grassroots ✳ INNOVATIONS

RESEARCHBRIEFING 24 August 2014

Although aims can be diverse, the 'doing, making, sharing and learning things together' aspect of workshops is something that is commonly shared between workshops

Examining web-based materials
A snapshot of UK FabLabs and Hackerspaces

Sabine Hielscher (SPRU) outlines initial impressions gained from an analysis of selected web-based materials on FabLabs and Hackerspaces in the UK to find out what type of information is being shared on these websites, in particular, in relation to the member's activities, projects and aims.

Although people have always tinkered with technologies and made their own things, people have started to conduct these activities within shared spaces.

The Transformative Social Innovation Theory (TRANSIT) and Grassroots innovation in low energy digital fabrication (GI-LEDF) research projects explore the phenomena of community-based digital fabrication workshops, so called, FabLabs and Hackerspaces. Such workshops create physical spaces where people come together to learn about and use versatile digital (and craft) design and manufacturing technologies in collaborative projects. Workshop members meet up at regional, national

and international events and are networked through social media and online resources. As such, these workshops and their networks provide people with spaces to work together on practical, hands-on projects, potentially creating a vibrant space for grassroots innovation.

Current media rhetoric has created excited claims around these activities transforming practices of design, innovation, production and consumption. Such rhetoric sometimes risks

extrapolating and inflating claims without considering workshop members' own activities, aims in setting up spaces and working together. One of our research projects' aims is to develop an understanding of practitioner aims and activities through visiting FabLabs and Hackerspaces, organising creative workshops, joining events and examining web-based materials. Academic literature on FabLabs and Hackerspaces tells us that in addition to meeting up at events or in each other's work-

1

shops, members make use of social media, such as self-installed open source systems and web-based services to connect and collaborate with each other. Such tools are often linked to Wiki pages and the workshop's own website.

In order to gain an initial impression into the way practitioners present workshop member's activities, we collected some initial information about each space from the Fablab and Hackerspace Wiki page (i.e. http://hackerspaces.org/wiki/, http://wiki.fablab.is/wiki/Portal:Labs, http://makerspace.com/makerspace-directory). These Wiki pages provide a list of FabLabs and Hackerspaces where each workshop has the option to introduce their space. Additionally, we followed up web-links if workshops provided information about their own websites, GooglePlus sites and Facebook pages. In total, we examined the web-material of 6 FabLabs and 79 Hackerspaces (mixed with some Makerspaces) in the UK. This material was then analysed to find out what type of information is being shared on these websites, in particular, in relation to the members' activities, projects, technologies used and aims.

This briefing provides our initial analysis of the web-based material. It is important to note at the outset that the information that follows refers only to what is contained in the webpages themselves. It does not necessarily correspond with what is actually happening within FabLabs and Hackerspaces. For example, the workshop groups might not regularly update some of the websites or do not use them as a main source of communication. We have also found workshops that share similar aims and activities that have not added their profile on the Wiki lists of Fablabs and Hackerspaces and therefore our list might not be complete. Nevertheless, these pages do indicate the way workshop organisers wish to represent the space and its activities in this format. Understanding the potential differences and similarities between the web-based material and workshop members' realities is something that we are interested in exploring further in each research project.

The web-based material and its content

The FabLab Wiki page gives a brief overview of each workshop, including its location (continent, country and city), its name, stage of implementation, contact information and links to the space's website and other web-based materials. Following the website links, it is possible to gain some more insights into members' aims, governance structures of running the space, partners they work with, pricings of how much it costs to use the space or technologies, machines that are used, training and workshop opportunities offered, links to blogs, Twitter and Facebook accounts and descriptions of the global FabLab network (including FabLab Charter). Blogs, Twitter and Facebook (when kept up-to-date) offer a closer look into the day-to-day activities of a FabLab, containing pictures and descriptions of technologies used, objects that are being made, announcements

of training courses and events that are being offered, and the arrival of new technologies. Not all of the FabLabs have provided the same amount of depth of information about each aspect listed above. Nevertheless, the content of the web-based material seems to be more coherent across FabLabs in comparison to Hackerspaces.

The Hackerspace Wiki page provides similar information about the listed workshops to the FabLab Wiki page but with some more detail. Here, Hackerspace members have the possibility to submit a short description about the workshop's aims, activities and projects. Instead of giving a list of pricings, the Wiki page provides information about membership fees (which can vary from nothing to £40). In addition to creating their own websites, blogs, Facebook and Twitter accounts, Hackerspaces link to YouTube, Flickr and GooglePlus to share their activities. In some instances, such communication is not only for external purposes but also to share project ideas or create discussions for internal exchanges (between members). The depth of information provided on these web-based materials varies greatly between Hackerspaces – from predominantly communicating that they exist and looking for more members to providing an in-depth log of their activities, projects, aims, technologies, etc. including films and images.

Overall, it seems that workshop members use a variety of social media platforms for their external and internal communication efforts. Such platforms are used for various purposes and with varying intensity and regularity. FabLabs appear to create a more coherent picture in comparison to Hackerspaces, potentially demonstrating the more informal and diverse characteristics of the latter.

A brief overview of workshop characteristics

The selected web-based material shows that Hackerspaces and FabLabs activities are occurring all over the UK. In particular, between 2006-2008, there seems to have been a real surge in the start up of workshops, with a slight dip

Blogs, Twitter and Facebook (when kept up-to-date) offer a closer look into the day-to-day activities of a FabLab.

Fab Lab Manchester @fabl… 27m
Tonight: #3DPM - 3D Printing Network Manchester, 6-8:30pm ow.ly/ydhYC
Details

Waag Society @waag 2h
This #security #robot watches your every move [VIDEO] on.mash.to/1ibWsXW
Details

Fab Lab Manchester @fabla… 15h
Made in Space, 3D Printer Cleared for August Launch to Space Station ow.ly/yc6qN
Details

Waag Society @waag 23h
Opening of 'The Romantic Disease' #exhibition next Fri. 20/6 at 8pm #Waag bit.ly/1pBXwX1
Details

after 2010 but with a gradual rise since 2011 (see figure 1). Interestingly as seen in figure 2, only 55% of the workshops stated that they are active whereas the rest were either in the planning stage, closed or did not disclose this information. These fluctuations might demonstrate the temporal fluidity of FabLabs and Hackerspaces and potential challenges in keeping groups and spaces going.

A potential challenge for setting up a space or keeping it going, in particular for FabLabs, is their reliance on external funding or host organisations (considering that such funding can potentially dry up after some time). Some of the FabLabs have therefore started to hire out machines, space and expertise. Moreover, staff members run the workshop, which on the one hand, aids maintenance of the space but on the other hand, requires extra funding to keep it going. Hackerspaces potentially rely on a more financially sustainable model in that they charge a small monthly or yearly membership fee and accept donations. Further, they are organised and run by their members (often an elected Board of Directors) rather than staff members. Some of the Hackerspaces run on a pay as much as you think/can basis or ask their members to volunteer some of their time, possibly indicating that the running costs of certain Hackerspaces are less critical for the survival of the group (and might even be a chosen characteristic to potentially be more inclusive and more freely able to decide on their aims and activities).

The more informal and potentially fluid nature of Hackerspaces becomes also apparent when examining where members host their meetings. For instance, not all Hackerspaces had a
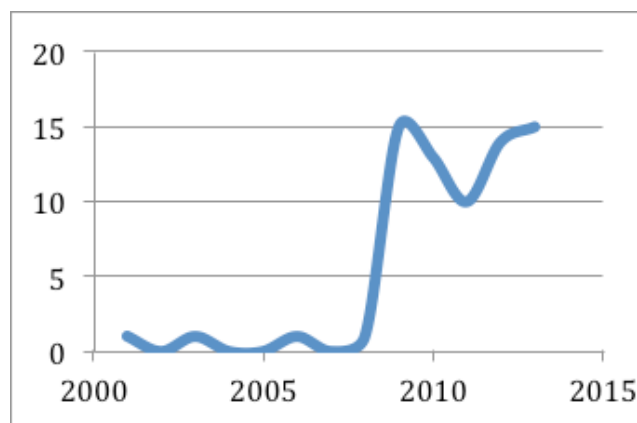

Figure 1: Fab Labs and Hackerspace start-ups by year

permanent workshop to meet up and work in. Some are located within people's homes or meet ups happen by bringing tools and materials to public spaces, such as community centres. The majority, however, has a more or less permanent space where they can keep their tools and do their activities. A handful of workshops have host organisation whereas others are part of self-organised co-working or cultural spaces. The permanency of physical spaces and host organisation can potentially determine how often people meet up (from once a month to everyday), how many members they can host, which machines can be made available to them, and what they aim to do and able to do.

Aims, objectives, activities and projects

Only 43% of the FabLabs and Hackerspaces in this sample mention their aims in the web-based material. Of the FabLabs that do mention their aims, the most common one is to provide access to technologies for people to make stuff. Sometimes this aim is framed around the empowerment or the provision of knowledge. Similarly, Hackerspaces aim to provide a space,

facilities and technologies for people to make and hack. Nevertheless, in addition to providing access, they clearly mention that they are also keen to encourage people to share knowledge, skills and ideas and to collaborate on projects with each other. Linked to the sociability of these aims is the mentioning of wanting to have fun together and socialise as one key objective within Hackerspaces.

For a small number of workshops addressing and discussing several societal, local, environmental and cultural debates are part of their main aims:

- To promote free open source software and DIY cultures
- To discuss attitudes towards technology, media and DIY production
- To advocate a greener, more inclusive, more empowering and sustainable relationships with technology
- To mobilise the community to develop new models of knowledge transfer, personal growth and urban generation

Although aims can be diverse, it seems that the 'doing, making, sharing and learning things together' aspect of workshops is something that is commonly shared between them, particularly highlighting the social character of these spaces. Such sociability within FabLabs and Hackerspaces becomes further apparent through the efforts of organising various formats to get together and collaborate. FabLab and Hackerspace members, for instance, organise training and workshop courses, weekly, fortnightly or monthly meet ups, open days, boot camps and create themed groupings. Examples are:

Figure 2: status of FabLabs and Hackerspaces
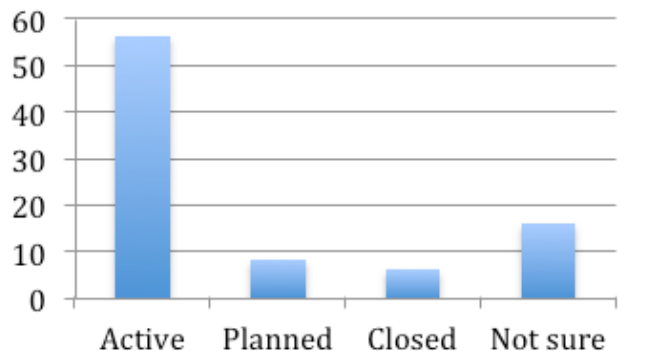
Workshops promote free access to tools
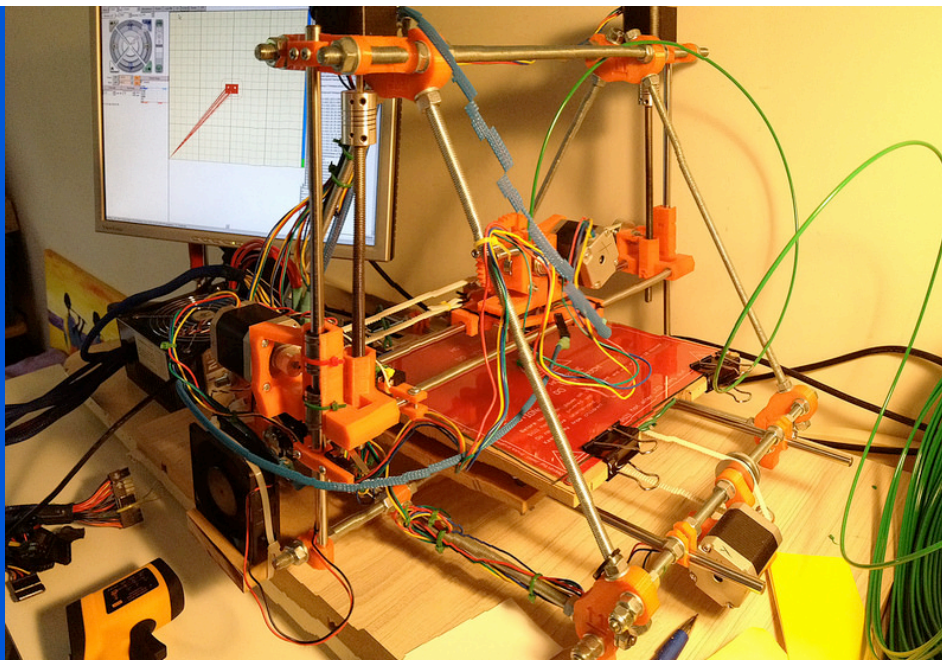
- Training and workshops courses such as Fine metalwork training, CNC router introduction, Arduino and Raspberry Pi, Make useless machines and Customise a bike
- Meet ups such as Saturday Club, Family Makers Morning, Build Night, Nerd Night, Tinker Tuesday and 3D Thursday
- Open days such as Common access days and Mad Hackers Tea Party
- Themed groups such as Open source and Electron Club

Within the collated web-materials, such activities and projects fall into the following broader areas: 1) electronics and soldering, 2) programming and coding, 3) knitting and sewing, 4) wood and metal working and 5) using digital hardware technologies. Within these areas more common projects are grounded in:

- Developing a door access system,
- Building your own open source hardware,
- Lockpicking,
- Building robots and androids,
- Creating micro controllers and wireless networks and
- Developing sensor networks, in particular Hackerspace temperature monitors

Less frequently mentioned projects can include: biohacking, cider brewing, urban gardening and film making, homemade satellites, RFIC creditor,

green maps, solar sun chimes just to mention a few. Perhaps the most significant point to take from these lists of activities, aims and projects is the sheer diversity of pursuits members get involved in. This might suggest that what the workshops are about and what people get involved in is partly determined by its members' interests rather than a coherent or enduring set of ideas and agendas.

Interests and activities of members also play a role when defining their membership and trying to increase it. Within web-based materials, Hackerspaces frequently define their membership in relation to their activities such as woodworking, hacking, robotics, etc. and interest groups such as hackers, makers, designers, electronic people, creative, engineers, artists, amateur scientists, tinkerers, fixers and programmers. Such listings of activities and interest groups is often related to the expression of looking for 'like-minded people' that do not only share similar interests but also ways of working and values (such as an ethos of collaborating and not being afraid of making mistakes when experimenting). In comparison to some of the Hackerspaces, FabLabs have an institutionally-defined membership group: students, school children, businesses, community members, innovators and entrepreneurs.

Potential new members hear and read about workshop activities and in-

terests and decide for themselves whether they have 'like-minded' interest and values or not – determining for themselves whether they are in or out. The organisation of a FabLab or Hackerspace targets and attracts different groups of people, and hence different kinds of project profile. It seems that there are shared activities, ways of working and values across workshops, but it is up to each individual space to interpret them and create something that works for their membership. Rather than being well defined or pre-determined, the development of workshop aims and its membership is part of a process of creating a space and partly determines its future development. Such self-defining process might explain the diversity of activities, interests and aims.
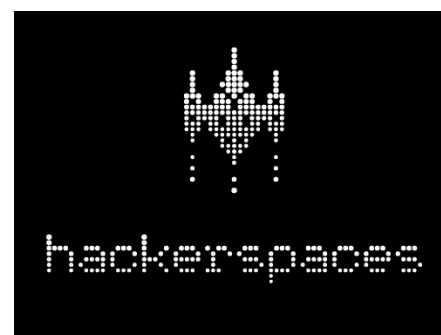
Some reflections

Whilst this analysis reports only on the ways in which Hackerspaces and FabLabs write about their activities, projects and aims within selected web-based materials, and thus does not necessarily reflect what is happening and being discussed within workshops on a day-to-day basis, it still raises some important issues and questions that deserve further investigation.

The web-based material highlights that the creation of Hackerspaces and FabLabs seems to be a recent phenomenon in the UK. Although people have always tinkered with technologies and made their own things, more recently people have started to conduct these activities within shared spaces rather than as a sole activity in their garage, shed or home. These developments highlight the potential important social character of these workshops – doing, hacking and making things together. But what role does the social play within these workshops? Do members actually collaborate on projects? Are they reflective about how the activities sit within wider societal developments? Do people who do come together as members of a space also feel part of a bigger movement?

Some of the web-based material further suggests that ideas around doing, hacking and making things together are shared across workshops. Similarly, the expression of trying to bring together 'like-minded' people implies that certain aspects of these activities are shared or at least commonly understood. Nevertheless, when looking across the selected web-based materials the enormous diversity of workshop aims, activities and projects becomes apparent. Such diversity makes it challenging to study the workshops. What are the most thoughtful entry points of investigating these workshops? How to group activities and aims that make sense to members? Should researchers focus on studying certain types of projects that are shared by numerous workshops or try to find ways to classify the diversity of workshops? Researchers need to find thoughtful ways of conceptualising and studying community-based digital fabrication workshops that appreciate their diversity, sociability and informality.

Only half of the Hackerspaces and FabLabs actively communicate their aims through the web-based materials we gathered and even less mention how their activities might link to wider societal, environmental and cultural developments. It might therefore be questionable in how far workshop members link their activities to these developments, deflating current media hypes. In how far workshop activities link to wider transformational claims is a question that still needs to be answered. Similarly, whether workshop members consider themselves to be part of a wider movement (such as 'makers') with shared aims or goals is a query that persists after this analysis (or even if this a desirable goal).

Researchers and commentators need to be careful about trying to frame these activities around transformation goals. For instance only a small number of workshops might directly explore and reflect upon how these activities sit within wider societal, environmental and cultural developments. Yet, existing rhetoric frames these activities in such ways and therefore it might be timely for FabLab and Hackerspace members to reflect upon how such rhetoric relates to activities on the ground. In this respect, we hope that our research project can provide space (in addition to others) for such reflections.

Please get in touch if you wish to learn more or to get involved:

Adrian Smith
SPRU (Science & Technology Policy Research)
University of Sussex
Brighton BN1 9QE
UK
a.g.smith@sussex.ac.uk
@smithadrianpaul

Sabine Hielscher
SPRU (Science & Technology Policy Research)
University of Sussex
Brighton BN1 9QE
UK
s.hielscher@sussex.ac.uk

STEPS centre

Centre on Innovation and Energy Demand

transit

grassroots INNOVATIONS
RESEARCHING SUSTAINABILITY FROM THE BOTTOM UP