

Our proposed contribution focus on *practices, experiences and values* regarding the institutionalization of shared machine shops, specifically on an international and plural perspective on those aspects.

Our overarching research perspective is motivated by European, praxeological approaches to Human Computer Interaction (HCI) and Computer Supported Cooperative Work (CSCW) which are well summed up in [1] as well as STS perspectives on technology design and use [2]. In a nutshell, those research traditions are critical of power differences between “designers/creators” and “users” in ICT development, always considering systems incorporating ICT as socio-technical (as opposed to just/mainly technical) and acknowledging their interrelation with collaboration, sharing, organizational and learning aspects as well as many other factors. These approaches include methods from Ethnography, Ethnomethodology, Participatory Design and other disciplines to try understand end user communities and to initiate cooperative systems development. We propose a similar approach for our contribution:

Research plan

Review and analysis of existing data.

Both corresponding authors have spent a significant time setting up and managing shared machine shops in academic contexts while simultaneously working as/with grassroots activists and in global networks. Their activities include research, teaching (digital) fabrication, grant acquisition and organizational aspects of shared machine shops in universities. The paper will be informed by existing data related to those activities as well as of reviewing recent events and literature. Close exchange with other researcher in the field (see below), might lead to additional authorship(s) for the final paper.

Upcoming Interviews and observations

The annual meeting of the Global Innovation Gathering (GIG) is currently one of the most exciting opportunities to work with founders and managers of community innovation hubs and shared machine shops on a global scale. The annual GIG meeting is co-located with re:publica, one of Europe’s central conferences on all things related to digital culture. Participating at GIG offers the unique opportunity for interviews and observations, but also for an exchange of research experiences and perspectives with other academic within GIG (e.g.[5]). The interviews will focus on *practices, experiences and values* regarding our interview partners’ community hubs, specifically on their institutionalization.

Additional empirical work

The paper will also be partly informed by a recently started federally-funded research project on *digital fabrication and community education in academic teaching ("FAB101")*, coordinated by one of the authors. The project's aims include understanding institutional and organizational factors of shared machine shops / innovation hubs in Germany. This research includes further interviews focusing on institutionalized shared machine shops within different institutions and disciplines of German academia.

Other methodological considerations and analyses:

The interviews will be conducted by the authors who, as members of GIG and involved in the management of institutionalized shared machine shops, act as "participating observers". This dual role as participants in the field that is being investigated is not without risk, but will be treated openly and critically taken into consideration. Data from the empirical work will be analyzed motivated by Thematic Analysis, as a collaboration between the authors and other researchers from project FAB101 as well as the GIG network.

Case studies and Interviewees:

Germany:

- FAB101 consortium labs:
 - Fab Lab Aachen: Germany's first Fab Lab
 - Fab Lab Bremen: Academic Fab Lab, turned into a NGO recently
 - Fab Lab Siegen: "Second generation" Fab Lab
 - Machine Shops Folkwang University, Essen: Arts & crafts campus
- ArTeLab Technical University, Berlin: focus on teacher training
- Open Design Research Lab, Berlin at Universität der Künste: Lab just for students.
- Fab Lab TH Wildau, Berlin: More recent Fab Lab with new organizational insights.
- Labs University Bochum: Old factory (huge) currently being converted in a Fab Lab / incubator / learning factory / student center.

GIG / international

- Make-i-Stan, Lahore: Pakistan. Co-located with university.
- Kumasi Hive, Kumasi: Community innovation space

- Woe Lab, Lome: Innovation Hub & Fab Lab
- Gearbox, Nairobi: Community machine shop
- Vecbox, Ramallah: First Hackspace in Palestine.
- Science Camp, Basra: one of two Iraqi Makerspaces
- Otelon Network Austria: rural, decentralized technology labs
- Olabi, Rio: Makerspace
- Ananse Group: Research relating to innovation hubs

Possible outcomes

The work we have tried to sketch out will result in a diverse selection of ethnographically motivated cases of institutionalization practices in shared machine shops world-wide. Naturally, given a wide scope and a limited time frame, the depth and “thickness” of the cases will be limited. Further research directions and questions will be outlined in the conclusion, some of these will be covered by the FAB101 project (runtime till end of 2019). Similarities among the German cases in contrast to global trends might emerge – but are not specifically targeted. The selection of partners and cases, we believe, highlights segments of shared machine shops and similar communities rarely covered by research. We hope this will add new perspectives on understanding institutionalization practices and processes and possibly contribute to a more pluralistic understanding of shared machine shops. Additionally, we hope the findings will benefit *practice-based* challenges, values and developments which we see in line with the planned Special Issue’s focus.

[1]Rohde, M., Brödner, P., Stevens, G., Betz, M., & Wulf, V. (2016). Grounded Design – a praxeological IS research perspective. *Journal of Information Technology*. <https://doi.org/10.1057/jit.2016.5>

[2] See: Carroll, Jennie. 2004. “Completing Design in Use : Closing the Appropriation Cycle.” in *European Conference on Information Systems (ECIS) Proceedings*. See also Orlikowski, Wanda J. 2000. “Using Technology and Constituting Structures: A Practice Lens for Studying Technology in Organizations.” *Organization Science* 11(4):404–28.

[3] <http://anansegroup.com/>
