
Showcasing Impact: curating art/science integration within the XSEAD platform

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Abstract

XSEAD is an online platform supporting networks of creativity and innovation across science, engineering, art and design. Through networked co-curation and community participation, the XSEAD portal collects and distributes a growing repository of integrative art/science exemplars. This collection serves to help articulate the past successes and future prospects of integrative undertakings in a shared reference space. In this paper, we reflect on the development of the curatorial approach of this ongoing initiative, indicating lessons learned in cultivating a participatory model of collection and dissemination.

Author Keywords

Curation, art/science integration, representation, online community, curatorial process, XSEAD.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

While curatorial practice within the context of a museum or gallery is well-established, documented, and understood, it is a somewhat nascent area within the digital domain. Specifically, Botticelli [1] notes that

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digital curation is marred by a lack of specificity as compared with its more traditional counterpart, owing to 'lack of established standards and best practices.' Further complicating matters, curatorial practice in the digital domain is often conflated with information management and connoisseurship. In discussing this, Cairns and Birchall [3] advocate for these new forms of digital curatorship, indicating that such 'new methods and meanings of curation might also offer a common ground where the work of the museum can be done both within and without its walls.'

The potential of digital curation to extend the reach and visibility of curated outcomes and engage diverse audiences in enriching understanding is something we explore in the context of the XSEAD platform (<http://xsead.org>). XSEAD is our recently launched online platform presenting integrative works across the arts and sciences [3]. The platform seeks to establish a carefully crafted reference space for understanding the history and prospects of successful art/science integration. This project is not the first to develop a digital archive of interdisciplinary exemplars. Notably, the late Steve Wilson maintained an extensive online repository of art/science projects, which was additionally compiled into several books [6,7]. The Studio for Creative Inquiry at Carnegie Mellon University created the 'New Art/Science Affinities' book¹ as a compendium of contemporary artists working at the intersection of art, science and design, while Rhizome² offers an online database of new media works and artist profiles. Similarly ACM Multimedia's Arts and Digital Culture program maintains a web-based arts

¹ <http://millergallery.cfa.cmu.edu/nasabook/>

² <http://rhizome.org/>

archive of featured contributions from the ACM MM annual conference [4], while the Leonardo Journal³ has amassed a large archive of art/science scholarship over the past 20 years.

While valuable, these initiatives present some limitations. In particular several of them have been driven by a small number of individuals with a leadership role in their preparation and maintenance. Thus, the potential scale and scope of the archive is limited by the availability of their time. Additionally, as these archives grow so does their complexity, placing significant burden on these gatekeepers to successfully sustain and maintain them. Unlike smaller efforts, those centered on scholarly outcomes may be robust, but slow to accumulate and respond to community needs and to represent emerging trends. Cognizant of these challenges, and to provision for long-term access and maintenance to these archives, we explore the potential of "networked co-curation" [4] as a means to decentralize the curatorial process, to collaboratively amass exemplars on an on-going basis, and to develop an inclusive representation of the past, present and future prospects of collaboration across disciplines.

We describe this approach as a case study of an ongoing curatorial initiative spanning eight organizations and twenty co-curators undertaken as part of the XSEAD project, where we are exploring distributed community processes to support co-curation of high impact art/science works. Starting with a small group of focused participants centered on organizational archives, we scaled this initiative through an agile protocol enabling rapid collection of

³ <http://www.leonardo.info/>

curated perspectives and the distribution of effort. Focusing on lessons learned, we describe the resulting development of new participatory models of online co-curation.

XSEAD's Curatorial Initiative

The XSEAD initiative aims to expand traditional academic approaches to documenting and disseminating work by offering diverse ways to participate and present richly mediated integrative works at multiple stages of development. To address the needs of the interdisciplinary art-science community, two key goals of the initiative are to: enrich understanding of the nature and foundation of deeply integrative arts-science work through interdisciplinary communication and engagement; and create a comprehensive, cohesive and accessible archive of high-impact work in the field.

In support of this, the XSEAD platform presents a series of collections of high impact exemplars selected by the community to express the value of integrative collaboration. This curated archive is designed to coordinate the community by developing a reference space of successful and authentic approaches to art/science integration, while also offering an entry point to diverse, interested audiences. Not only does this curated section represent a dissemination channel for rich outcomes, but it also offers a mode for increasing public understanding and interest in collaboration across arts and science. As the content is freely available online it is also intended to become a general resource to educators, institutions and general audiences.

To develop this archive, nominated representatives from the community have been invited to participate in identifying exemplars. This is further supported by cooperative partnerships with leading organizations in the field. These nominated individuals form a committee of curators engaged in collectively establishing a holistic overview of the field. Each curator is asked to identify a collection of between three and five related works for inclusion in the archive, along with a preface explaining the rationale for their selections. Both independently and collectively, the exemplars evidence the scholarly, societal and economic impact of integrative activities. The process of establishing this archive is next outlined.

Curating with Organizations

Initially, we invited eight leading organizations to participate in this curatorial initiative, including ISEA, Leonardo, ACM SIGGRAPH and ACM SIG Multimedia. Each organization was asked to choose one or more representatives to act as 'curators' responsible for reviewing its archives and preparing selected works for inclusion in the Showcase section of XSEAD. Curators were provided with an overview of the goals of the curatorial initiative and guidelines on the format of final submissions (e.g. content length, metadata required, copyright procedures etc.). Otherwise, decisions were discretionary and the curators were not bounded by any other requirements.

Curators from the invited organizations prepared a total of 12 sets and 45 works (see Fig 1.) These included for example, a review of ecological art presented at ISEA 2012, two sets surveying art and scholarly contributions presented through ACM SIG Multimedia's Arts & Digital Culture program and a reproduction of

Figure 1. Left) The homepage of the Showcase section provides an entry point to the archive. Middle) Each set is prefaced with a foreword communicating the curatorial intent and rationale which connects the series of selected works. Right) Each work is described through text and rich multimedia content to elucidate the outcome, innovation, impact and contribution to the field.

Pamela Jennings' 'Speculative Data and the Creative Imaginary' exhibited at the National Academy of Sciences.

From the initial works and the applied metadata, the archive converged on a small number of primary domain spaces. With 21 works attributed to (scientific) data visualization, it quickly emerged as an area of key interest for interdisciplinary collaborative efforts. Corroborated during discussions at art/science forums, this is seen to accurately reflect a porous domain, which is highly receptive to interdisciplinary exchange. While this convergence is a validation of the curated outcomes and confirms the importance of scientific visualization as an area of confluence, it also adds overt emphasis that detracts from other less recognized realms in which integrative activities have equal merit and promise. This motivates the careful solicitation of diverse perspectives on integrative activities in order to provide full representation to the spectrum of art/science work currently being conducted.

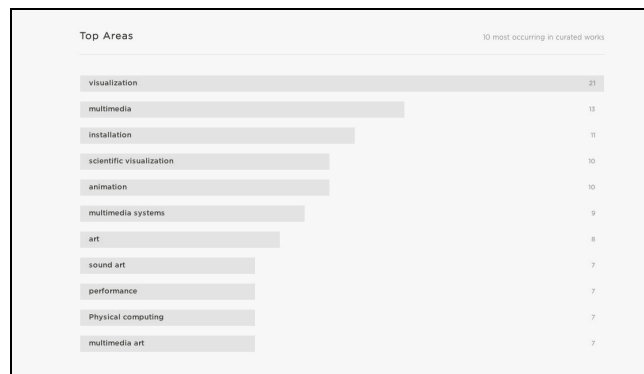


Figure 2. Convergence of areas presented within the first round of curated works.

Curating with Community Leaders

Recognizing the need for balance, we adjusted the curatorial agenda to not only collect high-quality exemplars but high-quality and diverse exemplars. Achieving this required a scaling up of the curatorial initiative and we diversified participation to include recognized scholars, practitioners, and artists within the space, in tandem with organizational contributions. Observing that the curatorial process of reviewing institutional archives was involved and effortful, this predicated the need to more clearly streamline the curatorial process.

An agile curatorial protocol was subsequently developed and implemented as a thirty-minute interview. This protocol was designed to mitigate the effort and cost of participation to a curator, requiring them only to judiciously select and evaluate works for relevance and contribution to the archive. It incorporated: three questions surveying the curator's background in art/science integration; four questions per selection examining the nature of the work as well as the key impact, innovation and offering to the art/science community of each contribution; and three questions exploring the curatorial intent and purpose. These curatorial interviews were transcribed and prepared for presentation online on behalf of the curator. The protocol was deployed with twenty curators between November 2013 and January 2014 and will continue until May 2014 with the goal of collating the perspectives of forty community members. In inviting participation, care was taken to balance the primary expertise of the co-curators across art, science, design and engineering, to give representation to emerging areas of interest, as well as to give representation to

community, curricular, scholarly, industry and artistic perspectives.

While this protocol constitutes a more bounded and mediated curatorial process, it has been successful in rapidly gathering exemplars and expert perspectives towards an inclusive and representative archive. New fields of integrative practice incorporated include maker movement and hack-days, urban design, gaming, wearable technology, and speculative futures. Additionally, the selections better speak to the historical lineage of integrative activities incorporating exemplars from the 1940s and beyond. Importantly, the 'lightweight' nature of the protocol has been found to mediate effort but not quality of works selected. In rapidly scaling the works in this way, it does, however, bring new complexities, opportunities and challenges.

Previously and with only a small number of curators working to review distinct organizational archives, the overlap in selected works was minimal. Now, several curators have synergistically selected the same exemplars. Much like previously observed thematic convergence, this similarly corroborates the value of the work, but does not require further 'diversification' of curatorial perspectives. While not intended, we have opted to embrace these multiple curated perspectives of a single work as it provides additional opportunity to understand their importance and impact. Participants in the activity have also expanded the definition of what might be included in this archive. Moving beyond curation of works, several curators have emphasized the importance of incorporating not just impactful outcomes but the processes and places, which foster them. Consequently, the archive now encompasses curated perspectives on institutional initiatives,

residencies, collaborations, programs, and collections which support interdisciplinary exchange toward creative outcomes.

Towards Participatory Curation

Curating beyond works and integrating multiple perspectives on the same work are new opportunities that advance the goals of the archive. To successfully enrich it in this way, increased participation is required. As we have shifted the locus of effort in preparing the works from the curator to the initiative, this creates some growth challenges.

In soliciting multiple perspectives and an increased scope of contributions over time, we recognize the need for novel strategies to support co-curation. We are now exploring the potential of computational support as a means to facilitate rapid expansion, broad participation, and collective enrichment of the curated outcomes.

To this end, we are currently experimenting with crowdsourcing techniques, content recommendation engines, visual representation strategies and participatory interfaces towards mediated tool support and new modes of digital curation. In traversing from more traditional modes towards mediated, participatory and online curation, we aim to explore how technical approaches and curatorial practice integrate towards the development of new information infrastructures. In undertaking applied exploration into the practice of digital curation within the context of XSEAD, we hope to establish guidelines and best practices for those working within this 'fluid' space and establish new models for digital practice which can support networked curatorship in an increasingly digital world.

Conclusions

The XSEAD curatorial initiative is intended to gather a rich set of exemplars conveying the broad impact and successes of an emerging interdisciplinary community. Initially, this curatorship was facilitated by an unbounded review of institutional archives by nominated representatives. Subsequently, an agile protocol was developed to mediate the development of curated perspectives with twenty community participants. Preliminary findings relevant to similar initiatives indicate the need to reduce effort and cost to participation in order to foster community participation; the utility of collecting multiple perspectives on the same content; and the value of considering curation beyond outcomes to include reflections on processes, collaborations, venues, and institutions. Mindful of challenges and expanding on new opportunities identified, we now seek to develop online participatory models for networked community co-curation.

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References

- [1] Botticelli, P., Fulton, B., Pearce-Moses, R., Szuter, C. & Watters, P. (2011). Educating Digital Curators: Challenges and Opportunities.. *IJDC*, 6, 146-164.
- [2] Byrne, D., Kelliher, A., Cox, D., Rikakis, T. (2013) XSEAD: A Community Platform For Art-Science Integration, *MultiMedia*, IEEE , vol.20, no.4, pp.4-7
- [3] Cairns, S., Birchall, D. Curating the Digital World: Past Preconceptions, Present Problems, Possible Futures. In *Museums and the Web 2013*, N. Proctor & R. Cherry (eds). Silver Spring, MD: Museums and the Web. Published February 6, 2013.
- [4] Jaimes, A., Senior, A., Muench, W. 2005. ACM multimedia interactive art program: an introduction to the presence/absence exhibition. In *Proceedings of the 13th annual ACM international conference on Multimedia (MULTIMEDIA '05)*. ACM, New York, NY, USA, 1051-1052.
- [5] Sabharwal, A. (2012). "Networked co-curation in virtual museums: Digital humanities, history, and social media in the Toledo's Attic project." *International Journal of Heritage in the Digital Era* 1(4), 587-610.
- [6] Wilson, S. (2002) *Information Arts*. Cambridge, MA: MIT Press.
- [7] Wilson, S. (2010) *Art + Science Now*. Thames & Hudson.