

From Conceptual Blending to Procedural Blending: Applying a Model of Cognition to Process in Sound Art Practice

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Abstract

This paper is based on a practice-led PhD research project conducted at CRiSAP, University of the Arts London. In this research, a theory of cognition, *conceptual blending* (Fauconnier and Turner 2003), was applied to the investigation of process in sound art practice, resulting in the model of *procedural blending* (Garrelfs 2015).

Conceptual blending posits that everyday, subconscious activities such as cross-domain mapping are involved in combining elements from a range of inputs into new concepts. Procedural blending borrows from and extends conceptual blending to create a tool for considering and articulating process, allowing artists to foreground their own voices within discourse.

Through the notion of inputs, which are blended through an iterative process of making into outputs, procedural blending illustrates how new work is created. Inputs can be drawn from diverse, even dissimilar categories, including media, genres, technologies, approaches, and even personal aspects such as emotions or personality traits can be considered as an input. As a consequence, this research also extends the notion of process to include all that artists might encounter in their lives.

This paper is divided into two parts: The first part introduces the key principles of the original theory of conceptual blending, followed by the adapted model of procedural blending and an illustration based on one of the author's own creative projects, a set of eight compositions released on the CD *Bedroom Symphonies* (Garrelfs 2014). This illustration will also serve to demonstrate blending as a tool for articulating practice. The second part will suggest potential additional applications of the principles of blending, which include a method for creating works, collaborations, capturing process and analysing works and concepts.

Keywords conceptual blending, procedural blending, sound art, process, creative practice

Introduction

Sound art is “explicitly intermedia”, states musicologist Barbara Barthelmes (2006:44), and for a sound art practitioner such as myself it can be a challenging yet crucial task to make sense of and to communicate a potentially broad range of activities succinctly; in my case, practice take place at the cusp of music, fine art and sociology and spans installation, improvised performance and fixed media works (figures 1 and 2).

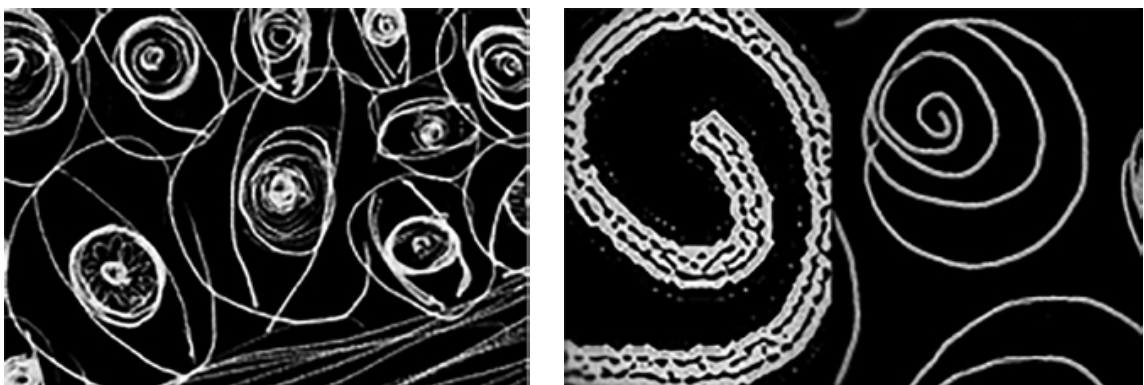
Procedural blending (Garrelfs 2015) was primarily developed as a tool for artists to discern commonalities within difference and to communicate complexity. It borrows and extends concepts from *conceptual blending*, a theory of cognition developed by Gilles Fauconnier and Mark Turner (2003). As part of a practice-led PhD project conducted at University of the Arts between 2010 and 2014, this theory was applied to sound arts process through a series of specifically designed creative projects, a set of collaborative workshops, interviews and commissioned articles¹.

¹ The articles are published as part of an online journal, available from <http://www.reflections-on-process-in-sound.net>. The interviews will be published in book format at a later stage.



Figure 1. Improvised performance responding to textual and graphical “scores” made by the audience during a keynote performance lecture by the artist at Field Studies, Musarc, The Cass Faculty of Art, Architecture and Design, London Metropolitan University in 2015. Copyright: Joseph Kohlmaier

This paper is divided into two parts: The first part introduces the key principles of the original theory of conceptual blending, followed by my adapted model of procedural blending and an illustration based on one of my own projects, a set of eight compositions released on the CD *Bedroom Symphonies* (Garrelfs 2014). This illustration will also serve to demonstrate blending as a tool to explore and communicate practice. The second part of this paper will introduce potential additional applications of the principles of blending: a method for creating works, collaborations, capturing process and analysing works and concepts. These are covered to varying degrees.



*Figure 2. Series of screenshots from the audio-visual installation *Traces in/of/with Sound*, shown at *NOISE and Whispers*, GV Art, in 2013*

1 From conceptual blending to procedural blending

As a theory of cognition, conceptual blending models how concepts are developed in the human mind, how human beings make sense of the world by reducing complexity to more understandable dimensions. At its heart lies the notion that as part of everyday, subconscious mental activities, people select *elements* from a range of *inputs*, which are held within a *generic space*, and connected into a *blend* (see figure 3). Through the blending of elements something new comes into being and the “blend develops emergent structure that is not in the inputs” (Fauconnier & Turner 2003:42). Once in place it can, but does not have to, manifest as a *material anchor*, that is as a physical manifestation of ideas (Fauconnier & Turner 2003:195).

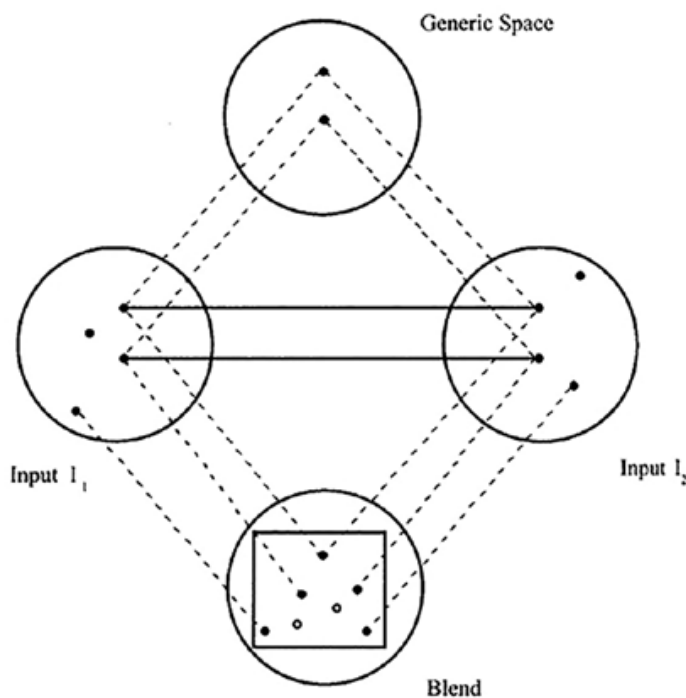


Figure 3. Blend diagram according to Fauconnier & Turner (2003:46)

In conceptual blending, blends can become very complex and inputs can be recruited from a diverse range of categories:

Varieties of meaning that on their faces seemed unequal – such as categorizations, analogies, counterfactuals, metaphors, rituals, scientific notions, mathematical proofs, and grammatical constructions – turn out to be avatars of the spirit of blending. (Fauconnier & Turner 2003:106)

The notion that blends employ very different types of inputs resonates with a creative practice that embraces, for instance, different media (film, sound recording), formats (performance, installation), methods (improvisation, collaging), and sensorial experiences (listening, watching). However, whilst conceptual blending addresses subconscious cognition and the formation of concepts, the creation of sound art is an iterative process that also incorporates conscious responses and physical aspects of making. Procedural blending, therefore, takes some of the key concepts of conceptual blending as a point of departure to offer a model of process through which practice can be explored and communicated from the artist's perspective.

In procedural blending, elements from a range of inputs are combined into an output. Each of these inputs can be drawn from a wide variety of categories, from concepts or commission briefs to tools or physical interactions; everything that flows into practice can become an input. In principle, therefore, the notion of an input equalises the *value* of all potential inputs, although in practice each artist establishes their own selections from the available inputs. In viewing inputs as flexible temporal containers, the system of procedural blending becomes scalable and allows the focus to settle on any aspect of practice, at any granularity, applying the same principles and terminology.

As with conceptual blending, procedural blending *inputs* are made up of *elements*, some of which are selected, whilst others are not. As procedural blending is scalable, at a different resolution an element can be viewed as an input in its own right. For example, the input of sound art contains the elements of installation and performance. Re-scaled from element to input, the category of installation may contain the elements of site-specificity and interactivity. To avoid confusion arising from such re-scaling, procedural blending primarily focuses on the notion of the input to discuss any given work.

Once selected, elements (inputs) are combined as part of a *blend node*; it is the point at which conscious and subconscious decisions are made and con-

nection are established. These decisions are influenced by *blend lenses*, a still unrefined container term which describes a view or indeed any factor that influences the selection of and from inputs. These may include the restraints that using a specific software or a commission brief entail just as it does cultural world views, personal childhood experiences or emotions.

As an iterative activity, procedural blending introduces *blend lines* as temporal trajectories of making. For instance, to develop an audio-visual work, the sonic and visual aspects may be worked on separately for some time, in which case each can be regarded as a blend line, as was done in the example of *Bedroom Symphonies* below. Viewed as a system, the term *blend field* designates an interconnected network of blends and blend lines created in the development of a piece. The outcome of an instance of process is called an *output*. This may be an artwork, a realisation that carries on as an input to subsequent works, or a theoretical text. Figure 4 depicts these concepts and their potential relationships as a flowchart, as a blend diagram of process. I will use such a diagram later when illustrating procedural blending by applying it to *Bedroom Symphonies*.

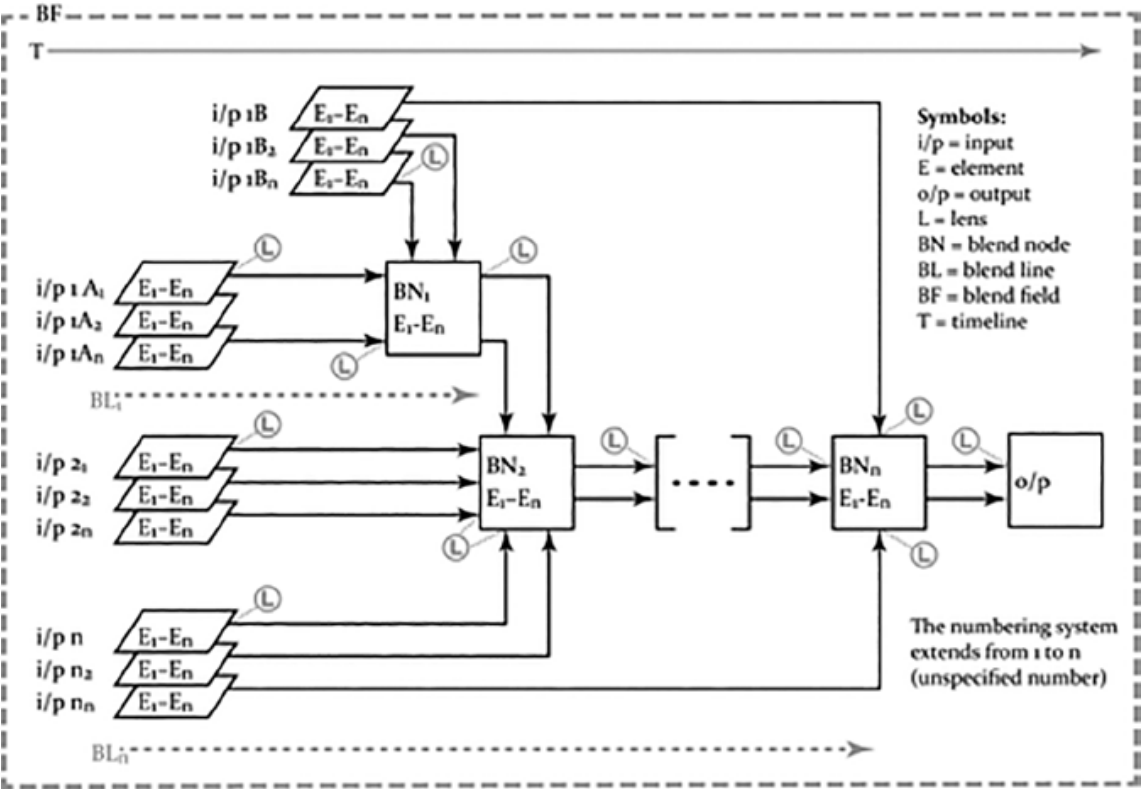


Figure 4. A graphical model of procedural blending in sound art practice (blend diagram)

a set of inputs we select elements affected by lenses (L), resolving themselves within a blend node (BN1). Each choice may be affected by more than one lens. Several trajectories or blend lines (BL) may be involved (BN2). The whole system constitutes a blend field (BF) although we might also examine smaller subsections as such. At any point, new inputs may be added or dropped, or we might re-consider those previously discarded. These steps may be repeated several times, yielding any number of outputs, although the model depicts only one. Whilst input, element and output are notions retained from conceptual blending, the terms of blend node, blend lens, blend line and blend field are adaptations or newly introduced concepts. Some concepts from conceptual blending, for example the notion of a *frame*, were not used in procedural blending.

Procedural blending was developed to aid sound artists in examining and communicating their practice, especially when it is as diverse and complex as in my case. By way of illustrating the concepts introduced so far I will now apply them to one of my projects, *Bedroom Symphonies* (Garrelfs 2014).

Bedroom Symphonies is an album containing eight stereo compositions made from hotel-room voice practice sessions during a number of tours and residencies between 2006 and 2009. The initial process is described in the accompanying booklet as follows:

So, imagine me sitting on a bed, laptop on the night table with my trusted cheap head mic plugged straight into it and you won't be too far from reality.

As the mic isn't exactly the best on the market and it's also done sans soundcard, there is a certain raw feel to the sound – and I have tended to whack up the effects in places. I really like the way you can hear the materiality of the situation in the recording! The result is a rather curious, private piece, a performance entirely without an audience. (Garrelfs 2014:3)

The pieces were composed by collaging this audio material in 2014. The

album is accompanied by a booklet containing photographs from the journeys and a critical review of my work by Brandon LaBelle. The album is available as a digital download and as a limited edition physical CD that includes two small photographic prints (figure 5). The brochure is hosted on a digital platform.



Figure 5. Image showing the CD *Bedroom Symphonies*, including two photographic prints

Viewed as a blend field (figure 6), *Bedroom Symphonies* can be broken down into two simple blend lines, with two respective connecting outputs. Blend line 1 takes input 1 (a series of practice recordings) to a selection stage and a composing stage through to the CD. Blend line 2 takes a series of photographs through comparable stages, and adds LaBelle's essay about my work to the final brochure. Both blend lines come together in the output, which is made up of several parts, a physical limited edition CD with two small-size photographic prints, an online release, and an online brochure. The initial decision to create the CD and its title relate to both blend lines.

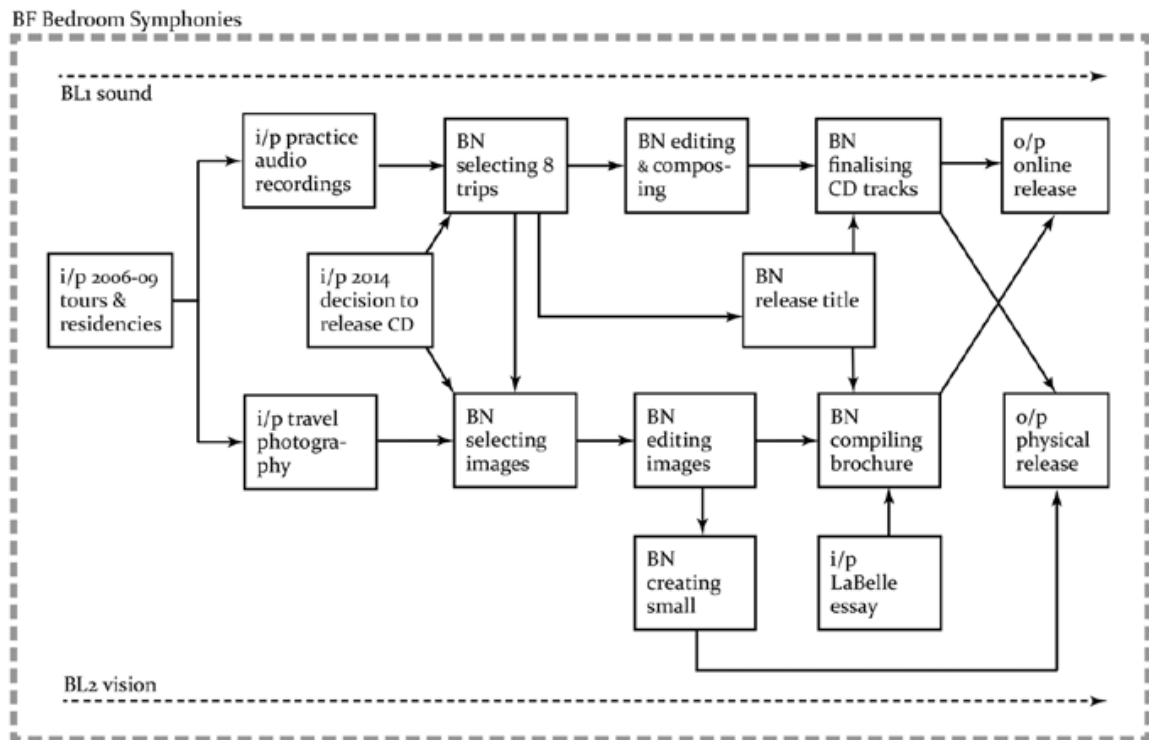


Figure 6. Blend diagram for Bedroom Symphonies

To illustrate the principles of procedural blending the above description of process examines *Bedroom Symphonies* at a relatively large resolution. However, the same concepts can be used to explore practice in more detail. This is achieved by “zooming” into an input and its elements until a more detailed picture emerges, and one input is revealed as an interconnected blend field in its own right. For example, the input of “practice recordings” in BL1 might be examined more closely by investigating the tools that were used there (I have mentioned some of them in the above quotation from the CD brochure). I could also have explored exactly how each individual journey is reflected in the work. In this way, procedural blending articulates process for a specific purpose.

2 Further potential applications of the principles of blending

In addition to exploring and communicating process from an artist’s perspective, further uses of procedural blending principles suggest themselves. These include supporting the creation of new works, facilitating collaborations, capturing on-going process and analysing works or concepts. They are

covered here in the order they are mentioned, although to varying degrees.

The first additional application is a method aiding the creation of new work. Artists frequently find themselves in situations where they need to respond to commission briefs and may find inspiration slow to arrive. This method can help to overcome such difficulties, even if it is not applied fully; the underlying principle here is the generation of inputs and their elements until some of them connect (see figure 7). From each input, an indefinite amount (n) of associations are generated, each of which may yield an equally unspecified amount of sub-associations. Process connects a finite selection, leading to an output.

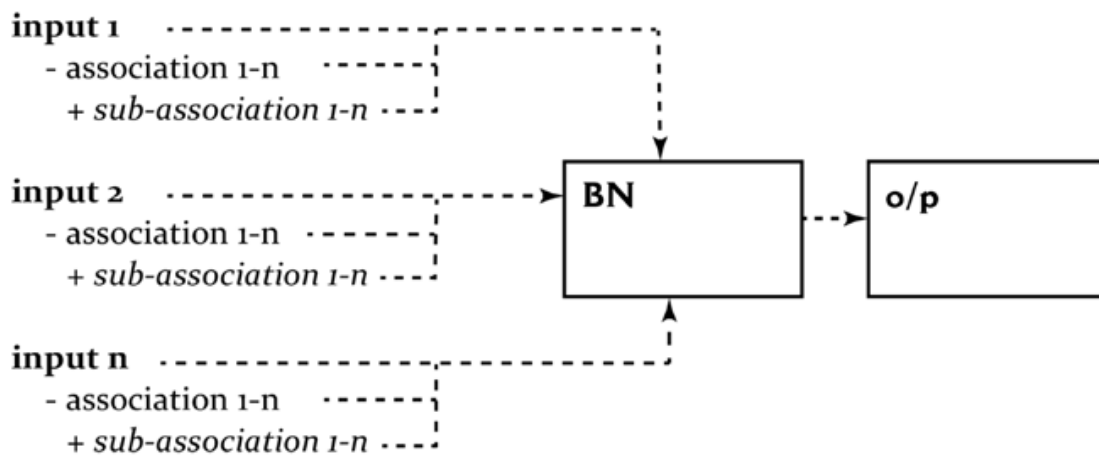


Figure 7. Diagram illustrating the principle of how blending might be used as a method for creating work

record and explore individual topics and factors such as a commission brief as inputs, to which new associations are added as needed. Any association may add a new idea to this list of potential inputs. A 'flip-side' approach, in which the opposite of an initial idea is explored, can also be used to generate new inputs.² Mappings may illuminate familiar inputs by looking at one input in terms of another. As an additional feature, one might introduce surprising and, apparently, completely unrelated ideas to the system, with the aim of exploring potential connections and thereby opening new

² Interestingly, I recently encountered an experimental mathematician, who also described this technique.

perspectives and understandings. To illustrate this I have constructed a hypothetical brief which calls for a site-specific recording based on the location of London's Elephant & Castle (see figure 8).

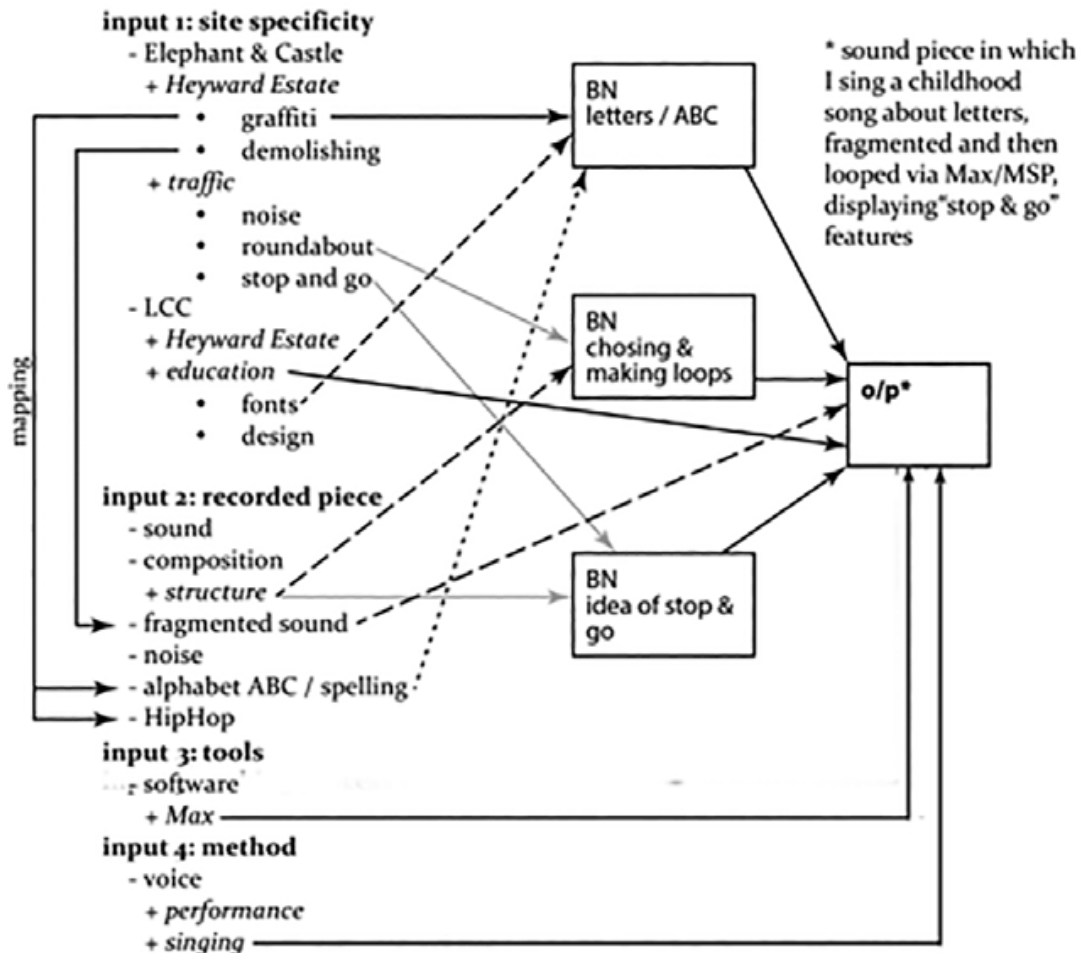


Figure 8. An example of how blending can be used as a method for creating work

Input 1 relates to the site-specific³ aspects and input 2 represents the specification that a recorded piece should be produced. I added input 3 for tools and input 4 for methods. As a second step I generated several associations and sub-associations; some came about through mapping. For instance, applying the idea of *demolition* to *recorded piece* generated an association of

³ LCC stands for London College of Communication, which used to be London College of Printing. The Hayward Estate was left empty for a considerable period of time, attracting graffiti artists, and has now been demolished.

fragmented sound.

For the blend, only some of the generated ideas were selected. This resulted in a hypothetical piece in which I would sing (selected from input 4 *method*) a childhood song (applying *method* to a sub-association in input 1 *education*) which is designed to teach children the *ABC* (mapping *graffiti* in input 1 onto *recorded piece* in input 2, merged with teaching *font* production in *education* to arrive at *alphabet* and the *ABC*), and which in turn is fragmented by a software process in *Max*⁴ (input 3, tools), arranged using loops (an idea derived from applying an association in input 1 *roundabout* to input 4 *method*). The overall *structure* (input 2) is derived from the *stop and go* traffic flow (input 1), meaning that the loops should be used intermittently. In “real life”, the success of each achieved blend would be evaluated and decisions would be taken whether to develop resulting ideas further or not.

Thinking about practice in this way may be useful to artists, and perhaps particularly students, as it makes explicit potential routes by which connections between various parameters of work can be forged, with the potential ultimately to assist the creator in deepening and extending connections across wider areas of their practice.

As we ponder the widening connections between different aspects of individual process, the same principles can also facilitate connections between different people; interdisciplinary collaborations, be that for the purpose of creating art works or for research, may prove particularly difficult, especially where concepts differ widely. Such collaborations may therefore benefit from a tool such as procedural blending (see figure 9).

To begin with, we may understand each discipline or participating collaborator as a blend field, each of which will have key inputs that need to be reflected in the output. Less important inputs will also be present although they might not have to find correspondence in the output at all, or at last

⁴ Max is a digital signal processing environment developed by Cycling 74.

not to the same extent. Each input is made up of a set of elements, some of which may also be more important than others. Making such aspects explicit may enable connections between even very diverse subjects to become visible. We can “drill” into each input or element as deeply as needed until connections are established. Joint evaluation stages are important where participants can comment on the value of achieved connections (blends), from individual perspectives as well as joint goal-oriented viewpoints. At any stage, difficulties arising from the process can be recruited as explicit inputs to the process. “Random” elements could also be introduced; in attempting to connect these with existing inputs, new routes to understanding may be opened.

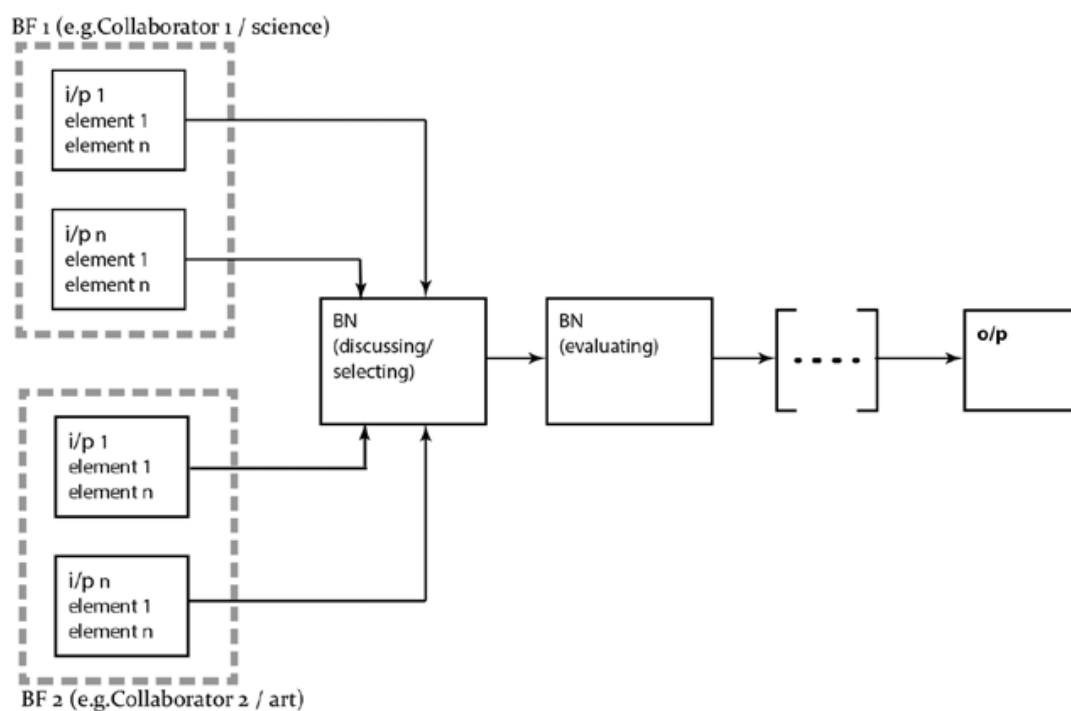


Figure 9. Blending in collaborations

Up to this point I have explored how the principles of procedural blending can aid the process of making; this last section will suggest blending as a means for capturing process and for analysis.

As part of the cross-university research group Collaboration for Research Enhancement by Active Metadata (CREAM),⁵ I have recently introduced

procedural blending for capturing the developmental data of two new audio-visual works, *Smoke* and *Fog*. Using the linked data notebook Annalist,⁶ a software tool by Graham Klyne of Nine by Nine still in its developmental phase, I recorded activities on the basis of the model's principles, noting inputs, decision points (blend nodes), blend lines and, of course, outputs. Respective blend diagrams were designed manually (see figure 10), although at some point it may be possible to extract at least some features automatically. In capturing process through blending, some analogies with provenance and workflow capture became visible.

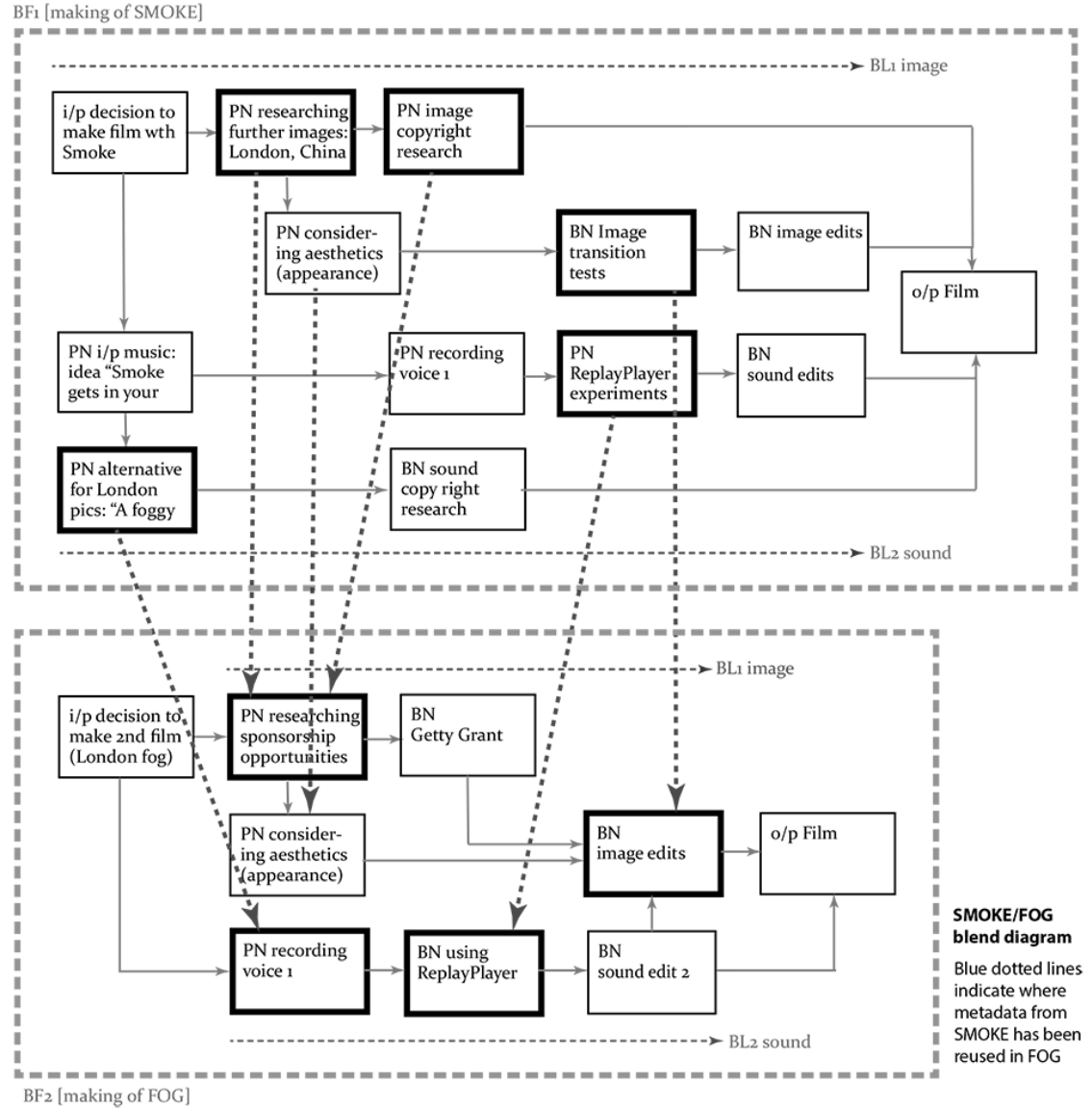


Figure 10: A blend diagram at a low granularity correlating the making of two audio-visual works, *Smoke* and *Fog*, indicating where metadata was re-used

After introducing procedural blending as a tool for discussing process, for creating work, for collaborating and for capturing process, it also suggests itself as a framework for analysing artworks and probing into the meanings of categories. With respect to the original model of conceptual blending, linguist Charles Forceville has already noted its potential for the analysis of multimodal works (Forceville 2004), with a relatively low take-up rate to date, some from the field of music (cf. (Zbikowski 2008, Fatihi 2012)). Using procedural blending as a framework for such an analysis may make this task a little easier.

Lastly, the notion of inputs enables the exploration of potentially very diverse understandings of individual categories, by comparing and contrasting the elements and sub-elements contained in each. As relational and context-dependent constructs, they aid the making of connections between subjective perspectives across cultural times and locations (cf. Garrelfs 2015:105). As a simplistic example, looking at the input of music, do I require music to be harmonic or am I attracted by dissonances and machine noises, as was the Futurist Luigi Russolo (1986) and many others?

Conclusion

In this paper I introduced procedural blending (Garrelfs 2015) as a model of process in sound art practice. It was adapted and extended from the model of conceptual blending, a theory of cognition (Fauconnier & Turner 2003).

In summary, procedural blending is intended as a tool for practitioners that aids the consideration and articulation of practice. It describes a journey of process in which artists select elements from a range of inputs, which are then connected to create one or more outputs. Inputs can be everything that flows into practice, from concepts, tools and commission briefs to personal concerns, methods or physical interactions. As a result, the no-

⁵ <https://blog.soton.ac.uk/cream>

⁶ <https://github.com/gklyne/annalist>

tion of process is also extended potentially to include all that artists might encounter in their lives. Elements are selected consciously or subconsciously, influenced by blend lenses. These may be internal lenses such as likes or dislikes, or external lenses such as commission briefs. Selected elements are then connected to each other within a blend node. A series of subsequent blends is called a blend line, an interconnected network of blends and blend lines a blend field.

These concepts are useful to me as a practitioner in a number of ways. Firstly, they are scalable, meaning that they can be applied to any aspect of practice, at any degree of granularity. Interrogating practice from a range of such perspectives then allows me to communicate both process and outcomes using one strategy, into which any other approach can be embedded as a further input. As an example, I may choose to explore psychological concepts to question the potential input of a childhood experience. When bringing all considerations together I can achieve this through the framework of procedural blending.

Furthermore, the same principles can also be used as a framework that directly aids the creation of work, rather than just articulating its creation; they can assist collaborative efforts by making participants' key concerns explicit and methodically aiding connections to be implemented; they can underpin the capturing of process and support the analysis of artworks or concepts. That said, as a tool and model it is in its infancy, with scope for further refinement in all the aspects discussed here.

Lastly, I would like to warn against over-simplifications, as no isolated aspect of practice can be used to explain its complexity fully. Rather, I would like to echo a comment by art historian Griselda Pollock, made in response to research where algorithms were used to analyse and compare paintings:

To study art history, we need to know about economics, politics, literature, philosophy, languages, theologies, ideologies while also studying to understand how art thinks. Art thinks through making, through forms, through materials. And over the past century, art history has

been enriched by feminist, post-colonial, queer, and trans-national perspectives. (Pollock 2014)

As “art thinks through making”, procedural blending seeks to be a tool that aids artists in articulating their process of making, allowing us to insert our perspectives into the discussion and to foreground our voices within this complex and constantly shifting discourse.

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