<http://www.diva-portal.org>

This is the published version of a paper presented at *CHI 2016*.

Citation for the original published paper:

Andersen, K., Knees, P. (2016)

The Dial: Exploring Computational Strangeness.

In: *Proceedings of the 2016 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '16)* New York, USA: ACM Press

<https://doi.org/10.1145/2851581.2892439>

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:kth:diva-214012>

The Dial: Exploring Computational Strangeness

Kristina Andersen

STEIM

Achtergracht 19

1017WL Amsterdam, NL

kristina@tinything.com

Peter Knees

Department of Computational

Perception

Johannes Kepler University

Linz, Austria

peter.knees@jku.at

“First, you build the machine, then it tells you what it’s for. A machine is only a kind of magnet for attracting Use. That’s why we say things are Useful — because they are all full of the Use that chose them to perform itself.” Catherynne M. Valente [17]

Abstract

This paper describes the process of a computational idea emerging from a process of user engagement: algorithmic recommendations as artistic obstructions in creative work. Through a collaboration between HCI and Music Information Retrieval, we conducted open-ended interviews with professional makers of Electronic Dance Music. We describe how the idea emerged from this process, and consider how algorithmic recommendation systems could be re-considered as tools for artistic inspiration. We propose the concept of a “Strangeness Dial,” which allows the gradual adjustment of the degree of desired otherness, which is tested through the use of a non-functional prop and a series of interviews.

Author Keywords

Participatory; recommendation; defamiliarisation; interviews; creativity

ACM Classification Keywords

H.1.2 [User/Machine Systems]: Human Factors; H.3.3 [Information Search and Retrieval]: Information Filtering

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the Owner/Author.

Copyright is held by the owner/author(s).

CHI’16 Extended Abstracts, May 7–12, 2016, San Jose, CA, USA

ACM 978-1-4503-4082-3/16/05.

<http://dx.doi.org/10.1145/2851581.2892439>

Context

The ideas described in this paper emerged from within the context of a larger research project on creative tools for expert producers of electronic dance music. The underlying concern for the project is to not just improve existing user interfaces for electronic music, but to aim for interface structures that fit better with our associated musicians' mental images of the music they make.

As such the user involvement in the project is focused on going beyond technical testing, and instead aim for a coherent impression of how new interfaces may benefit the real-life creative process of the musicians. To this end, we have been conducting interviews in a fashion that fits within the work-flow and interpersonal communication style of the music professionals we ultimately aim to support creatively with the outcomes of the project [5] (cf. figure 1).

Figure 1: Interview in progress.

An Idea Emerges

Over the last year we have conducted 51 in-depth interviews with expert users on location at music events, such as Red Bull Music Academy, Amsterdam Dance Event and Sonar. The aim of these sessions are open, and primarily focused on establishing understandings of existing work practices to be used as a baseline for the project and ultimately establish detailed and informed use-cases. However, a number of ideas are emerging from these interviews that fall outside of the scope of the existing project and have pushed us to explore them differently.

The main idea that we will address here is the notion of the computer providing deliberate error or essentially artistic obstruction to the work process. The idea came up in a number of interviews, driven by a general question about whether sample suggestions from an intelligent agent would be interesting.

“What I would probably rather want it would do is make it complex in a way that I appreciate, like I would be more interested in something that made me sound like the opposite of me, but within the boundaries of what I like.”

USER007

“I’d like it to do the opposite actually, because the point is to get a possibility, I mean I can already make it sound like me, it’s easy.”

USER001

“So if I set it to 100% precise I want it to find exactly what I am searching for and probably I will not find anything, but maybe if I instruct him for 15% and I input a beat or a musical phrase and it searches my samples for that. That could be interesting.”

USER003

Emerging from these conversations is a desire for the computer to provide a function of controllable push-back in the form of an alter-ego of sorts, providing the artist with different suggestions that still reside within the artist’s idea of his own personal style, and can be “dialed” up or down. As a result the music is rendered “strange”, and when the interviewer makes the suggestion that the machine might be able to do this, one of the users answers:

“That would be crazy and most importantly, it’s not the same strange every time, you turn it on.”

USER016

Proposing the Dial

Based on these conversations and inspired by the notions of artistic obstruction and estrangement [15], we decided

to propose an interface for computational manipulation of sound, which we called “The Strangeness Dial”.

The Strangeness Dial is imagined as a recommender system that allows the user to query the computer based on an existing sound file, but instead of returning a new similar sound file, the Strangeness Dial lets you set the level of “strangeness” you would like for the new file. Using the same or a comparable algorithm as one would have traditionally used for a recommendation of a similar file, the system lets the user set an explicit level of sameness/otherness. We imagine that a Strangeness Dial would be able to:

- **Return a file in a search scenario:** “Give me a sample that is 12% different from this one.”
- **Filter a piece of sound:** “Play this back to me 50% strange.”
- **Assess the strangeness level between to files:** “How different is this file to that file?”

Figure 2: Strangeness Dial cardboard box.

To propose the Dial back to our users, we made a simple cardboard box with a dial, essentially functioning as a prop to anchor the following set of conversations (figure 2).

Conversations with the Box

The most important purpose for this round of user conversations was to confirm the concept of the Strangeness Dial as a potentially useful idea (cf. figure 3). The notion, that an algorithmic recommendation system could be extended through the use of artistic obstruction was inspired by the first round of user involvement, but we needed to confirm that a more detailed embodiment of the idea would be interesting, and also gather any additional design detail. On this first point the users were very clear, the access to some

level of control of their computational devices was uniformly deemed very desirable.

“It’s again about creating possibilities and then you would explore that.” STR_BOX001

Overwhelmingly, our users imagined using the dial for search.

“I think that it can be interesting in this way to have, you have a guided access to your database, so you don’t have to search everything manually and, open file, hear that, but you’re not constrained by the final result. Also it can, so to say, help you to, instead of like starting from a reference sound, and instead of having a lot of searching for literal qualities... I want this to, with these things and these things, you’re kind of tuning a radio so to say, probably. Looking for the, when you have this FM radio that you have to... like there is a station that it’s in different channel.” STR_BOX004

“For search it would be amazing.” STR_BOX006

The actual handling of the non-functional dial inspired a lot of comments about the detailed way they might control this effect – from variation to difference.

“In the beginning you’ll probably be freaking out but at some point you’re... I think you’re probably like, ‘Let’s do this at 34%’ or something.” STR_BOX002

"If you put it to 10 or 15% you get a cool variation to what you're doing. You go to 80% or beyond it's ... it's really difficult." STR_BOX002

"The strangeness are the things that are closest, but are not easy to integrate. At the same time, you know, they are maybe the furthest away." STR_BOX007

Figure 3: Interviewing with the box.

At the same time it became clear that different people have different understandings of the concept of strangeness, for some it was a matter of dimensions, parameters, or musical aspects, while others simply acknowledged that there are many ways of interpreting this concept.

"No, it should be strange in that way, and then continue on in a different direction. That's the thing about strange, that there's so many variations of strange. There's the small, there's the big, there's the left, there's the right, up and down." STR_BOX006

"Strangeness of genre maybe, how different genre you want. [...] It depends how we chart the parameter of your strangeness, if it's timbre or rhythm or speed or loudness, whatever." STR_BOX001

"In synth sounds, it's very useful [...] Then the melody can also be still the same, but you can also just change the parameters within the synthesizer. That would be very cool." STR_BOX003

These individual notions of the concept of strangeness, lead directly to ideas around personalisation, however still bearing the central element of explicit control rather than an implicit adaptation of the system:

"Then you have a lot of possibility of strange to chose from, actually. Like for me, I would be super interested to see it in 'your' strange, for example." STR_BOX006

"For me at least because working with other people's stuff, with found things, then the whole element of randomness or strange, it's kind of, I think it's important to it. Google also remembers stuff and this would not, I think. That would be important, that it shouldn't remember what I search for." STR_BOX006

Overall 21 interviews were conducted in this session with the box as a non-functional technological prototype.

Outcomes

The outcomes of the cardboard box interviews were very clearly supportive of the general idea of the dial and the notion of there being artistic value in having access to some aspect of control of the workings of the underlying computational structure of a "smart agent". While understanding the idea in very different ways, our users appear to be particularly interested in having the machine suggest variations and obstructions, while remaining somewhat worried about the machine becoming boring or taking control:

"I think this could work, but I don't know how long I would actually use it for. It would

probably give me the first part and then I could move on again.” STR_BOX006

Also, it becomes clear that the central challenge will be to define what “the other” is. This is not only a highly subjective matter, but first requires the definition of the space of possible actions, which, ultimately, turns into a question of semantic interpretation. We thus can define five user desiderata for such an interface coming out of our process, namely *strangeness*, *search*, *control*, *individuality*, and *personalisation*. Taking inspiration from these notions we will continue to investigate the possibilities of including anti-recommendation in working software prototypes.

Computational Strangeness

These quotes suggest that our users would like computers not to provide them with collaborative or content-based recommendations, but instead system qualities that go beyond pure accuracy, e.g., diversity, novelty, serendipity, or unexpectedness, e.g., [1, 2, 9]. Among these professional creatives, we are finding that similarity-based, “more of the same” recommendations have basically no relevance, as illustrated by this quote from the first session:

“I would be more interested in something that made me sound like the opposite of me [...] cause I can’t do that on my own.” USER001

For these creators and artists — as opposed to consumers — the idea of simulating on the basis of past activity provides no added value, as the goal of creative work is something new that challenges and questions expectations and past behavior rather than reproducing it. Thus, opposite goals to those used in typical recommender systems matter when collaborating with an intelligent system for creative

work: change of context instead of contextual preservation, defamiliarisation [15] instead of predictability, or even explainability, opposition instead of imitation, and obstruction instead of automation [13]. Still, these goals reside within the artist’s idea of personal style, putting a need for personalisation of systems at the core of these concepts.

Discussion

It could be argued, that the notion of the Strangeness Dial arrived before we knew what use it had, and by making it physical (in the form of a box) we were able to begin the process of imagining how such a thing might be used. Making use of the box the users were able to engage with the relative complicated concept of computational strangeness in more depth, allowing it to become a temporary possibility for engaging with sound.

The cardboard box in effect functioned as a traditional prop, in the sense that props can act as containers of symbolic content [16] while maintaining a link to reality [12]. As such the prop can be used to give form to an incomplete notion while being used as tools for interacting with its own potential context. It simply calls into existence that which was not there before, and allows us to engage with its potential Use. In this way, it is a natural continuation to a number of our previous techniques, which incorporate craft and making in the ideation process [3, 4, 6].

These methodological moves are off course deeply related to methods such as Placebo Designs [11], Body Storming [14], Experience Prototyping [8] as well as a broad range of techniques from theater, dance and performance, that in turn take inspiration from the experimental performance as exemplified by Boal [7], the art practice of estrangement as described by Shklovsky [15] and Dewey’s notion of experience as a process of becoming [10].

Future Work

At this point it is clear that we still do not know what the Strangeness Dial is for exactly, it has not yet found its use, to reference the quote from Valente above. We have however embarked on a process, where we are investigating an emerging computational idea through the use on a non-computational prop. In that sense our users have been engaged in a process that they would normally be excluded from, by virtue of the complexity of the computer science involved.

The resulting notion that we may be able to make use of computational strangeness in the form of surprise, opposition and obstruction, opens up two areas of research that we will now embark upon: The connection of traditional artistic practices with computational systems in order to provide more creative interactions with machines, and the use of algorithms as a means to recommend degrees of difference instead of sameness. We regard this short paper as the beginning of this journey.

Acknowledgments

This work is supported by the European Union 7th Framework Programme FP7/2007-2013 through the GiantSteps project (grant agreement no. 610591). Figure 3 is courtesy Dan Wilton / Red Bull Music Academy.

REFERENCES

1. Panagiotis Adamopoulos and Alexander Tuzhilin. 2014. On Unexpectedness in Recommender Systems: Or How to Better Expect the Unexpected. *ACM Transactions on Intelligent Systems and Technology* 5, 4, Article 54 (Dec. 2014), 32 pages. DOI : <http://dx.doi.org/10.1145/2559952>
2. Xavier Amatriain, Pablo Castells, Arjen de Vries, Christian Posse, and Harald Steck (Eds.). 2012. *Proceedings of the Workshop on Recommendation Utility Evaluation: Beyond RMSE (RUE 2012)*. GEUR-WS, Dublin, Ireland.
3. Kristina Andersen. 2013. Making Magic Machines. In *10th European Academy of Design Conference – Crafting the Future*.
4. Kristina Andersen. 2014. The Deliberate Cargo Cult. In *Proceedings of the Conference on Designing Interactive Systems (DIS)*. ACM, Vancouver, BC, Canada, 627–636. DOI : <http://dx.doi.org/10.1145/2598510.2598596>
5. Kristina Andersen and Florian Grote. 2015. GiantSteps: Semi-Structured Conversations with Musicians. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA)*. ACM, Seoul, Republic of Korea, 2295–2300. DOI : <http://dx.doi.org/10.1145/2702613.2732868>
6. Kristina Andersen and Danielle Wilde. 2012. Circles and Props: Making Unknown Technology. *interactions* 19, 3 (May 2012), 60–65. DOI : <http://dx.doi.org/10.1145/2168931.2168944>
7. Augusto Boal. 1992. *Games for Actors and Non-actors*. Routledge, London, UK.
8. Marion Buchenau and Jane Fulton Suri. 2000. Experience Prototyping. In *Proceedings of the 3rd Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques (DIS '00)*. ACM, New York, NY, USA, 424–433. DOI : <http://dx.doi.org/10.1145/347642.347802>

9. Pablo Castells, Neil J. Hurley, and Saul Vargas. 2015. Novelty and Diversity in Recommender Systems. In *Recommender Systems Handbook*, Francesco Ricci, Lior Rokach, and Bracha Shapira (Eds.). Springer US, 881–918. DOI :
http://dx.doi.org/10.1007/978-1-4899-7637-6_26
10. John Dewey. 1958. *Art as Experience*. Putnam, New York, USA.
11. Anthony Dunne and Fiona Raby. 2002. The Placebo Project. In *Proceedings of the 4th Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques (DIS '02)*. ACM, New York, NY, USA, 9–12. DOI :
<http://dx.doi.org/10.1145/778712.778714>
12. Steve Howard, Jennie Carroll, John Murphy, and Jane Peck. 2002. Using 'Endowed Props' in Scenario-based Design. In *Proceedings of the Second Nordic Conference on Human-computer Interaction (NordiCHI '02)*. ACM, New York, NY, USA, 1–10. DOI :
<http://dx.doi.org/10.1145/572020.572022>
13. Peter Knees, Kristina Andersen, and Marko Tkalčič. 2015. "I'd like it to do the opposite": Music-Making Between Recommendation and Obstruction . In *Proceedings of the 2nd International Workshop on Decision Making and Recommender Systems (DMRS) (CEUR-WS)*, Vol. 1533. Bolzano, Italy.
14. Antti Oulasvirta, Esko Kurvinen, and Tomi Kankainen. 2003. Understanding Contexts by Being There: Case Studies in Bodystorming. *Personal Ubiquitous Computing* 7, 2 (July 2003), 125–134. DOI :
<http://dx.doi.org/10.1007/s00779-003-0238-7>
15. Viktor B. Shklovsky. 1965. Art as Technique (1917). In *Russian Formalist Criticism: Four Essays*, Lee T. Lemon and Marion J. Reis (Eds.). University of Nebraska Press, Lincoln, USA.
16. Georg Strom. 2002. Mobile Devices As Props in Daily Role Playing. *Personal Ubiquitous Computing* 6, 4 (Jan. 2002), 307–310. DOI :
<http://dx.doi.org/10.1007/s007790200032>
17. Catherynne M. Valente. 2013. *The Girl Who Fell Beneath Fairyland and Led the Revels There*. Constable and Robinson Ltd.