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A Laboratory as Critical Infrastructure in the Humanities

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Outline:

I A laboratory as a research infrastructure

- 1.1. Three discourses that gave rise to the emergence of a laboratory in the humanities:
- 1.2. Lab history: Mapping humanities and media labs around the world.
- 1.3. Two generations of laboratories: 1983-2010 and after 2010.

II A laboratory as the infrastructure of engagement

- 2.1. Disrupting humanities labs through a critical examination of the infrastructure.
- 2.2. Disclosing the power of labs: Bruno Latour (1983) and Graeme Gooday (2008).
- 2.3. Rebuilding a laboratory as the infrastructure of engagement.

Introduction



http://pawlickadeger.com/humanities-labs/



Number of laboratories established in the humanities:

1983 - 2010: 54 labs

2010 - 2018: 156 labs

There is no unified and global history of laboratory.

FOCUS: LABORATORY HISTORY

Lab History

Reflections

By Robert E. Kohler

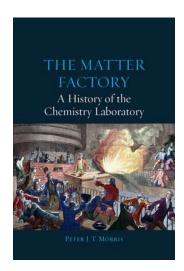
ABSTRACT

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WHEN AN E-MAIL MESSAGE from Isis Editor Bernie Lightman appeared in my thoox, asking if I would take part in a Focus section on laboratory history, I was surprised. Not because the project seemed to me odd or unnecessary—had been feeling for some time that lab history was being sidelined—but because I had no inkling that others felt the same way.

Many, though, may be genuinely surprised to hear that the lab is a neglected subje-

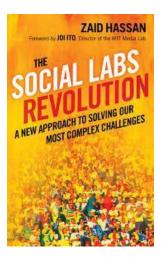
Kohler, Robert E. (2008) "Lab History." *Isis* 99: 761–768.



Morris, Peter J. T. (2015)

The Matter Factory: A History of the Chemistry Laboratory.

London: Reaktion Books.



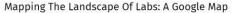
Hassan, Zaid. (2014)

The Social Labs Revolution: A

New Approach to Solving our

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Francisco: Berrett-Koehler.





Hassan, Zaid. (2014) "Mapping The Landscape Of Labs: A Google Map." Social Labs Blog 2.0, June 19, 2014. https://sociallabs.org/mapping-the-landscape-of-labs-a-google-map/

The growing interest in a laboratory concept in the humanities:

- "Building the Humanities Lab: Scholarly Practices in Virtual Research Environments", the panel session in the Digital Humanities conference at King's College London.
- 2013 "Theories and Practices of the Literary Lab" roundtable at Modern Language Association National Meeting.
- **2014** "The Hum Lab: A Consortial Workshop" at the Haverford College.
- **2016** "The Humanities Laboratory: Discussions of New Campus Model", organized by Arizona State University's Institute for Humanities Research and held at the National Endowment for the Humanities.
- **2018** "Reimagining the Humanities Lab", a panel discussion at ADHO Digital Humanities Conference.
- **2019** "What Is a Feminist Lab?", symposium at the University of Colorado, Boulder.

I A laboratory as a research infrastructure

- 1.1. Three discourses that gave rise to the emergence of a laboratory in the humanities:
- 1.1.1. The transformation of the humanities infrastructure taking place in North America and North-Western Europe since the beginning of twenty-first century.
- The 21st century: the accelerating power of technology, the emerging cyberinfrastructure, and intensifying globalization.
- Humanities after 2007: the proclaimed state of crisis.
- "Scientification of the humanities": moving the humanities closer to the sciences [Gottschall 2008]:
 - the use of computational and applied methods,
 - new research practices
 - new methods of evaluating research
 - reconceiving institutions

Two impulses to establish laboratories in the humanities:

- 1) to utilize digital tools and methods in research projects
- The report "Our Cultural Commonwealth" of the American Council of Learned Societies Commission on Cyberinfrastructure for the Humanities and Social Sciences (2006).
- The transfer of STEM model for the infrastructure to the humanities and social sciences.
- 2) to introduce team-based practices to the humanities work
- Calls for developing laboratories as a place enabling collective work [Arac 1997], intellectual exchange [Davidson 1999], and the formation of new relationships between people in the humanities and the sciences [Joselow 2016].
- Building a "meeting place" [Svensson 2016] where people from different disciplines can share and inspire creative ideas.



HUMlab, Umeå University (1997), http://whatisamedialab.com/2018/04/24/reimagining-scale-scope-and-situatedness-in-humanities-infrastructure-an-interview-with-patrik-svensson/

1.1.2. The emergence of laboratory studies in the 1990s.

- The 1980s: a new approach to thinking about science as a practice and a move towards unveiling scientific practices.
- New questions regarding a place in which to construct science [Latour et al. 1979, Galison et al. 1999], the manufacture of knowledge [Knorr Cetina 1981], and material instruments and artefacts [Latour et al. 1979, 1987, Lynch 1985].
- In 1990s, the laboratory studies emerged as the field concerned with the ethnographic and the epistemological investigation of scientific laboratories to understand the process of scientific knowledge production.
- The interest in laboratory was revived again in the 21st century: Laboratory History, *Isis* 99 (2008).

- 1.1.3. The expansion of cultural categories of "innovation" and the "maker movement".
- Innovation paradigm: to tackle the complex social problems of the 21st century, society must turn into an "innovation society".
- The emergence of the innovations labs within the university.
- The innovation as a crucial category defining the humanities labs: strong link between the humanities and the creative industries, providing cutting-edge equipment, and solving complex problems.

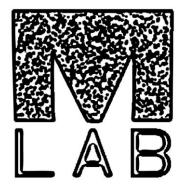




Carolina Digital Humanities: Digital Innovation Lab, the University of North Carolina at Chapel Hill (2011)

Scholarly Innovation Lab, the University of California Los Angeles (UCLA)(2014)

- A laboratory as a creative space built in the common space: in the library.
- A laboratory as a *makerspace*: a "center or workspace where like-minded people get together to make things" [Hatch 2013].
- Makerspace as an outgrowth of the cultural *maker movement*.
- "Labcraft": an innovative and, above all, community lab, seeking to connect people, create a space for dialogue, and transfer ideas to the world [Tiesinga et al. 2014].
- Makerspaces and hackerspaces in the humanities:



Maker Lab in the Humanities, the University of Victoria (2012)



Blow Things Up, the University of Colorado, Boulder (2014)

The transformation of the humanities infrastructure

- The laboratory emerged in response to the infrastructural inefficiencies.
- The lab has been simplified to the instrumental view of physical place equipped with digital technologies, machines, and devices.
- The adaptation of the science model and the workstation model of labs.

The development of laboratory studies

- A laboratory as a gateway to understand how scientific knowledge is constructed.
- The emergence of the laboratory in the humanities entails a shift from the *text* towards the *place* where it is produced.
- Like the sciences, the humanities involve "infrastructural thinking", according to which the infrastructure determines the process of knowledge construction.

Innovation paradigm and maker movement

- The innovation paradigm: providing cutting-edge equipment for experimental excellent research and solving complex problems.
- The emergence of social innovation labs.
- The laboratories in the public space: creative spaces, makerspaces, laborafts, citizen labs, community labs, etc.

1.2. Lab history: Mapping humanities and media labs around the world.

I analyze the history of the laboratory in the humanities within a global context from the 1980s to 2018. The comprehensive map and statistics present the basic empirical evidence of "laboratory boom" in the humanities. These methods provide answers to the following questions:

- When did a laboratory emerge in the humanities?
- When did the idea of laboratory spread around the world and when did it reach its peak?
- When did the transition occurred from the first experimental generation to the second generation of the humanities lab?



http://pawlickadeger.com/humanities-labs/

The Range of Data

What type of labs are under the umbrella of "humanities labs"?

1) Labs established at the humanities departments and institutes.



Critical Media Lab at the Department of English, the University of Waterloo (2008)



Media Archaeology Lab at the Department of English, the University of Colorado Boulder (2009)



Digital Humanities Lab at the Faculty of Humanities, the University of Basel (2010)



Digital History Lab in the Centre for Contemporary and Digital History, the University of Luxembourg (2015) 2) Labs launched outside the humanities institutes.



Digital Storytelling Lab at the School of the Arts, Columbia University (2013)



Humanities Action Lab in the Institute of Museum and Library Services, The New School (2014)



The Franke Family Digital Humanities Laboratory in Sterling Memorial Library, Yale University (2015)



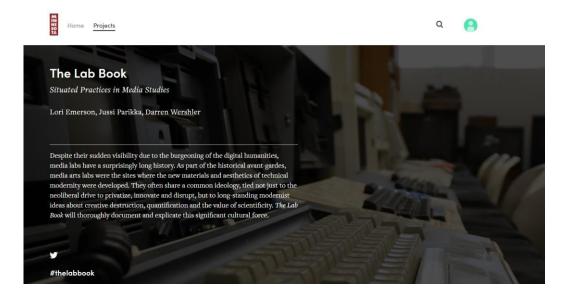
Tactical Humanities Lab at the Department of Science and Technology Studies, Rensselaer Polytechnic Institute (2017)

Data collection

• Internet resources like universities' websites, articles, and research projects



Atlas of Digital Humanities and Social Sciences. (2014). GrinUGR. http://grinugr.org/en/mapa/



Emerson, Lori; Parikka, Jussi; Wershler, Darren. (2016). *The Lab Book. Situated Practices in Media Studies*. University of Minnesota Press. https://manifold.umn.edu/projects/the-lab-book

A questionnaire sent to the most relevant networks in October 2018

Data organization

- Collecting and organizing data about each lab based on its website and other resources [Pawlicka-Deger 2019].
- Used StoryMapJS, a free tool designed by the Northwestern University Knight Lab.



http://pawlickadeger.com/humanities-labs/







1993 - Media Lab Helsinki

Aalto University Espoo, Finland

About: The mission of the Media Lab is to explore, discover and comprehend the new digital technology and its impact in society; to find and exploit the possibilities it opens to communication, interaction and expression and to evaluate, understand and deal with the challenges it poses to design and creative production.

Affiliation & location: Department of Media

Disciplines & keywords: information, communication, media studies, human-technology interaction, design, virtual reality, immersive systems, digital cultural heritage, augmented reality, 3D modeling, learning environment, video games

Selected projects: virtual reality installation of the "1632 Anatomy Lesson of Dr. Nicolaes Tulp" by Rembrandt Harmenszoon van Rijn, virtual reconstruction of the "Finnish Pavilion at the Paris 1900 World Fair", an open source application for video recording, annotating and sharing "Ach so!", a mobile app "SoAR" (Social Augmented Reality), "Vibrating Instruments in Virtual Reality (VIVR)"









College of Arts & Letters

2012 - Digital Humanities and Literary Cognition Lab

Michigan State University East Lansing, United States

About: The DHLC is a space currently devoted to cultivating interdisciplinary projects across literature, cognitive science, and DH, including experiments in literary neuroscience, research in the history of mind, and the development of a creative array of digital technologies for research and teaching.

South

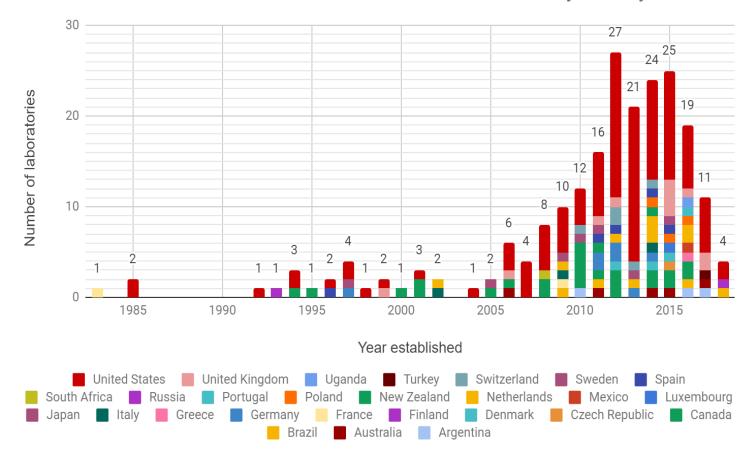
Affiliation & location: Department of English

Disciplines & keywords: literature, cognitive science, literary neuroscience, literary cognition, digital humanities, digital media, human-technology interaction, linguistics, philosophy, aesthetics, history of mind, neuroaesthetics, narrative

Selected projects: "Jane Austen and the Neuroscience of Reading and Attention", "Neuroaesthetics: Poetry and Aesthetic Pleasure", "Collaborative Research: The Role of Narrative in Music Perception"

Antarctica

Number of laboratories established in 1983-2018 by country



1983-2010: 54 laboratories established in the United States (29 labs), Canada (9), Sweden (3)...

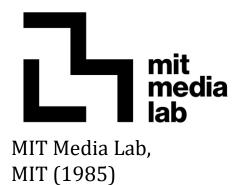
2010-2018: 156 laboratories created in the United States (82 labs), Canada (15), the United Kingdom (8)...

1.3. Two generations of laboratories: the first generation (1983-2010)

The first laboratories emerged in media studies in the 1980s:



Laboratory Paragraphe, the University of Paris 8 (1983)





Digital Writing and Research Lab, the University of Texas at Austin (1985)

Media labs launched in the 1990s:



Aalto Media Lab, Aalto University (1993)



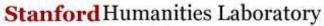
New Media Lab, City University of New York (1997)



GroundWorks Media Lab, the University of Michigan (1998) In the 1990s, the first laboratories showed up in the humanities field:



HUMlab, Umeå University (1997)





Stanford Humanities Lab (SHL), Stanford University (1999)

In 1999, for the first time, a "laboratory ethos" were defined as follows: *collaborative, co-creative, and team-based* (SHL). SHL stressed that a laboratory is not a place for just discussions but first of all for building: "new media, interactive archives, predictive models of social change, new courses, collaborative research workshops, art exhibitions" [Hartwig 2011].

The second generation of laboratories: after 2010.

The year of 2010 is the begin of the next generation of laboratories:

- The "infrastructural turn" in the humanities: a new infrastructure aimed to foster and drive technology-based, collaborative, and experimental research;
- A center became questionable model for digital humanities [Sample 2010, Fraistat 2012];
- Some centers were reorganized into departments of digital humanities (e.g. the Center for Computing on the Humanities was renamed the King's College Department of Digital Humanities in 2011);
- The number of laboratories has been rapidly growing becoming a prevalent model for digital humanities.
- The emergence of the first virtual laboratory: Alfalab, a project of the Royal Netherlands Academy of Arts and Sciences (2009-2011).



Digital Humanities Lab, University of Basel (2010)

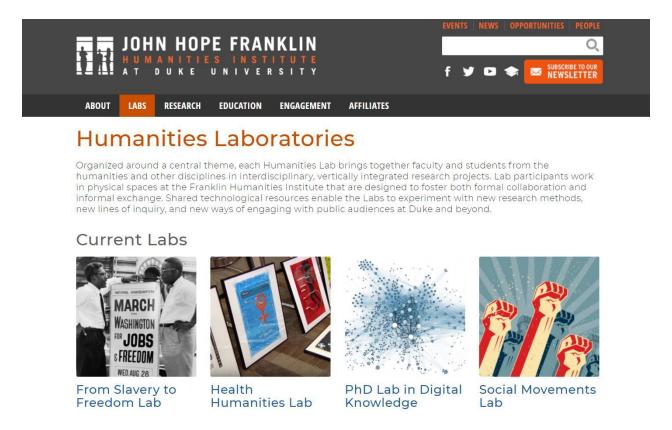


Stanford Literary Lab, Stanford University (2010)



The NULab for Texts, Maps, and Networks, Northeastern University (2013)

The second generation is also determined by the Humanities Labs established at Duke University's Franklin Humanities Institute. Its structure marked the beginning of a new model for a laboratory in the humanities as one that was established for a fixed period (three years), a specific purpose (problem-based lab), and vertically-integrated research.



https://fhi.duke.edu/labs

The notion of laboratory has been used to describe many different places and initiatives:

- distributed research infrastructure (the Digital Humanities Lab Denmark at Aarhus University, 2012)
- a makerspace (ThinkLab at the University of Mary Washington, 2011),
- knowledge-design lab and production studio (metaLAB at Harvard University, 2011)
- experimental space (the Humanities Lab at Arizona State University, 2017),
- a coalition (the Humanities Action Lab led from Rutgers University-Newark, 2014),
- a state-of-the-art facility (the Digital Humanities Lab at the University of Exeter, 2017),
- an innovative course (the Humanities Labs at Colby College, 2014),
- a study programme (the Humanities Lab at Leiden University, 2014),
- student-led initiative (Public Humanities Lab at the University of Virginia, 2017)
- a virtual research environment (LINHD at the National University of Distance Education, 2014),
- a podcast (the Literature Lab Podcasts at Brandeis University, 2012).

Summary of the first part:

- The laboratory emerged as the essential part in the development of the infrastructure for humanities to support new research practices and methods related to the utilization of technology and digital tools.
- The laboratory entered into the humanities not only as the infrastructure for digital humanities but as the model for the whole humanities.
- The laboratory turn has been driven by the movement away from building physical labs towards creating conceptual laboratories (lab courses, lab podcasts, virtual labs).
- The term "laboratory" is used to describe many different places and initiatives: the laboratory implies the new mode of thinking and knowledge production.
- The laboratory can be established anywhere and anytime since it is not determined by a physical space. The only condition for creating a lab is *community*: a lab is constituted *by* and *for* the people gathered together to address particular challenges.
- A laboratory is more than infrastructure; it is a "conceptual vehicle" (Critical Media Lab at the Academy of Art and Design FHNW) and it involves "new ways of engaging with public audiences" (the Humanities Laboratories at Duke University).

II A laboratory as the infrastructure of engagement

Goals of this part are to:

- present a new perspective on a laboratory for the humanities drawing on critical infrastructure studies, laboratory studies, and social lab theories;
- go beyond the prevailing discussion of a laboratory as a research infrastructure to investigate it as *the infrastructure of engagement* in social and global challenges;
- provide a new conceptual framework for reinterpreting a laboratory for the humanities in the vein of social labs.

The infrastructure of engagement: institutional support engaged scholarship, structures that including degree programs, centers, funding opportunities, digital technologies, and curriculum reorientation initiatives. (the Humanities Action Lab, the initiative of Humanities for All, the National Humanities Alliance Foundation, U.S.) the https://humanitiesforall.org/projects/humanities-action-lab



2.1. Disrupting humanities labs through a critical examination of the infrastructure.

- Critical infrastructure studies: the nascent field established by a collective of international scholars from different disciplines who build a theoretical foundation for "reading" culture through the concept of infrastructure (CIStudies).
- "Infrastructural literacy": the ability to use "infrastructure as a 'critical scaffolding' through which we can address critical issues, including those pertaining to environmental health, the distribution of public resources, and social justice" [Mattern 2016].
- The infrastructure is employed as a useful critical lens for analyzing the socio-cultural concerns.
- One way of "reading" infrastructure is to interrogate a policy of institution, workplace or service. The infrastructure is acted as a kind of epistemic machinery through which we can critically recognize the values and knowledge channeling from such infrastructure [Svensson 2016].



- The second way of applying infrastructural literacy is to envision a new organizational structure that would disrupt the current constructions.
- The discourse of reimagining infrastructure: particularly taken up by North American scholars in feminist studies.
- "Reimagining The Humanities Lab" (ADHO 2018): aimed at disrupting the development of "digital humanities labs" modelled on science labs.
- Scholars proposed to rebuild the lab "as a site for humanistic rather than scientific work" which would be based on the values of generativity, legibility, and creativity.
- "What Is a Feminist Lab?" at the University of Colorado, Boulder in April 2019: revolved around themes of building a laboratory in line with feminist thinking.

what is a FEMINIST LAB? symposium

FEATURED SPEAKERS.

Ashley Baccus-Clark Hyphen-Labs

Ingrid Burrington Deep Lab

Max Liboiron Civic Laboratory for Environmental Action Research

Elizabeth Losh Equity Lab

Tara McPherson Ahmanson Lab

Marisa Parham Immersive Reality Lab for the Humanities

Jacqueline Wernimont Digital Justice Lab / HS Collab

Darren Wershler Residual Media Depot/

APRIL 17-18, 2019 Norlin Library, N410

We are grateful to the many sponsors, on and off campus, who are generously supporting this symposium. Please find them listed at whatisafeministlab.online/sponsors

https://whatisafeministlab.online

Questions? email us: feministlabs@gmail.com

https://whatisafeministlab.online/

2.2. Disclosing the power of labs.

Bruno Latour, "Give Me a Laboratory and I Will Raise the World", 1983:

- Latour argued that a laboratory action entails the dissolution of the inside and outside dichotomy by transferring the knowledge from inside the lab where it was produced to the world outside the lab where it is applied.
- The laboratory gathers experts inside its own walls who conduct experiments and measurements with room for iterations and mistakes.
- The lab's power lies solely in the knowledge manipulated and projected in the lab by the group of people who in the lab environment gain strength of experts.

Graeme Gooday, "Placing or Replacing the Laboratory in the History of Science?", 2008:

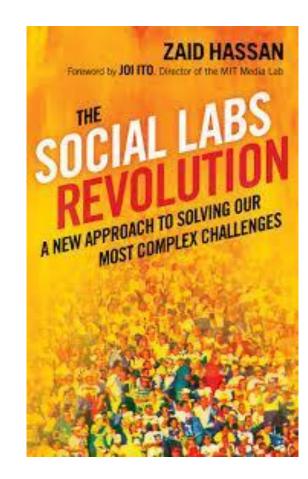
- The extension of laboratory idea over the public space demands to examine a laboratory from a broad and inclusive perspective: "a lot of historians of science now devote their attention to what went on outside the laboratory: on the theater platform or in the museum, auditorium, exhibition, or home".
- Scientific experts are now replaced by citizens in white coats who gather together in a common laboratory space to produce knowledge and influence local challenges.

Following social labs.

We have scientific and technical labs for solving our most difficult scientific and technical challenges. We need social labs to solve our most pressing social challenges [Zaid Hassan, The Social Labs Revolution, 2014].

Social labs defined as platforms for addressing complex social challenges that have three core characteristics [Hassan, 2014]:

- social bringing together diverse participants (civil society, government, and the business community) to work in a team.
- experimental the team takes an iterative approach to the challenges and prototyping methods.
- systemic the ideas developing in social labs aspire to be systemic in nature; this
 means trying to come up with solutions that go beyond dealing with a part of the
 whole or symptoms and address the root cause of why things are not working in
 the first place.



Changes:

- A concept of laboratory has been transformed from a separate scientific room to coalition-based labs seen as a collective chain capable of catalyzing social change.
- The laboratory studies have also undergone significant changes from the ethnographic explorations to tracking a network of engagement in global social challenges.
- The transformation of laboratory has been made through thinking beyond the *instrumental* infrastructure towards the *critical* infrastructure intertwined with social, political, economic, and technological systems.

Rights Lab

We are home to the world's leading modern slavery experts and have built a large-scale research platform for ending slavery.



Rights Lab, University of Nottingham, https://www.nottingham.ac.uk/research/be acons-of-excellence/rights-lab/index.aspx

Ending slavery by 2030 is an ambitious goal. But in the Rights Lab, we believe it is achievable. And to help achieve this goal, we are working with a global community of policy-makers, civil society actors and businesses – a community with a shared vision of ending slavery in our lifetime.

2.4. Rebuilding a laboratory as the infrastructure of engagement.

A laboratory is involved in addressing the local and global challenges by embedding the infrastructure into a social system of interconnected elements as well as by embodying social values and principles in the design of infrastructure. The laboratory is turned into the *infrastructure of engagement* which through its construction, action, and design becomes a voice in the social involvement.

Three implications for the development of the infrastructure of engagement:

- 1) The infrastructure is socially and culturally organized and situated; therefore, social and cultural aspects provide contexts for understanding the infrastructure as well as a framework for designing one.
- 2) The infrastructure as a social product builds new forms of communities and organizations through the mechanism of inclusion by connecting actors in a network of collaboration.
- 3) The infrastructure controls the mechanism of knowledge production and transfer; it can influence the ways that the knowledge is reinforced or undermined.

I determine the following elements of the lab that can underpin the infrastructure of engagement:

- a network structure connecting various stakeholders and spin-off labs;
- the diversity of actors as an engine of a lab;
- collaboration across sectors, institutions, and disciplines enabling to act effectively;
- a flat, nonhierarchical structure embodying the values of inclusivity and equality;
- openness and transparency of uses and actions;
- the focus on a specific challenge undertaken from a broad and holistic perspective;
- the systems analysis approach enabling to understand the bigger picture of problem;
- experimental practices (e.g. prototyping of innovation ideas);
- participatory-based practices (e.g., the method of participatory design);
- merging theoretical and real-world application.

Can we envision a laboratory in the humanities as a place of intervention in social challenges?

The Humanities Action Lab (HAL) led from Rutgers University-Newark in 2014:

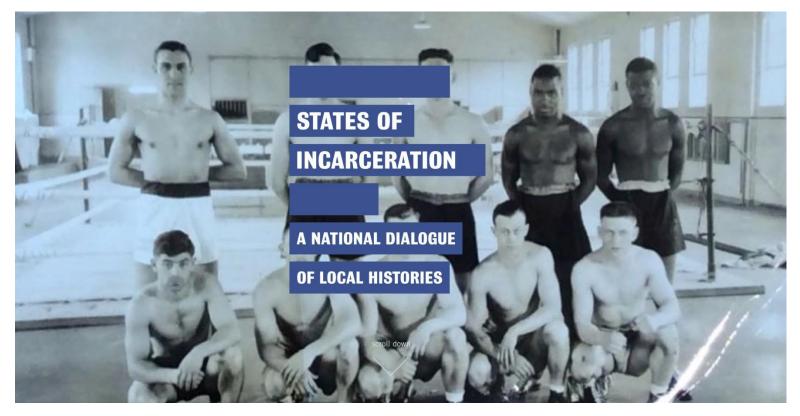
- Operating as a coalition of various universities, issue organizations, and public spaces that collaboratively work on the same initiative for a given period of time to produce community-curated public humanities projects on urgent social issues.
- The projects based on participatory research methods and public humanities prototypes.
- Each partner develops local a multi-media installation, digital and physical archives, public programs, and other platforms for civic engagement.
- Projects travel internationally to museums, public libraries, cultural centers, and other spaces in each of the communities that created them.



Humanities Action Lab, https://www.humanitiesactionlab.org/

The goals of the HAL are to:

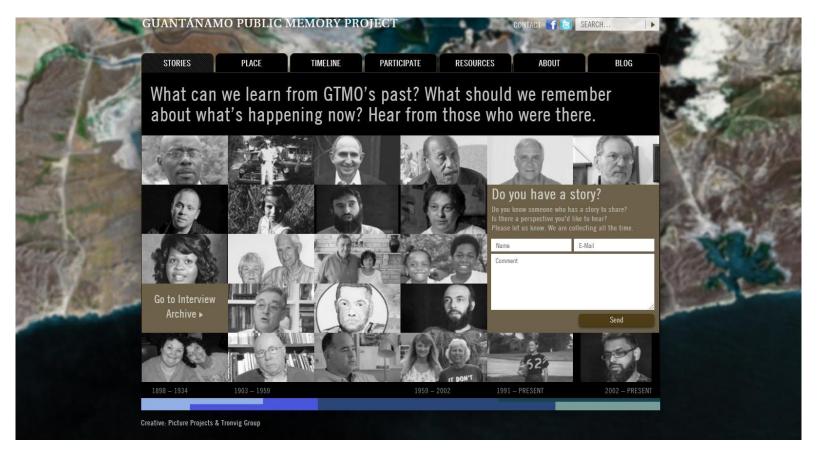
- develop a new perspective on cross-institutional and cross-sector collaboration,
- foster a national and international exchange of local experiences,
- enhance the civic capacity,
- produce the systemic knowledge on a particular social challenge.



Humanities Action Lab, "States of Incarceration", https://statesofincarceration.org/

The HAL has launched three projects:

- "Guantánamo Public Memory Project" hosted by Columbia University,
- "States of Incarceration" based at The New School,
- "Climates of Inequality: Stories of Environmental Justice" hosted by Rutgers University-Newark.



Humanities Action Lab, "Guantánamo Public Memory Project", https://gitmomemory.org/stories/

Summary

- The laboratory is the powerful infrastructure with a great potential for supporting social engagement and driving systemic changes.
- The laboratory has become a critical and interventive space guided by the principles of cross-sector collaboration, diversity of actors, the vertical structure, inclusivity, a systemic approach, and public engagement.
- The infrastructure of engagement is intended to be an epistemological tool to reconsider a laboratory for the humanities.
- The Humanities Action Lab: building a laboratory in the vein of social labs.
- The laboratory has a huge untapped potential for the humanities which can be reinforced by transforming laboratories into the powerful infrastructures of engagement.

Thank you for your attention!

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References:

[Arac 1997] Arac, J. "Shop Window or Laboratory: Collection, Collaboration, and the Humanities", In: Ann E. Kaplan and George Levine, *The Politics of Research*. New Brunswick: Rutgers University Press (1997).

[CIStudies] Critical Infrastructure Studies. CIStudies.org, https://cistudies.org/.

[Davidson 1999] Davidson, C. N. "What If Scholars in the Humanities Worked Together, in a Lab?", *Chronicle Review*, May 28, 1999. https://www.chronicle.com/article/What-If-Scholars-in-the/24009.

[Fraistat 2012] Fraistat, N. "The Function of Digital Humanities Centers at the Present Time." In M. K. Gold (ed). Debates in the Digital Humanities, University of Minnesota Press, Minneapolis (2012).

[Galison et al. 1999] Galison, P. et al. (eds). The Architecture of Science. MIT Press, Cambridge and London (1999).

[Gooday 2008] Gooday, Graeme, "Placing or Replacing the Laboratory in the History of Science?", *Isis*, Vol. 99, No. 4 (2008), pp. 783-795.

[Gottschall 2008] Gottschall, J. *Literature, Science, and a New Humanities*. Palgrave Macmillan, New York (2008).

[HAL] Humanities Action Lab, https://www.humanitiesactionlab.org/.

[Hartwig 2011] Hartwig, D. "Guide to the Stanford Humanities Lab Records". Online Archive of California (2011). https://oac.cdlib.org/findaid/ark:/13030/kt3b69r9xx/entire_text/.

[Hassan, 2014] Hassan, Z. *The Social Labs Revolution: A New Approach to Solving our Most Complex Challenges.* Berrett-Koehler, San Francisco (2014).

[Joselow 2016] Joselow, M. "Labs Are for the Humanities, Too", *Inside Higher Ed*, July 12, 2016. https://www.insidehighered.com/news/2016/07/12/conference-explores-humanities-labs.

[Knorr Cetina 1981] Knorr Cetina, K. The Manufacture of Knowledge. Pergamon Press, Oxford (1981).

[Latour et al. 1979] Latour, B. and Woolgar, S. *Laboratory Life: The Construction of Scientific Facts*. Princeton University Press, Princeton (1979).

[Latour, 1983] Latour, B., "Give Me a Laboratory and I Will Raise the World," In: K. Knorr-Cetina and M. Mulkay (eds) *Science Observed: Perspectives on the Social Study of Science*. London: Sage, 1983, pp. 141-170.

[Latour 1987] Latour, B. Science in Action. Harvard University Press, Cambridge (1987).

[Lynch 1985] Lynch, M. Art and Artifact in Laboratory Science. Routledge & Kegan Paul, London (1985).

[Mattern 2016] Mattern, S., "Scaffolding, Hard and Soft – Infrastructures as Critical and Generative Structures", Spheres. *Journal for Digital Cultures*, June 2016, http://spheres-journal.org/scaffolding-hard-and-soft-infrastructures-as-critical-and-generative-structures/.

[Our Cultural Commonwealth 2006] Our Cultural Commonwealth. The report of the American Council of Learned Societies Commission on Cyberinfrastructure for the Humanities and Social Sciences. American Council of Learned Societies, New York (2006).

[Pawlicka-Deger 2019] Pawlicka-Deger, U. "(Digital) Humanities and Media Labs Around the World" [Data set]. Zenodo (2019). http://doi.org/10.5281/zenodo.2631219.

[Sample 2010] Sample, M. "On the Death of the Digital Humanities Center". *Sample Reality*, March 26, 2010. http://www.samplereality.com/2010/03/26/on-the-death-of-the-digital-humanities-center/.

[Svensson 2016] Svensson, P., *Big Digital Humanities: Imagining a Meeting Place for the Humanities and the Digital.* Ann Arbor, MI: University of Michigan Press (2016).