

# Art+Experiment: Introducing the IEEE VIS 2013 Arts Program

Angus Graeme Forbes and Lauren Thorson

**Abstract**—This paper introduces the theme of the IEEE VIS 2013 Arts Program, *Art+Experiment*. We discuss the motivations leading to the choice of this theme, and provide an overview of the work presented in the Arts Program papers track and art show.

**Index Terms**—Art, Experiment, Research, Art-Science

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## 1 OVERVIEW

This year the IEEE VIS Arts Program, or VISAP, accepted 15 submissions (5 papers, 4 artworks, and 6 “hybrid” submissions where an artist simultaneously submitted both an art piece and a paper) out of 49 total – a combined acceptance rate of 30% across both the art show and papers track submissions. This represents a significant increase in interest in the Arts Program since being re-introduced in 2011 by Bruce Campbell and Daniel Keefe: in 2011 there were 19 submissions, of which 9 accepted; and in 2012 there were 11 submissions, 6 accepted [2]. We were pleased that this year there were many high quality submissions by both established and emerging artists and researchers, and the final selections were based on originality and relevance to the VIS (VAST, InfoVis, and SciVis) communities attending the conference.

## 2 ART+EXPERIMENT

In the call for entries for the Arts Program, titled *Art+Experiment*, we asked artists and researchers to think about the potential of artworks to act, figuratively or literally, as research experiments:

What could it mean for an art installation to produce experimental results? Can an artwork be expressive, challenging, and conceptual, yet simultaneously rigorous, practical, and empirical? We invite artists and researchers to think about the connections and chasms between art and research, and to explore the nature of experimental design and creative experimentation [6].

Discussions about the relation of art and visualization are often centered on the usefulness of aesthetics for functional purposes [11]. The influence of Edward Tufte’s seminal work contributes to the awareness that design and aesthetics are primary components of effective visual communication [22]. On the other hand, some writers and artists resist a too-literal reading of that understanding. For instance, Warren Sack explores the aesthetic appropriation of visualization metaphors and methods for artistic, rather than purely functional, purposes [16]. He finds that many works of data visualization art are, in fact, relevant, challenging, and even sublime. Seeking to delineate the extent of what they call “information aesthetics,” Andrea Lau and Andrew Vande Moere have designed a helpful domain model that positions visualization projects on along continuums of focus: data, interaction, and aesthetics [12]. In their view, work that emphasizes aesthetics has an “interpretive,” rather than a “direct” purpose, yet, however, successful visualizations could incorporate both of these outlooks simultaneously. Intriguingly, they stress that it is more useful to think about the

term *aesthetics* as involving reasoning about context instead of limited to the realm of representation.

Just as interaction, analytics, and evaluation are integral concerns of visualization research, similarly visual representation is only one of many possible components of works of new media art. As the art historian Edward Shanken discusses in his investigations into the beginnings of new media arts and conceptual art in the 1960s and 70s, media artists have always focused on systems and concepts more than on representations and technology, even as they make use of advances in representational technologies [20]. Although the phrase “experimental art” tends, popularly, to refer to art that is avant-garde or perhaps simply inscrutable, much of the art by early media artists consciously characterized itself as intentional, quasi-scientific experiments in creating “meta-critical” experiences, demanding “that the viewer examine the process of processing information, *while in the process of doing so*” [19].

Much recent visualization research is concerned with the creation, implementation, replication, and evaluation of user studies in order to increase knowledge in the fields of information and scientific visualization. While these studies are often meant to validate or reinforce the primary claims of novel visualization systems and methods, there is a growing awareness that creating empirical experiments that lead to new knowledge (or a validation of new knowledge) is not necessarily a straightforward task, and that the effective design of visualization experiments itself requires research. For instance, Tamara Munzner presents a “nested model” in order to help researchers untangle the many approaches toward validating visualization tasks [15]. Similarly, Michael Sedlmair, et al., outlines the complexity of choosing appropriate design studies to convincingly evaluate visualization research [18]. And Ben Shneiderman calls into question the effectiveness of the “old strategies of controlled studies,” preferring instead to make use of more flexible, iterative methods that “embrace ethnographic styles of observation” [21].

Despite perhaps some complexity and confusion regarding the meaning of the word “experiment” in different disciplines, it is clear that experiments function differently in artistic and research contexts. Nonetheless, our hope is to provide a creative forum to foster dialog about possible connections between artistic experiments and research experiments. Moreover, we believe that thinking more deeply about these connections could lead to novel creative works engaged in data and visualization, as well as to starting investigations into creative ways to design studies that validate research. In other words, we wanted to *de-emphasize* the importance of aesthetics and representation, and instead encourage artists and researchers to submit work that offered novel explorations of what various modalities of art might have to say about the design and meaning of experiments. While the Arts Program submissions represent a wide range of perspectives and topics – and while they are certainly engaged in representational aesthetics and design considerations – the accepted works in the art show and art papers track are also concerned with the idea of art or artistic perspectives as *experiments* that contribute to thinking creatively about research, that are enablers of research, or that function as a form of research in and of itself.

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### 3 THE ARTS PROGRAM SUBMISSIONS

A number of themes are evident across the Art Show submissions, including a focus on real-time streams of data, the use of immersive, participatory environments, and an interest in presenting provocative, qualitative modalities of data representation [5]. Three pieces engage with textual data arriving in real-time via Twitter feeds: Byungkyu Kang presents an ambient portal of currently trending topics using a “Tweet Probe” [10]; Ye Lin and Romain Vuillemonet present a novel creative “spirograph” representation of the Twitter feed for the CHI2013 conference [13]; and a large, dynamic sculpture created by Hilary Harp and Barry Moon emits sounds based on a sentiment analysis of incoming tweets. Another piece that engages with a different type of temporal data is presented by the Los Angeles based artist, Xárene Eskander. Her piece, “Salton Sea Revisited,” presents her “realtime lapse” technique, concurrently presenting multiple slices of video taken at different times across a single landscape [3].

The exploration of data within immersive spaces was also a popular theme this year. Yuan-Yi Fan and F. Myles Sciotto demonstrate a version of their immersive installation, “Time Giver,” that measures and interprets EEG and PPG signals, visualizing and sonifying them within 3D space [4]. Qian Liu and Yoon Chung Han present an interactive visualization using 3D arc diagrams to explore the borrowing patterns of library visitors checking books in and out over the course of a year. And Jeong Han Kim presents “Qualia Landscapes” built by analyzing data from different cities using what he terms, “emotional search engines” that characterize the mood of a city. Chin-En Keith Soo is also interested in creative ways of transforming data. His work, “VICISS” is an interactive mirror that turns a user’s image and movements into melodic patterns. Many of the artists explicitly present their work as an ongoing process of conducting artistic experiments. For instance, Yeohyun Ahn applies generative art to typography, using procedural texturing algorithms to evolve organic material into letters and words imbued with emotion and meaning [1]. And Philip Galanter, displaying excerpts from the latest incarnation of his project, “XEPA,” presents a series of intelligent sculptures that evaluate each other’s output, each making high level aesthetic decisions in dialog with its neighbors.

In addition to these artworks that incorporate various modalities of interacting with, representing, and transforming data, the Arts Program also provides a forum for artists and researchers to engage with this year’s unifying theme, *Art+Experiment*, through presenting in the papers track. Three papers explicitly discuss the relationship of art to science, or what is often termed “Art-Sci”. In the paper, “Art and Science as Creative Catalysts,” Eleanor Gates-Stuart and her colleagues explore a group of projects involving scientists, engineers, and artists, and offer strategies for how to integrate the different modes of thinking related to their disciplines [8]. Similarly, Francesca Samsel provides an overview of what she defines as representative works that bridge art and science [17]. And Ruth West, in collaboration with Roger Malina and others, explores the “crisis in representation” stemming from the ever-increasing size and complexity of data; introducing the idea of “data remixing” as a potentially transformative approach to interdisciplinary collaboration that can include multiple inputs and objectives [23]. Francis Marchese takes a historical approach, analyzing early experiments by medieval scholars who operated in some way as proto-data visualization researchers, creating the first known examples of certain types of abstract data representations [14]. More contemporarily, Julian Heinrich and Daniel Weiskopf present a novel rendering technique for obtaining visually pleasing images from parallel-coordinate plots via “density footprints” [9]. Finally, Philip Galanter discusses the role of evaluation in computational aesthetics, and, using his art show submission as an example, explores evolving systems to mimic creative processes [7].

### 4 CONCLUSION

It is our hope that the continued presence and greater integration of the Arts Program with other conferences, symposia, and workshops that make up IEEE VIS – and especially the introduction of the VISAP papers track – will be conducive to meaningful dialog about the role of

art and creativity in scientific research as well as the creative potentials of introducing empirical methodologies into artistic practices.

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