

# Surfing with Sound: An Ethnography of the Art of No-Input Mixing

Starting to Understand Risk, Control and Feedback in Musical Performance

Alan Chamberlain

School of Computer Science

University of Nottingham

Nottingham, UK

[Alan.Chamberlain@Nottingham.ac.uk](mailto:Alan.Chamberlain@Nottingham.ac.uk)

## ABSTRACT

The idea of No-Input Mixing may appear at first difficult to understand, after all there is *no input*, yet artists, performers and sound designers have used a variety of approaches using such *feedback* systems to create music. This paper uses ethnographic approaches to start to understand the methods that people employ when using no-input systems, and in so doing tries to make the *invisible, visible*. In unpacking some of these techniques we are able to render understandings, of what at first appears to be a random and autonomous set of sounds, as a set of audio features that are controlled, created and are able to be manipulated by a given performer. This is particularly interesting for researchers that involved in the design of new feedback-based instruments, Human Computer Interaction and aleatoric-compositional software.

## CCS CONCEPTS

• **Human Centered Computing** → **Collaborative and social computing**; Collaborative and social computing theory, concepts and paradigms; Social content sharing; Collaborative content creation.

## KEYWORDS

Ethnography, Autoethnography, Feedback, Mixing, Non-Input, Semantics, Methods, Design, Music, HCI, Experimental, Qualitative, Sound Art, Noise

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## 1 INTRODUCTION - Surfing with Sound

This study takes an autoethnographic stance and starts to unpack some of the features associated with no-input mixing. Autoethnography is purposefully used as a mechanism to better appreciate and provide a more personal/human way of representing the world. I take this approach as it is highly suited to understanding the ways that musical skills are developed and the personal, emotional nature of making music, as Bartleet and Ellis discuss in their seminal text *Music Autoethnographies* [1]. As I have witnessed from earlier Audio Mostly conferences such approaches [2] can help support designers and system developers by offering a range of implications for design. In my earlier work I have employed such methods, based on writings by Sudnow [12][13].

As Cremin [5] writes, “*The fresh opportunities for exploring space, time and emotion offered by autoethnography are put to use to attempt a synthesis of research, philosophy and personal history, as well as to find new ways of engaging*”. We use the metaphor of *surfing* in this piece and we shall expand upon this at a later point.

I hope that people will find the piece interesting and insightful and be able to see the ways in which this work can support the development of new instruments and tools that might support musical creativity. In many respects the work in this short paper is as much about the exploration of using new emergent methods in the field to understand interaction and audio as it is about the practices that are used in the creation of music using feedback as a mechanism through which to create music.

Although this work isn't a technical piece discussing the engineering and technical design of mixers, it is important to briefly describe what no-input mixing is, before we move back into the descriptive, reflective style of writing that make up the majority of this paper. In ‘*Electronic and Experimental Music: Technology, Music, and Culture*’, Holmes [8] writes:

“*the so-called "no-input mixer," an audio mixer wired such that its output is connected to its own input: no external signals are introduced. It thus becomes an instrument capable of being played via manipulation of its tone and volume controls, and the range of sounds that can be produced is extraordinary.*”

## 2 STEIM, Sound and Sight

I'd started looking at issues relating to Autonomy and Control in music creation a while ago and had been researching algorithmic, generative and aleatoric composition [3][4] when I came across no-input mixing whilst carrying out research [11] and running a workshop at STEIM<sup>1</sup>.

It had been a week-long session where people were working on expanding the features of their own custom digital instruments. People had turned up in the morning and had all kinds of exotic and wonderful creations that one could bend and stretch, wear, wipe and scrape. As people set to work on their creations, I noticed that one person just had what looked like a mixer. I'd not even noticed the mixer to start with, I thought that it was just a piece of kit that other people might use to run their instrument into the PA or something of that nature, but as I sat and watched I noticed the person connect the mixer to the laptop via an audio interface and grab a handful of patch cables that were lying on the table.

Sitting down with his headphones on he slowly started to plug in the short coloured patch cables into the mixer and stare at the board intently, almost mesmerized by its cacophony of dials, buttons and lights. Slowly and meaningfully he started to adjust the odd dial, add another patch cable and re-patch – listening intently as he made his thoughtful moves. This was my first experience with no-input mixing, there was nothing sonic about it, it was a purely visual experience. When he removed his headphones for what appeared to be a mental break I asked him what he was doing and discovered it was something called no-input mixing. I needed to find out more and discover this 'art' for myself.

### 2.1 Kitting up and Starting to Patch

I'd headed home after a week at STEIM and started to experiment, or rather attempt to understand what other people had done and how I could attain that level of skill. As I pondered this I'd been reminded of Sudnow's exploration of computer games in the 80s [13], how he'd gathered gaming skills and started to think about the practicalities involved in building what ethnomethodologists called 'vulgar competence' (I wanted to be an *insider*) [7] and how developing that competence and somehow becoming a member (a member of a group that understands the practices associated with given phenomena) was in itself something that was bounded by context. The situated nature of learning an instrument is something that I hadn't really thought about before and in trying to learn about how to do something like no-input mixing you are pulled into a world of musical exploration, experimentation, improvisation, hacking, patching, art and academia.

I'd tried to watch videos on YouTube, find out more on Wikipedia to discover who the known figures were in this 'genre', I'd even read the odd forum post on Muffwiggler (a popular modular synth/music tech forum <https://www.muffwiggler.com>), where there appeared to be a slight obsession with equipment, did I have the right kit? The forum mentioned Toshimaru Nakamura

(<http://www.toshimaru-nakamura.com>) as a known no-input artist, other people in the forum discussed the way they had 'played' with this sort of no-input thing while at Art School in decades gone by.

I found videos on YouTube spent some time trying to work out what Nakamura was doing, listened to tracks on Bandcamp and read interviews, but there was much more to this than met the eye, how could a small movement of a dial produce so much noise, how could one understand these phenomena by merely observing? It was something that had to be done to be understood. I remember a blues guitarist friend saying that his friend, a professional blues guitarist now inhabited this world, in a rather demeaning way he used the term Squeak Bonk, and that's what it became known as in the household. I dug out my Soundcraft EPM6 mixer, a set of short cables and started to patch.

## 3 The Mixing Board

I'd read that people call the mixer the board, or at least the collection of mixer patches and the other 'stuff' that forms part of the set-up. The board is effectively the whole set-up, and that set-up is essentially a platform for your mixing. Looking at it from a guitarist's, or Ableton Live user's perspective I started to wonder what the myriad of controls on the mixer meant, what did they do – this was the interface? But that interface is designed for mixing inputs, not creating audio. In fact, isn't it a bad thing to create a noisy signal?

The thing about no-input mixing is that it appears to be a very contrary way to go about creating music – using a mixer as an instrument, using feedback and dealing with a system that feels like it has a life of its own. I'd carried out some initial studies, observing someone at STEIM use their no-input set up, we'd even had a session where we'd played together. However, what is happening on the board is often invisible to the observer, the invisible work of no-input mixing brings tangible, audible and visual, working with the 'feedback', catching the 'wave', *surfing with the sound*. It feels natural, immersive, exhaustive and fluid. I'd got in touch with the person that I'd originally seen doing no-input mixing pieces of advice (or rather I was told what to do): plug the output into the aux using the patch cables, you don't need patch diagrams, keep the volumes low, be careful of your hearing, don't use good equipment. It appeared to me that there was an element of danger in all of this, was I going electrocute myself, blow my speakers, kill the mixer or at worse deafen myself? I thought back to the people that I'd seen doing this sort of thing, it appeared at odds with the evolving, ambient, delayed, reverb-chilled sounds that I'd heard. It was time to start patching.

### 3.1 Playful Patching and Patterns

I'm looking at the mixer, the thing about mixers is that there are a lot of possibilities, patch cables that can be added in different ways, buttons, dials and faders. All of these have a different and somehow semi-predictable, but often not, impact upon the sound. Interacting with the mixer is playful and reminds me of research work that I'd

<sup>1</sup> STEIM (STudio for Electro Instrumental Music)

done on the D-Box [10] (a playful instrument). Using the no-input mixing technique is about discovery and explorations, maybe sticking with a ‘patch’, building a soundscape. There’s a temporal nature to the interaction that brings together learning what the system is and the constituent parts of the system do and trying to build on that knowledge.

As I plug in cables I remember them and the actions that they perform in relation to their colour and where they are patched. In figure 1., yellow aux – continuous tone plugged in, unplugged will give a pulse. I start to develop techniques for unplugging, you don’t need to pull them all of the way out, just a small way out, so the shaft of the plug is showing. This speeds up my experimentation.



**Figure 1. The Mixer set up – a myriad of flashing lights, dials, patch cables and faders**

I find that one of the dials on the mixer is slightly loose, I gently nudge it with my finger, it effects the noise. This is good find, I remember the dial – red top right, first row. If I wiggle it almost sounds like a basic wah-wah sound. I alter the faders, they appear to have no impact on the volume, but I get a rhythmical pulse, I move 1 fader it alters the pitch, the lights on the mixer are flashing in time with the pulse, I slightly turn a red gain knob – nothing. I try another, and it speeds up the beat – I have pitch and tempo controls, two of the faders control this for the moment.

I unplug the patch going into the last channel, the pulsing stops and turns into a tone, I plug it back in and the pulsing starts again. I move back to my loose dial, I wiggle it and it has no effect this time. It’s not something that will work all of the time, but something that can be pulled upon if available. It’s obvious to see there is some reasoning behind the way that no-input performers build up a performance on their understanding of, and the ways in which various patching patterns are learnt. Not all of them work all of the time, there’s an element of chance.

#### 4 Knobs, Faders and Falling Back

You’ve got a mixing board with a lot of controls, these appear to act in a random way, sometimes. Attempting to control the ‘autonomous’ and ‘random’ nature of this means that there needs to be a quick and easy way to ‘fall back’, in many respects this is akin to the stop button on a piece of industrial equipment or a safety critical system. It’s a way of instantly stopping what is happening (at least on an audible level). And unlike many other moves that one can make in no-input mixing, it works every time. Turning the volume down will enable the performer to stop what is happening, but also, should they choose, it can bring the noise back into existence. It’s possible to use this technique as a gentle way to fade out of something that is on the verge of being too ‘harsh’ (feeding back) for the performer or audience, to try to bring invoke something that might be of a different musical texture and more rhythmical or ambient sounding. Fade out – change settings – fade in and repeat until you find something that you like.

I’d made notes about the features relating to the ‘fall-back’ position the first time I saw no-input mixing, I’d seen these sorts of practices when watching someone at STEIM, you could hear and feel the feedback getting louder and more intense, but just before it got the point of no return the performer would pull all of the faders down to zero, and then start to build up the noise again.

I’d read that it was possible to input audio into the mixer and that, that could become part of the evolving ongoing soundscape that performer and mixer created. I’d developed a couple of techniques for creating different sounds, I’d been using two patch cables instead of a single cable and touching the ends together to create a connection and this added some fuzz to the sound, I’d also found that adding one’s finger to the end of an un-plugged patch cable can have an effect, but I’d never thought about putting something into the mixer, after all this is called no-input mixing, so the idea of running something into the mixer appeared at odds with the ethic of no-input mixing. I take out the patch cables to start from new, I record a sample on to the Zoot (a low-cost sampler). I then plug it into the mixer. I listen to the sample coming through the speakers, I add a patch cable from the input on the second channel to an aux. It distorts the sound, I go on adding path cables and the sample, although still audible gets pulled into the mix of sounds and pulses emanating from the mixer. I start to play and experiment with the dials again, I lose the sample I can no longer hear it in the mix. I try and turn up the gain in the first channel to bring the sample into the mix, but it just isn’t there. I start to work backwards taking out patch cables to find the original sample, but it isn’t until I reach the last cable that I start to hear the sample once more. It becomes apparent that trying to have/keep a given sound in the mix is difficult and that the channels somehow start to stop working independently once the patches start feeding back upon themselves.

I’d been in contact with a no-input mixer performer and later find out that it was also possible to build a more complex system by adding effects pedals between the patches so that these would feedback on themselves. Adding effects into the patches is something that would need more time to explore, but it’s obvious

how this could expand the sonic properties of the system, but for now I was sticking with the patch cables.

## 5. In the Loop

Mixing requires a lot of attention, both to the physical mixer and to the sound, a small movement can have a large impact on what people hear, it becomes an immersive experience and it's somewhat of an intense experience that consumes you both during and post the experience, that somehow left me feeling slightly sea sick. Audio can have this effect, I've felt it before moving from dry studio spaces into rooms full of heavy reverb.

People tend to forget that no-input mixing is a physical thing, patching, turning knobs, pushing buttons and sliding faders. It requires the person doing the mixing to actively pursue sounds. It's not possible to just plug in the mixer and walk away, each turn and push can create a different sonic possibility and another sound that can be surfed. In the introduction I briefly allude to 'surfing', and there's a good reason for this. Liberman [2016] discusses surfers, some waiting for a wave (the surfer line up) to catch, but he also talks about himself trying to catch a wave and failing, but watching a boy adeptly catch a small wave and the skill in which he was able to do that. This attunement is fundamental to no-input mixing, there's a skill and understanding in being able to work with the sound, catch the wave and surf with sound. To be proficient at no-input mixing you need to know the board, fallback strategies, how to create rhythm, constant tone, distort and alter pitch.

The interesting thing here, is that what at first appears to be a somewhat random activity, is in fact heavily controlled, and it is the controlling and manipulation of the sound that requires the skill and knowledge to be able to perform and compose. In terms of creativity there are factors and emergent sounds that evolve from the interaction between performer and mixer, but these might not necessarily be predictable, or need to be.

## 5.2 Implications for Design and Future Work

Traditionally, ethnographic papers in Human-Computer Interaction (HC) and Computer-Supported Cooperative Work (CSCW) end with a section that highlight some of the findings of the study and start to outline the implications of the findings for design [6]. In this section drawing on my findings I start to tease out some of the features of no-input mixing and ways that these features might be used, in this case in the development of systems for music creation.

In many respects no-input mixing is an odd thing to draw inspiration from. The system isn't 100% predictable, the sound is evolving and fighting feedback can be a near constant issue. However, the point is that such systems are interesting and enjoyable to use (I certainly found them engaging) and creating music is about engaging in a diverse range of practices that might give the composer a 'platform' on which to develop and base ideas, in the same way that the surfer needs a wave on which they can surf. At this early stage we've found out that predictability and randomness aren't an issue (in this context), but future work will

aim to explore the nature of no-input mixing in a live situation and when performing with others.

Being able to take some of the features from no-input mixing and employ them into software could be difficult, particularly in respect to the physical nature of no-input mixing. However, systems could be produced that may be able to emulate the ongoing, emerging tones that no-input mixing produces, and there may be parameters with the composer/performer might set before using the system to avoid feeding back, although arguably that part of the engagement/interaction has an enjoyable mesmerizing quality that arguably few digital pieces of music software find difficult to produce. Perhaps a system that had a core physical element that allowed people to interact with it in a physical way may be a way forwards, but in order to fully appreciate this a design workshop needs to be done.

## 6 CONCLUSIONS

This short paper has started to unpack the practices associated with no-input mixing using autoethnographic techniques. The work is both an exploration and development of the technique and as a way to understand no-input mixing practices. The ongoing work aims to further document and analyse no-input mixing techniques in order that we might understand how such evolving, semi-predictable systems are used, might be used to inform the design of other generative, evolving systems and also tell us about performance techniques that are in many respects under-studied, but understanding approaches to using feedback systems could inform the design of future music technologies.

I have also started think about new ethnographic methods that might be employed to further expand and understand musical meta-creation. It is through studies such as this that we can develop our understanding of the way that music is produced in a variety of contexts and how those understandings start to form the basis and implications for design.

My next step of the research is to examine live performance, collaboration, cooperation and the ways in which features such as control and randomness are dealt with in such settings.

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## REFERENCES

- [1] Bartleet, BL & Ellis, G. (2009) "Music Autoethnographies", Australian Academic Press.
- [2] Chamberlain, A., Bødker, M & Papangelis, K. (2017) "Mapping Media and Meaning: Autoethnography as an approach to designing personal heritage soundscapes" Audio Mostly 2017: Augmented and Participatory Sound/Music Experiences, 23-26 August. Queen Mary University of London (London, UK) ACM - DOI 10.1145/3123514.3123536
- [3] Chamberlain, A. (2017) "Are the Robots Coming? Designing for Autonomy & Control in Musical Creativity & Performance." Audio

- Mostly 2017: Augmented and Participatory Sound/Music Experiences, 23-26 August. Queen Mary University of London (London, UK) ACM - DOI 10.1145/3123514.3123568
- [4] Chamberlain, A., Bødker, M., Hazzard, A., McGookin, D., De Roure, D., Willcox, P & Papangelis, K. (2017 ii) "Audio Technology and Mobile Human Computer Interaction: From Space and Place, to Social Media, Music, Composition and Creation", In the International Journal of Mobile Human Computer Interaction (IJMHCI) Volume 9, Issue 4, October - December 2017 pp. 25 - 40. DOI 10.4018/ijmhci.2017100103
  - [5] Cremin, H. (2018) "An autoethnography of a peace educator: Deepening reflections on research, practice and the field" in the journal of Emotion, Space and Society Volume 28. DOI 0.1016/j.emospa.2018.05.001
  - [6] Dourish, P. (2006) "Implications for design" In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '06). ACM, New York, NY, USA, 541-550. DOI 10.1145/1124772.1124855
  - [7] Garfinkel, H. (1984) "Studies in Ethnomethodology", Polity Press, Cambridge.
  - [8] Holmes, T. (2016) "Electronic and Experimental Music: Technology, Music, and Culture", 5<sup>th</sup> Edition, Routledge.
  - [9] Liberman, K. (2016) "Rules as Ethnomethods: Surfing in Denmark" Public Lecture given in Denmark (October, 2017) <http://emca-legacy.info/rules.html>
  - [10] McPherson, A., Chamberlain, A., Hazzard, A. McGrath, S. & Benford, S. (2016) "Designing for Exploratory Play with a Hackable Digital Musical Instrument", Proceedings of Designing Interactive Systems, DIS'16, June 4 - 8, 2016, Brisbane, Australia. ACM Press. Pages 1233-1245. DOI: <http://dx.doi.org/10.1145/2901790.2901831>
  - [11] Morreale, F., Moro, G., Chamberlain, A., Benford, S. & McPherson, A. (2017) "Building a Maker Community Around an Open Hardware Platform". Proc. CHI'17, Denver, USA, 2017. DOI 10.1145/3025453.3026056
  - [12] Sudnow, D. (2001) Ways of the hand: a rewritten account; foreword by H.L. Dreyfus. MIT Press.
  - [13] Sudnow, D. (1983) Pilgrim in the Microworld, Heinemann.