

## Cooperative Experimentalism: Sharing to enhance electronic media

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### Abstract

This article explores the impacts of information sharing and experimentation on electronic media practitioners. It draws on characteristics of ‘open’ or ‘DIY’ cultures prevalent in the technological ‘maker’ movement and suggests that we collectively describe such practices as cooperative experimentalism. In particular this article focuses on the discipline of music and describes how adopting an approach to making that privileges sharing of tools and knowledge might be a useful strategy in the development of handmade electronic music instruments and associated live performance practices. The implications of such trends in electronic media suggest that the notion of cooperative experimentalism may well apply more generally to creative electronic media practices in our (post) digital age.

### Keywords

Sharing, Tools, Production, Music, Media, Collaboration, Electronic, Online, Open.

### Introduction

There has been a huge growth in the DIY and Maker communities since the 1990s. This partially reflects the democratisation of technologies and the increasing digitisation of the creative industries. It also reflects a spirit of self-sufficiency and individual expressiveness that can be seen as a reaction against mainstream processes of virtualization and abstraction that are features of much commercial digital developments. In an academic music context David Tudor’s pioneering work in combining instrument making and composition is well recognised [1]. Another musical example of this integration of tool making and aesthetic production is the Composers Inside Electronics (CIE) group Tudor started in 1973 and whose ongoing practices are coordinated by John Driscoll.

In more recent years, networks of hackerspaces and maker communities have arisen in domains well beyond the domain of music or even of electronic arts. These feature physical spaces and face to face workshops and have further expanded as online repositories and forums. Music activities have been part of this growth and include enthusiasts building modular synthesizers, musical robots, microprocessor-based sound generators, and constructing devices from open-source hardware and software tools. With the expansion of online networks and inexpensive

microelectronics “interest in DIY electronic music has been reinvigorated and rekindled with new agendas, motivations and new resulting communities” [2: 242]. The expansion of the New Interfaces for Musical Expression (NIME) conference has been a parallel development in the academic space.

We recognise that instrument design and manufacture have been an integral influence on musical practices for centuries, and a number of histories of this development exist. Some trace this history as technical evolution [3], others take a more sociological perspective [4] or a musical approach [5]. The role of craftwork guilds and master-apprentice relationships have been at the heart of knowledge and skill sharing through this history.

Today, practitioners who work in the musical maker space blur the boundaries of traditional musical occupations; acting variously as performer, composer, producer, and instrument maker. Thus, traditional notions of how these occupations function are found lacking to describe contemporary practice [6,7]. In particular, it seems that over time instrument making, and tool making more generally, have been divorced from formal musical practices. Instead, scholars have become focused on composition and performance skills. Ignoring the fact that, as De Souza observes “musical knowledge is grounded not in bodies alone, but in the interplay of techniques and technologies” [5: 2]. The guitarist Derrick Bailey put the idea more directly, writing “The instrument is not a tool but an ally. It is not only a means to an end, it is a source of material, and technique for the improviser is often an exploitation of the natural resources of the instrument” [8: 99]. More generally, we suggest, technologies, techniques and practices are part of a network of creativity for musicians that needs further study because too often the sociotechnical aspects of musical practices have been ignored [9]. Magnusson’s theory of digital instruments as epistemic tools [10], reinforces the point that in musical contexts designed artefacts (tools) are extensions of human cognition. In digital instrument’s, he argues, “the distinction often blurs between instrument and composition on the one hand, and performance and composition on the other” [10: 168]. And so, despite its growing prevalence, the structure and dynamics of what we are calling cooperative experimentalism are not clearly understood, especially in the context of creative activities such as music. In this article we highlight the characteristics of cooperative experimental practices and how they drive innovation in musical tools, techniques and

practices and how these, in turn, are catalysts for cultural enrichment and development.

More particularly for experimental electronic artists, often the DIY approach goes hand in hand with an exploration of musical affordances of materials. This included an embrace of the glitch with its echoes back through 20th century avant-garde music [11]. We are especially concerned here to emphasise the development of tools (especially bespoke musical instruments) and practices (music making) as facilitated by elements of sharing culture that have grown up around the open source and maker movements.

### Cooperative Experimentalism

We use the phrase ‘cooperative experimentalism’ to include democratising trends in the exploratory use of electronic and digital technologies often described with terms like; ‘maker movement’, ‘open source’, ‘sharing economy’, ‘participatory design’, or ‘Do It Yourself’ (DIY). In one sense this is commonplace because “Doing-it-together (DIT) and the idea of community and shared experiences are at the root of DIY practice” [12: 274]. However, the fragmentation of terms highlights a lack of conceptual, let alone practical, coherence that this article aims to help draw together. The term cooperative is, we feel, more descriptive than the terms ‘open’ or ‘sharing’ and implies assistance as well as access. The term ‘experimental’ pushes toward more enquiring and disruptive ambitions in contrast with routine team work that is frequently present in craft-based productions. The phrase shares resonances with ‘crowd sourcing’ in that it assumes many heads are better than one and prioritises diversity (building on the shoulders of giants) over homogeneity (the wisdom of the crowd). An underpinning assumption is that encouraging greater diversity and experimentation leads to greater innovation in tools, practices, and cultural forms. This diversity arises because, as Jef Chippewa notes, “DIY audio and sound art practices celebrate the unique visions and practices of the individual artist” [13]. This diversity may arise in a number of musical planes; instrument design, compositional techniques and styles, performance practices, music distribution processes, and other means of production. This is in contrast to many musical traditions that celebrate the reproduction of repertoire and technique, and that prioritise virtuosity over originality. Creating music with electronics and code involves working with media that have few predefined sonic constraints and therefore implies “a disposition towards processes, connectivity, and relationships—how things [and people] may or may not interact with each other” [2: 246].

### Sociotechnical aspects of electronic music

The interactions between technologies and musical practices, or performance idioms, are rich with meaning and significance. This article focuses on how cultures of sharing

amongst instrumentalists and instrument makers help shape the dynamics of that interaction and thus the development of those practices and idioms. In the words of musicologists Jonathan De Souza, musical instrument technology “is not immutable. Its stabilization requires active maintenance, and though the social actors that reproduce musical instruments and idioms often act in predictable ways, they do not always do so. In other words, instrument and idiom may be transformed as well as preserved.” [5: 81].

There are many varieties of electronic music practice in the world today, and as new technologies continue to develop so do opportunities for increased diversity of musical expression. Musical scenes [14] have long been influenced by the instruments and tools employed within them, these scenes foreground electronic musicians who create and develop their own instruments and are engaged with some of the principles of DIY and maker culture. Cultural practices are intimately intertwined with the technologies designed to express them. Especially in electronic music genres, the innovations in musical practices are strongly tied to technological designs. These “act as traces of the authoring entities that created them” [15: 169] and are as indicative of a musician’s creativity as are the compositional or performance expressions.

A number of publications have focused on particular electronic music scenes; modular synth community, experimental music [16], algorithmic music [17], and synthesizer culture [18]. A central location for the academic study of experimental electronic music culture is the community that has formed around the New Interfaces for Musical Expression (NIME) conference. In this community there has been some documentation of existing workflows in collaborative electronic instrument making [19, 20]. These surveys provide useful insights into the design and use of musical tools which typically involve an iterative cycle of experimentation and consolidation. They show that mostly cooperation is within a geographically collocated team. Often absent from these accounts is mention of the reliance on online sharing systems.

### Sharing Tools and Platforms

A variety of tools, often open-source, are available for electronic music making (Pure data etc.). A number of platforms have been designed for collective music performance, sometimes called network music - such as Malleable Mobile Music [21], Jam2Jam [22], the Musebots framework [23] and the Modulome System [24]. Similarly, and perhaps even more prevalent, are platforms for collaborative composition, such as PIWeCS [25] and Sonic Sketchpad [26]. In recent years, low cost tools for electronic music have proliferated in both pre-constructed and kit form: for example Teenage Engineering, Mode Electronics, Bugbrand, and Dirty Electronics [12]. Well-known sources of technical knowledge and aesthetic inspiration have developed in parallel, these include multiple iterations of the ‘Atari Punk Console’ that emerged via Radio Shack booklet in 1980, the online community that developed

around Stanley Lunetta's instruments, the book *Handmade Electronic Music* [27] and the recent internet sensation 'Look Mum No Computer' [28]. A number of collaborative platforms are already in common use. They include Reddit forums, GitHub repositories such as the music collection (<https://github.com/collections/music>), and communities of audio and video programming enthusiasts who share and discuss their projects on [patchstorage.com](http://patchstorage.com) and the like.

These examples demonstrate the growing interest in the DIY electronic music field. However, many initiatives arrive pre-formed. Detailed discussion and documentation are only common around the resolution of technical problems and they tend to gloss over problem-solving strategies. Aesthetic and intellectual issues are also often under-explored and creative process is poorly documented. But this is not to diminish attempts that have been made.

Vallis et al. [29] discuss the use of open source sharing in supporting the iterative development of electronic music hardware. They make it clear that such sharing supports the evolution of electronic music devices, as is evident in Maker practices and open source software communities. However, they limit their investigations to the traditional sharing of designs and techniques and do not explore collaborations amongst a community of musicians nor discuss the relationship with performance practices and sonic aesthetics. Both these studies used interviews with participants and explanation of how online tools were used in their studies.

The need for a repository to support sharing amongst the electronic music community has been recognised and found concrete expression in calls for a NIMEHub, one of the aims of which was to "Facilitating collaboration between geographically separated institutions in areas including instrument (co)design, composition and performance" [30: 2]. This facility is still in the planning stages and if it becomes available it could be a useful tool.

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Whilst these examples are illustrative of the potential for DIY experimentation to have a significant impact in electronic music practices, there is currently not a sufficient understanding of these processes nor any systematic approach that might make these examples more prevalent. More work is required to better understand developmental aspects of experimental electronic music design and production. We hope that the identification of cooperative experimentalism as a label for these practices can assist to foster a perspective that leads to this further work.

## Conclusion

While there is a growing literature about the importance of the DIY and maker processes in academic discourse this is from a low base; as identified by Cantrell in an examination of the primary outlet for this field, the New Interfaces for Musical Expression conference. "The relative lack of presence of the hacker/maker area in the NIME written corpus may be due to the nature of the proceedings format itself, as it tends to mimic the validation mechanisms present in academic art and science institutions" [15: 171]. We suggest that what is required is a multidisciplinary approach to addressing the practical and theoretical aspects of music practice that can help facilitate cooperative experimentalism.

Such an effort is necessary to assist creative practitioners to take advantage of the possibilities of newly emerging (and fast changing) sharing platforms and to assist the collaborative development of new software and hardware tools. Such sharing platforms change what it means to be a musician in the 21st century. In this article we hope to encourage electronic artists to better take advantage of the growing interest in making with technology to support cultural innovation through the identification of such practices as collaborative experimentation.

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