the outcomes of a residency in which three participants combined their practices within three disparate areas of sonic art. During the residency, a fourth “performer” was added to represent the host building in the form of its wireless internet data and a framework was developed to facilitate this metaphor whilst integrating distinct aesthetic considerations. This culminated in a series of live performances entitled *Amalgam*, which is described in the context of both collaboration and cooperation. Discourse surrounding network affordance, authorship and the use of non-musical data is also explored.

Keywords: collaboration, performance, network, non-musical data.

Introduction

This paper outlines the project entitled *Amalgam: Collaborative Techniques within Cooperative Spaces*, a residency undertaken over a two-week period in June 2012 at the Metropolitan Arts Centre (MAC), in Belfast, Northern Ireland, which culminated in a series of live performances at the venue; an example of the performance is available online (Deery et al. 2012). The remit of the residency was twofold: to create an original sonic art composition to be performed live, whilst simultaneously educating and informing the general public on the processes and techniques used within the creative process.

The residency forged links between three artists who contributed their knowledge of three disparate areas of sonic arts to the project, providing a platform for the amalgamation of artistic practices and relevant aesthetic standpoints. The three contributing methods were soundscape composition, network music performance and algorithmic composition. These distinguished compositional strategies would combine to construct a shared framework on which the final performance could rest, enabling a distinct dramaturgical model to emerge. The term dramaturgy originates from the performing arts – particularly theatre – but

has been reappropriated within network music theory in order to understand “notions of authorship, collaboration, structure, content and as an umbrella term for a number of aspects that characterise performance practice” (Rebelo et al. 2008, 1), all of which were under consideration during the residency.

This framework aimed to extend the artists’ collaborative efforts by including the building’s wireless public access network, which provided dynamically changing non-musical data to which we would assign a level of ‘affordance’ (Kane 2007) – that is, the level of control the network possess over elements of the overall performance. This is in keeping with network performance theory, in which telematic systems are viewed as “a new class of musical instrument” and therefore integral to the performance (Braasch 2009, 421). Musical material for the project was gathered from recordings exclusively from within the host building, so that the data could – in some way – control elements of its own ‘sonic identity.’

The focus of the residency was placed firmly on establishing an architecture for the performance that would allow for this transspatial interaction to occur, seeking to reduce the role of the “artist” and emphasising the “interactions and actions of the process” (Makelberge 2012, 31). This paper explores the theoretical and aesthetic implications of engaging with non-musical material in the context of collaboration, both between the three participating artists and the network data (representing the building) as a fourth “performer.”

The project

Amalgam centred around the decision to utilise data from the building’s wireless public access network, which raised a number of theoretical issues regarding not only the roles of the “sonic artists” but also that of the “non-musical” network data in the project. The information itself was essentially arbitrary, as specific details of the internet traffic were disregarded. It was felt, however, that the changing information embodied a tangible yet abstracted presence of human activity: the “digital lifeblood” of the building and an evolving representation of the MAC’s internal “identity.” This constantly changing stream of information allowed for a means of “collaborating” with the building itself, essentially making the network a fourth “performer” in the composition.

The network information was accumulated using `tcpdump` – a command-line packet analyser – after which the data was converted to valid OSC messages using a Perl script, which in turn could be received by a host application: in this case SuperCollider. At this stage, decisions could be made regarding the programming of an appropriate algorithm. After much consideration, the data was used simply to trigger sound files; specific information from the network – such as packet sizes, network addresses and checksums – was ignored and activity was used only to trigger a sample from a predetermined bank of sound files (seven banks were used in total, spanning four different sections of the piece). When new network data became available, an OSC message was generated containing that data, which was then sent to SuperCollider.

Each section of the piece consisted of two precomposed layers of sounds: ‘ambience’ and ‘gestural.’ The ambience bank simply played in sequence (with some overlap), whilst the gestural bank was triggered using the network data. Some safety features were incorporated, namely to automatically play a sound if a trigger was not received within a specified time and,

similarly, if more than one trigger was received in a too-short amount of time, only one was used to trigger a sound and the others were ignored. These upper and lower bounds were made to vary some of the gestural sections in order to decrease and increase the density of the events dynamically (to provide more or less gestures, depending on the requirements of that particular section).

With additional time, the potential for network data to control various other aspects of the performance (dynamic control over various parameters of sound manipulation, for example) could have been explored. Utilising the data as a trigger system, however, ensured that the aim of incorporating the network within the performance was satisfied, and that additional attention could be allocated to the development of musical content.

Prior to discussing the musical content and performance of the work, and due to the nature of the project, the paper will address collaboration, not between participants, but more applicably from the standpoint of the residency's host building vis-à-vis the participants and the final performance. The building itself became a "performer," directly engaging with the presupposed model of dramaturgy. Concepts related to degrees of affordance are incorporated into this collaboration, especially in relation to the decisions made that allowed for either a greater or lesser degree of affordance to be realised (Kane 2007). The paper will now offer a brief overview of each of the practices that contributed to *Amalgam*.

Soundscape composition

Fixed-medium electroacoustic music, as a subsidiary or relative of sound art, is itself a diverse practice that cannot be generalised in terms of approach. A branch of this "genre" is concerned with the 'soundscape,' Schafer's flagship term to describe the sonic environment (Schafer 1994). Artists work primarily with field recordings, editing and manipulating them using a variety of techniques to create fixed-medium electroacoustic compositions, with recourse to the original context of the material. The stated aim of soundscape composition, embodied by the work of composers such as Barry Truax and Hildegard Westerkamp, is to harness this context in order to create a dialogue between composer and listener that in some way enhances our understanding of the world (Levack Drever 2002; Truax 2002).

When field recordings are employed in fixed-medium soundscape composition, the original context of the disembodied sound is often alluded to through extramusical discourse or the establishment of 'sound-image' relationships (Kim 2010). As an important aspect of the project was to explore the sonic identity of the host building, the performance would aim to exploit what Smalley describes as 'source-bonding:' our "natural tendency to relate sounds to supposed sources and causes" (Smalley 1997, 110). As sounds were recorded from within the MAC building – including recognisable sounds from the café and the recorded voice from the building's elevator, for example – and as the performances would take place in the building itself, the *recognisability* of the sounds in relation to their sources was embraced in order for the listener to relate the sounds to their sources within the building.

Network music performance

Network music harnesses the potential of interconnections between the multiple agents involved in a performance: composers, performers and technologies (Vallis et al. 2012). Data sharing capabilities are exploited, making possible real-time interaction between artists, utilising digital "space" in such a way that allows for creative frameworks to be developed. Interdependability and interconnectedness of factors are seen as core features of the aesthetic, allowing for original and dynamic performance and compositional models to emerge. Delineated and designated network structures are seen as an essential platform for the practice, as well as the overarching muse of the methodology (Field 2012).

Amalgam sought to utilise network ideals, concepts, and technologies within the performance architecture. The network was used as a 'technical metaphor' (Föllmer 2005, 185), indicating its presence as an additional "performer," rather than to provide the focus for the performance itself. However, the use of network structures for performative means did raise some aesthetic concerns. These concerns were discussed throughout the creation of the project, and involved decisions such as how to implement the dynamic information gathered from the building's network infrastructure into the performance in manageable and worthwhile ways, and how to convey to the audience that the network was an additional performer. In terms of collaboration, cooperation and aesthetic convictions, these prevalent concepts found within network music performance practice and theory had a pertinent influence on the realisation of the project.

Algorithmic composition

Algorithmic composition applies to the practice of creating material and structural meaning by means of using a set of rules and instructions. It could be argued that whilst the use of algorithms in music composition is "as old as music itself" (Jacob 1996, 157), it was not until the advent of the computer that algorithmic methods of composition came to fruition. More powerful computers have allowed composers to model the creative process more delicately and algorithms with which to experiment are now more readily available. Though engaging in a more scientific approach to composition – with recourse to mathematics, physics and biology – its aesthetic concerns and outcomes share similarities with other forms of electroacoustic music, as it can often result in fixed-medium works concerned with timbre and structure (Maurer 1999).

Regarding the use of algorithms for artistic creation, philosophical questions are posed relating to the 'authorship of ideas' and the role of the composer, such as "who or what is responsible for the music produced" (Jacob 1996, 157). During the residency, many options were considered that would afford more or less "authorship" to the network data. These included analysing the data and using stochastic processes to offer greater affordance to the network in terms of allowing it to control more of the content and structure of the performance. Alternatively, the network data could be used as a trigger system, as previously discussed. These decisions would impact not only the form and content of *Amalgam*, but also the respective roles of each of the performers within the framework of the performance.

The performance

During the residency, there were a total of eight performances, each with a short introduction given to the audience. As a reference, an audio example of one of these performances is available online (Deery et al. 2012). The topology of the performance framework had the potential to allow a great deal of affordance to be allocated to the building's network data. A simple tree structure was imposed, in which one computer (designated the master computer) would generate audio signals with respect to the public access network information gathered (Fig.1).

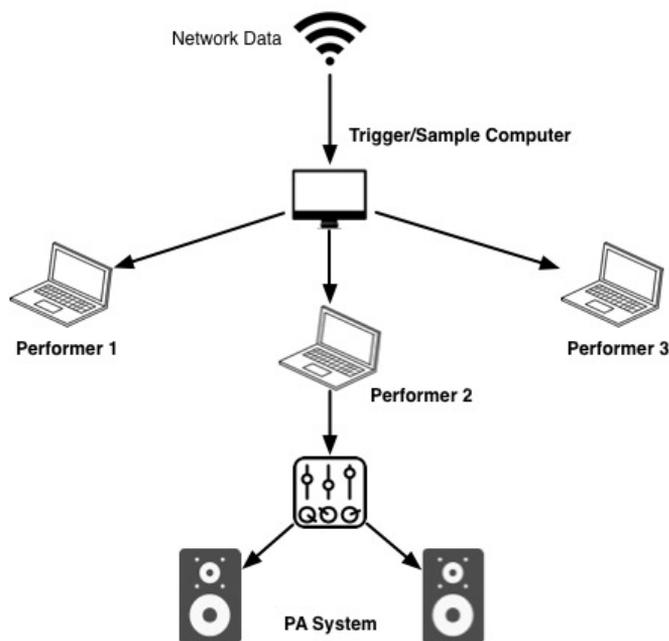


Figure 1 / Amalgam Topology.

This audio signal would then be simultaneously sent to three performers, who would apply signal processing techniques during the performance, in a 'reactive' manner (Globokar 1970).

As previously mentioned, a number of possibilities were considered for the role of the network data within the performance framework. It was initially thought that an activation system could be used to trigger a series of random samples from the precomposed sample bank. During the live performance, it was thought that the artists could react to this material and apply appropriate live processing. Attempting to use the trigger system in this way lacked structural cohesion, resulting in a disjointed series of sonic events. Aesthetic decisions were required regarding the role of this trigger system and the overall structure of the composition.

Whilst it was initially thought that diluting the role of the network would impact negatively on the performance, it was felt that giving the data complete structural control would not have been sonically interesting, or wholly aesthetically pleasing – the result being a series of randomly generated samples. Consequently, an overall structure, or 'bed,' was created using textural and ambient sounds recorded within the building, over which the network would

“decide” what sonic material would be included in the piece by choosing sounds from the samples that were suited to each of the sections. Each performer would subsequently apply subtle processing to both the ambient ‘bed’ and the samples triggered by the network.

Though this meant that the overall structure would loosely remain the same, each performance would be altered according to the amount of network activity at the time – as if the network were “improvising” in each performance. As such, the level of control afforded to the network directly informed the content of the performance, rather than its structure, as previously hoped.

Before each performance, the role of the network data was explained to the audience, who were encouraged to log on to the building’s Wi-Fi network and browse the internet so that they could contribute triggers to the performance. Although the link between browsing to produce triggers and hearing the samples was not obvious, this was considered an important additional element to the performance that helped the audience engage in and relate to the work.

Delineating reciprocity

Pertaining to network music performance, Makelberge identifies distinctions between collaboration, cooperation and collective creation, terms that are “spread out along an axis of more to less reciprocity” (Makelberge 2012, 29). Whilst Makelberge goes on to concentrate on the least ‘reciprocal’ of these methods – collective creation – the distinctions between the first two terms are useful in the context of our approach. Collaboration is seen here as coordinated and synchronous, and the most ‘intensely reciprocal’ (Makelberge 2012) method of interaction, whereas less reciprocity is assigned to the practice of cooperation, as subtasks were assigned to be solved individually which contributed to the subsequent whole (Dillenbourg 1999). As such, *Amalgam* provoked an engagement with two fundamental and overlapping concepts – collaboration and cooperation – and the next section of the paper will engage in a theoretical discussion on the issues and implications of these approaches.

Collaborative techniques

Artistic collaboration was a primary motivation for *Amalgam*: three artists drawn from disparate, yet related, compositional practices interacted with the view of creating a coherent musical whole that would reflect the compositional methodologies of each participant. The convention of collaborative art may be seen as a fine balancing act between aesthetic standpoints so as to be able to find a creative equilibrium (Becker 1974). It was envisioned that the collaborative process of *Amalgam* would be synergistic, in contrast to the view of the creative sonic artist as an isolated figure (Hecker 2008).

The degrees of reciprocity between the performers and the building – along with the level of affordance extended to the non-musical data – shifted throughout the residency, mainly through a process of trial and error, with the theoretical focus fluctuating between the collaborative and the cooperative. As such, the discourse primarily associated with network performance can be identified throughout the production and performance process, tempered

and augmented by soundscape and algorithmic approaches. For instance, programming techniques from the algorithmic domain were integral to obtaining a functioning trigger system while the field recording techniques used to capture the building's unique soundscape were crucial in giving the network data a resource bank from which to "play," thus providing material for the performance that reflected its own sonic identity.

Authorship and dramaturgy

Dramaturgy is concerned with outlining fluid definitions that can be used to better explain and enhance our understanding of artistic processes (Schroeder 2009). The idea of dramaturgy can be extended to *Amalgam*, so that the relationship between the three performing artists and the fourth "performer" can be better understood. Rebelo et al. identify three models of dramaturgy – projected, directed and distributed – and whilst there are potential identifiers pointing to all three within *Amalgam*, directed dramaturgy would appear to be the most relevant:

This is a model [...] in which an artist or group is in charge of the overall performance, i.e. authorship remains with an individual or group who take on the role of director (Rebelo et al. 2008, 30).

Within *Amalgam*, the three physical participants act as both directors and performers, whereas the fourth performer, the digital manifestation of the building itself, is directed through the performance architecture to support the overarching view of the directors.

An interesting discussion could have emerged from an alternative framework: there was potential to realise a model of 'projected' dramaturgy, wherein one performer takes the role of author, and the others as contributors. This was a model that would have invoked a greater level of affordance to be ceded to the network data and therefore the MAC building; it could have become author and primary performer, with each composer contributing their expertise when required. This vision was not realised, but may be seen as a valid avenue for discussion, considering the decisions that were made in relation to degrees of affordance given to performers and entities within the collaborative musical composition.

Cooperative spaces

In a performative setting it is perhaps more appropriate to consider space in terms of 'environment,' encompassing both the physical and the virtual as well as their subsequent relationships (Rebelo et al. 2008, 30). Rebelo et al. posit that a network itself can be "rendered as an acoustic environment in which distance and latency have directly perceptible acoustic implications" (Rebelo et al. 2008, 30). As the "directors" imposed a structural framework to which the network contributed, it can therefore be suggested that the network acts as a contributing 'environment' within the directed dramaturgy: a virtual space that collaborates with a physical one occupied by the performers.

From the outset we strived to incorporate recognisable sounds from the building that captured the essence of its core "identity." This subjective process involved deciding upon

readily identifiable sounds that stood out from the buildings ambience. Sound artist Stephen Vitiello provides compelling examples of how the sonic identity of a building can be revealed. His recordings and installations – for example his 1999 work *World Trade Center Recordings: Winds After Hurricane Floyd* (Vitiello 1999) – often accentuate sounds within buildings that usually go unnoticed, and according to Kim-Cohen, make “direct reference to the spaces of the built environment in which most of us spend the better part of our lives, drawing attention to the boundaries that delimit and contain our senses” (Kim-Cohen 2005).

Not only does this portray an example of a focus on sonic occurrences within a particular building not dissimilar to the intentions of *Amalgam*, it also implies a desire to encourage engagement with the transcendental, shifting attention from the phenomenological to the metaphorical. Comparably, *Amalgam* aimed to employ non-musical data to achieve a similar shift in perception.

Considering Kanés’ view on the restricted development of network affordance, it became apparent that *Amalgam* sought to leverage the role network data obtained from the building had on the final performance. This translation, from the non-musical to the musical, was enabled by the framework that emerged as a result of cooperative efforts, therefore allowing the virtual space of the building to cooperate with the physical space inhabited by the three performers.

Conclusion

Amalgam sought primarily to make use of the public access network data within the building to harness the potential for non-musical material to structure the performance, which would be determined by the amount of ‘affordance’ ceded to the network (Kane 2007). This would be shaped by our approach to the creation of an algorithm that would, in some way, allow the network to act as an additional performer. Considering the ‘amalgamation’ of each performer’s disparate methodologies, and the timeframe of the residency, it was felt that the coalescence of collaboration and cooperation, as described, was the most appropriate approach in terms of satisfying aesthetic considerations and the incorporation of the non-musical network data into the final performance.

It was this combination of collaboration and cooperation – both in the compositional and communication paradigm (Föllmer, 2005) – that meant the final output of *Amalgam* remained dynamic and engaging, achieving core relevancy with respect to the delineated remit of the residency and also with the three participating sonic artists. Though many roles were considered for the data, the flexibility of the approach maintained by the three participants ensured a balance between the level of affordance ceded to the network and the musical content of the work.

A subsequent realisation of the project in April 2013 at the Sonic Arts Research Centre in Belfast demonstrated the potential to further develop the framework of the project in different locations. Again the sound material was gathered from recordings made within the host building, and in this case, the size and length of the data packages from the network were used to control elements of the spatialisation of the sound by allocating this information to various ambisonic parameters. It is therefore concluded that the project has the potential to

be realised in multiple locations, each investigating additional levels of affordance that could be ceded to the network.

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