

COMMENTARY

Living Labs and the DH Centre: Lessons for Each from the Other

Priscilla Ferronato¹, Lisa Mercer¹, Jennifer Roberts-Smith² and Stan Ruecker¹

¹ University of Illinois, US

² University of Waterloo, CA

Corresponding author: Stan Ruecker (sruecker@illinois.edu)

The digital humanities (DH) has a long and successful history of creating, using, and maintaining DH centres, as evidenced by the vast centerNet network. Furthermore, some of the most successful centres are constantly evolving in form and function. In this paper, we propose that the next phase in the evolution of the DH centre may involve a related phenomenon from the design research community, called the 'Living Lab.' The European Network of Living Labs describes them as dedicated to open forms of design for social good: 'Living Labs (LLs) are defined as user-centred, open innovation ecosystems based on a systematic user co-creation approach, integrating research and innovation processes in real-life communities and settings.' Current member labs deal with topics ranging from health and well-being (52%) to mobility (14%), but there are few that focus on issues central to DH, such as open social scholarship. We argue that incorporating more DH into the Living Labs network, and more Living Labs into DH centres, would benefit everyone involved. Specifically, DH labs could benefit from Living Labs' experience with complex problems, and Living Labs could benefit from DH centres' experience producing research.

Keywords: Living labs; design; digital humanities

Living Labs

The concept of the Living Lab was first used in the USA by researchers William J. Mitchell, Kent Larson, and Alex Pentland at MIT to observe the living patterns of users in a smart/future home. They argued that the Living Lab represents a user-centred approach for sensing, prototyping, validating, and refining complex solutions in multiple, evolving real-life contexts. A Living Lab is any kind of space where interaction among people normally thought of as either designers or users is redesigned in order to better apply both groups' knowledge for the empowerment and development of people and communities (Leminen, Westerlund & Nyström 2012). Over 409 Living Labs have been recognized by the European Network of Living Labs (ENoLL) over the past 10 years (ENoLL 2018). Of these, 105 are currently in operation, geographically located mainly in the European Union, but also in other regions, such as South Africa, Asia, and South America. There are eight Living Labs currently operating in Canada (ENoLL 2018).

Design has traditionally utilized a variety of approaches to including non-designers in the design processes that address complex social problems. One example is participatory practice, in which different stakeholders are part of the design process (e.g., Schuler and Namoiika 1993; Björgvinsson, Pelle & Hillgren 2010). Another is co-design, where the role of stakeholders is prolonged throughout the process (e.g., Steen 2013). In order to succeed, collaboration respects the individuality of each participant. Through their human-centred training, designers are often able to translate stakeholders' various needs, expertise, and backgrounds into participatory and co-designed solutions. However, Living Labs are more than a human-centred approach. Instead, they are about the openness of design to collaboration and transdisciplinarity. Openness is crucial to the innovation process in a Living Lab, where it is necessary to gather a multitude of perspectives that can lead to faster and more successful solutions to complex social problems.

By 'complex social problems,' the Living Lab movement generally means the kinds of issues that fall into the category of what Rittel and Webber (1973) defined as 'wicked problems.' Whereas a complex systems problem can often be subdivided into smaller pieces that can be addressed individually and then reassembled, a wicked problem is one that loses too many salient aspects for that approach to be viable. For example, designing a viable passenger train car is a complex systems problem, involving the undercarriage, the engine, the doors that open onto a compartment with seating, handrails, and so on. The components form a system, and although they overlap in constituting a unity that is the train car, it is reasonable to address each of them with some degree of autonomy, provided that they are all understood as pieces that will eventually be reassembled. Designing a successful transit system, on the other hand, is a wicked problem. There are so many stakeholders, so much infrastructure, and so many related concerns to address that it is not possible to consider most of them in isolation: changes to one part of the system affect other parts in unpredictable ways. Only by continuing to treat the system as a whole is it possible to make progress. As Rittel and Webber point out, addressing wicked problems is therefore, in some sense, a game with higher stakes than are found in more conventional problem areas. Testing is not often possible, nor is it possible to isolate people from the consequences of the work: changes will happen in the real world as the project is carried out. The Living Lab approach is intended to account for this necessity, largely through its emphasis on longer-term engagement between academics, professionals, and the general public, with the recognition that everyone involved has expertise and experience to bring to bear. As a space and a method, then, a Living Lab can be a source of information and can help to foster creative activity, but its primary goal is to have community members and academics collaborating on issues that are of concern to everyone involved. This collaboration usually takes place over extended periods of months or years.

Although Living Labs have emerged as a response to innovation environments that are considered too closed, some have been criticized for using co-creation approaches that construe '... users as participants to sample or simply be involved in design processes to help elicit user needs' (Björgvinsson, Ehn & Hilgrem 2010, 2). This approach is more aligned with participatory and co-design practices than with Living Lab practices, which aim to establish long-term relationships among stakeholders in order to allow all participants to become active co-creators. Their goal is to design solutions that can be adopted in the real contexts of participants' lives (Björgvinsson, Ehn & Hilgrem 2010). Since the outcomes of Living Lab collaborations are normally expected to be social innovations affecting complex communities (Leminen, Westerlund & Nyström 2012), they are, ideally, spaces for open collaboration between people with the widest possible variety of relevant backgrounds, perspectives, knowledge, and experiences, according to Eriksson et al. (2005). For example, in the Malmö Living Lab in Sweden, participants from design, society, government, and business have been working together to develop social policies (Björgvinsson, Ehn & Hillgren 2010). The challenge of open participatory approaches is not only related to the concern of when different stakeholders are involved in the process, but also to the responsibilities and powers that accrue to them (Stappers, Visse & Kistemaker 2011). Open design has numerous aims; some of the most important ambitions include: breaking down the barriers between designers and end users, making it possible for non-designers to become designers, and cutting out the 'middle-man' by having end users fabricate the products they need (Stappers, Visser & Kistemaker 2011). Therefore, collaborative interactions among all participants in Living Labs should enable and empower participants with opportunities to provide productive criticism, as well as to develop long-term relationships. Although many projects have been using (and also researching) Living Labs, there still remains a gap in best practices for developing long-term relationships among the various stakeholders on any project.

In summary, Living Labs are innovation ecosystems in which innovation processes emerge from the co-creation and participation of different stakeholders, developing a new community dynamic based on a real-life context. They create a new situated knowledge that is capable of shaping possible solutions for specific social and complex problems (Ballon, Pierson & Delaere 2005). The relationships developed are as important as the knowledge generated. In designing Living Labs, design as a discipline has been expanding from a focus on designing products and services to designing processes and environments for collaborative interaction. From this perspective, the designer must become a 'metadesigner,' shaping environments in which others can design their own solutions. Metadesign is intended to create a pathway through a design process, so that untrained designers can combine a series of building blocks into a meaningful design. The metadesigner resembles the scientist who no longer creates a linear argument, but instead develops a model or simulation that enables the user to explore and analyze a particular domain of reality, or a game designer who, when successful, designs a game space that facilitates meaningful and enjoyable play (De Mul 2011). Thus, metadesign provides one approach to interrogating and extending the concept of the Living Lab.

Living Labs and the Digital Humanities

As early as 2005, Eriksson et al. noted a trend in Europe towards applying the Living Lab concept more broadly than it had yet been, to 'enhance innovation, inclusion, usefulness and usability of ICT [information and communications technology] and its applications in...society' (Eriksson et al. 2005, 5). While this movement suggests that Living Labs might increasingly take up questions relevant to the digital humanities (DH), to date only 27 of the 105 Living Labs that are currently members of the European Network of Living Labs (ENoLL) self-identify as being engaged with 'Culture & Creativity,' and of these, four provide insufficient information to determine whether they are engaged with ICT at all. Of the remaining 23 possible digital humanities Living Labs (DHLLs), more than half remain focused on the older paradigm of product and service development for commercial markets and/or business incubation. The mandates of the remaining ten possible DHLLs (just under ten percent of all LLs in the ENoLL network) are actively concerned with issues ranging from interventions in the digital economy to reduce the 'digital divide' and increase 'digital literacy' (Bristol, UK; EXPIN, Colombia), including through enhancing library services (Library Living Lab, Spain; Urban Hub, Canada); to increasing community engagement in the use of public space, especially for climate change management (De Andere Markt [The Other Market], Germany; Living lab en innovation ouverte [open innovation], Canada; Småland, Sweden; Smart Seia Mountains, Portugal); to more generally described projects focused on 'cultural,' 'heritage,' and 'arts' projects (BCNLab, Barcelona; Smart City, France; Urban Hub, Canada). Only one of the ten (Småland, Sweden) cites metadesign as among the 'Living Lab methods and tools' it uses (ENoLL 2018). So, in the current landscape of Living Labs, there is a lot of space both for more projects engaged in classical DH concerns and also for more DH-oriented projects engaged with current Living Lab practices.

From the digital humanities perspective, a more participatory and open form of design practice and research is connected to the kind of topics that the digital humanities is increasingly attempting to address. This is particularly true in the context of open social scholarship, which seeks to foster critical engagement with the humanities outside the traditional boundaries of the academy. However, it is more difficult to determine the extent of current DH centres' engagements with Living Lab problems and practices. Although centerNet, the 'international network of digital humanities centers,' offers links to the websites of member DH labs, the listings are not searchable, nor do they contain any standardized form of description of mandate or practices (centerNet 2018). Anecdotally, based on our experience, we note that most of the DH labs of which we are aware (especially in Canada) lean towards scholarly expertise as the condition of participation, scholarly problems as the object of study, and critical making (Ratto 2011) as the primary mode of practice.¹

One notable exception occurs in DH collaborations with public libraries. In recent decades, with the growth of digital content and its concurrent reduction in the need for shelf space, libraries have also re-envisioned themselves to include community-based activity spaces. It is not uncommon for a public library to include, for instance, some combination of computers with internet access, a makerspace with equipment, supplies, and experts to consult, some video production capabilities, and even sound recording facilities. University libraries have also undertaken similar innovations, but they are typically (though not exclusively) focused on the students and faculty that are their primary patrons, rather than on the general public. University libraries also tend to provide access to more specialized digital scholarly literature, to which the cost of subscription can be prohibitive for public libraries.

While there are significant examples of participatory practice and co-design in the authors' previous work (including, for example, the Simulated Environment for Theatre, in which theatre artists were participants in the design process (Roberts-Smith et al. 2013), or the information ecosystem work with Fortune 500 furniture manufacturer Steelcase, in which the design team was equal parts design researchers and industry partners), we have only recently begun to attempt Living Lab-style co-creation to address wicked problems (in Stan Ruecker's participation in the Design for Peace project (Molano et al. 2018) and Jennifer Roberts-Smith's participation in the Digital Oral Histories for Reconciliation project). Similarly, we have only recently begun to consider methods for enabling and acknowledging the labour of co-creation (Radzikowska, Ruecker & Roberts-Smith, forthcoming).

One benefit to the Living Lab community of collaboration with DH would be support for projects in which some research is still required in the course of developing solutions to intransigent problems or taking advantage of possible opportunities. Given the nature of Living Labs, and the often urgent, immediate needs of the projects they engage in, there can be a constant pressure to expend all available resources on the matter at hand. From the perspective of both design and the digital humanities, accommodating this

¹ To our knowledge, no comprehensive survey of the mandates and methods of DH centres and/or labs has ever been conducted.

pressure to create infrastructure for use is often at odds with the mandate to produce research outcomes. One way of addressing this problem is to keep each project's research goals in play at each point in the project. Another is to subdivide the sequence of the project into practice and research, ideally with one feeding into the next in an iterative cycle. A third strategy is to have practice and research projects running simultaneously, perhaps with some overlap, but each with their own agendas, processes, and goals. Finally, there is the approach of 'research through design,' where new knowledge is generated in the process of making. None of these alternatives, however, guarantees success. As with many issues faced by Living Labs, the combination of practice and research is a wicked problem. Ideally, however, the research result of Living Lab projects will be more than a set of case studies, and will actually contribute either to new or modified theories relating to the topics being addressed. An intermediate contribution is to the process literature, helping directly with decision-making involving frameworks and methods, but not necessarily in reference to any higher-order model of the topic.

A benefit to the digital humanities community would be a better understanding of methods for conducting projects that address wicked problems, in which the sometimes competing needs and values of multiple stakeholders must be accounted for in solutions that the stakeholders, themselves, will use. A longstanding anxiety of the digital humanities has been the degree to which the tools it develops are (or are not) taken up by others,² a problem that has been addressed historically through user studies and formal partnerships. Over time, mixed-mode qualitative and quantitative user-testing methods drawn from the social sciences, such as surveys, semi-structured interviews, screen capture, and sideshadowing (Carr 2004; Stafford et al. 2008; Toms and O'Brien 2008; Gainor et al. 2009; Warwick 2012; Nowvieskie 2013; Cutic et al. 2016; Miya et al. 2016; Tracy 2016), have expanded to include methods drawn from participatory design (e.g., Schuler and Namoiika 1993; Björgvinsson, Pelle & Hillgren 2010) and cooperative design (e.g., Greenbaum and Kyng 1991; Steen 2013), which take seriously Phillips and Zovros' (2013) suggestion that 'participants themselves should be counted as members of the research team' (Dobson 2015, 12); Teresa Dobson's work is notable in this regard (Dobson 2015). These methods have been effective in evaluating experimental prototypes, especially when assessment protocols are designed to encourage what Dobson calls 'generative feedback,' or responses 'that invite one to step away from the ideas instantiated in the prototype and consider the broader context, such as the values inherent in, say, a disciplinary approach to knowledge and knowledge mobilization as evidenced by the responses of readers' (Dobson 2015, 6). However, the digital humanities still tends to work with participants recruited from higher education (especially our students and colleagues) or cognate industries (such as public education, libraries, or the IT industry), and has not yet adopted methods that give creative agency to the people we tend to construe as end-users—sometimes not even giving access to the tools we develop with their help. Similarly, formal partnerships (such as The Creative Writing Research Collaboratory and the Implementing New Knowledge Environments partnerships) have been successful in bringing together academic institutions and para-academic organizations with cognate expertise (such as libraries, archives, and publishers) to conduct research, develop research tools, and develop infrastructure, but again, we have tended to work with like-minded partners whose interests are oriented towards structures and systems rather than the complexities of ordinary daily life. In the context of wicked problems, however, it is both difficult to apply some of the controls expected in traditional user study contexts, and also essential to give substantive agency to non-expert participants who may have very different priorities from researchers and from each other. Projects addressing wicked problems will also need to measure forms of impact that may not normally be considered relevant in traditional research contexts, such as ticket sales to cultural events, visible or audible emotional responses to interpersonal interactions (Ruecker and Roberts-Smith 2017; Molano et al. 2018), endorsements in social media, and so on.

What would a DHLL look like?

The international DH community, including many DH centres, often working in collaboration with libraries, has made tremendous strides in advancing public knowledge of, and interest in, the humanities. One possible evolution of this work is the concept of the Living Lab, where longer-term engagements between academics and the larger community can serve as a platform for addressing topics of mutual concern.

Open social scholarship seems to be one area in which a potential convergence of DH and LL practices may be productive. One of the more challenging aspects of the Living Lab is the idea that it does not exist only to address issues of concern to one particular community, but that it is also a site of knowledge production for use by other people working with adjacent complex problems, perhaps associated with other Living

² To the point that controversial new media scholar Lev Manovich, at a DH conference presentation in 2009, stood up and pronounced 'you've all got to stop apologizing for your prototypes.'

Labs. Open social scholarship is, similarly, the attempt by academics to engage communities in carrying out research in the Humanities. The goals of this approach include approaching new kinds of research topics, improving the quality of research outcomes, and increasing the impact of humanities research in the world. With respect to addressing these goals, the twin agendas of the Living Lab of providing community engagement while also engaging in knowledge production seem to be a natural fit. DH scholars interested in open social scholarship are attempting to identify new approaches to helping the larger community productively engage with the humanities. This engagement might focus on broad societal concerns, such as the economy, democracy, citizenship, justice, and equality. It might involve particular topics of interest, including culture, history, linguistics, or literary studies. It may deal with rapid advances in technology and their implications for the world. These are just a few of any number of possible challenging topics that a DH Living Lab might choose to address.

What is important is that the choices be made in conversation with the various stakeholders on the project. From an academic's perspective, for instance, there is likely to be a desire to produce some form of new knowledge that can assist others with decision-making. From a community leader's viewpoint, the primary issue may be to solve an intractable problem or to take advantage of a current opportunity. For other participants, the goals may include an experience of agency in an area they could not productively engage with as individuals. As the Living Lab starts functioning, the original topics of interest are also likely to change, to shrink or expand, making it important to have mechanisms in place for having various stakeholders join the Lab or step away, or increase their participation and decrease it, while still keeping the overall effort productive. That is, the Lab is ideally an organic organization that reconfigures itself as necessary, in order to maximize the benefits of a reasonable effort, always aware that the people involved are subject to the vagaries of life.

Given its dynamic nature, a Living Lab does not necessarily fit comfortably within the somewhat more rigid and slow-moving bureaucratic structure of a university. However, the concept of the Living Lab was created inside the university and the most successful LLs (such as the lab in Malmö, Sweden) are related to universities. The connection to a university is vital in the sense that academic stakeholders are most likely to be the participants focused on the research components of the work, which help to maximize the benefits by creating and disseminating new knowledge for use by others. It can also facilitate interdisciplinary collaborations in the service of design; as Sir Christopher Fraying, former Rector of the Royal College of Art, has provocatively said: 'the big plus is access to different disciplines, i.e. sociology, ethnography, psychology. You can find partnerships with like-minded people, but you're (the designer is) calling the shots. The energy comes from design, and that is the key' (Durrant 2015). But positioning a Living Lab physically within the university may also have the undesirable effect of reducing the direct involvement of community stakeholders. The challenge of university-based Living Labs, then, may lie less in university bureaucracy and more in connecting university, government, community, and business.

Key to the development of a successful DHLL will be the means by which non-university stakeholders are engaged, not only in individual projects but also in the development of the Lab itself. Working together, designers and humanists might develop new ways of establishing long-term relationships with community, industry, and government liaisons, as well as with academic disciplines that have traditionally participated in LLs, such as the Social Sciences, Urban Planning, Architecture, Computer Science, Medicine, and Engineering. We might also look, for instructive precedents, to Living Labs that have originated outside of universities, such as the Library Living Lab in Barcelona (ENoLL), and actively make the lab available to support projects originating outside of the university.

Competing Interests

SR received sub-grants from the Implementing New Knowledge Networks project between 2009 and 2016. Beyond that participation, the authors of this paper declare that they have no competing interests.

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