MAKE-IT

Observations from the 33rd Chaos Communication Congress (33C3) in Hamburg, 27th – 30th December 2016:

Influences of the Hacker Scene on the Maker Movement

Introduction and disclaimer of this analytical report

The following observations are the outcome of an interactive workshop on "similarities, differences, overlaps and interactions between the maker movement and the hacker scene" that Janosch Sbeih facilitated with about 20 participants at the 33rd Chaos Communication Congress (33C3) in Hamburg on 28 December 2017. Many of the participants seemed to be active members of hackerspaces and/or makerspaces and/or academic researchers of these communities. The workshop started with a short presentation on selected findings from MAKE-IT's ten case studies that presented the diversity of the maker movement, and an introduction to MAKE-IT's three research pillars "organisation and governance", "peer and collaborative behaviour", and "value creation and impact" to offer a baseline for the interactive discussion which formed the main part of the workshop. The discussion revolved around the question how makerspaces and hackerspaces differ with regards to the three analytical pillars described above. All arguments and claims presented in this text are based on contributions that participants made during the discussion and are not necessarily generalisable to contexts outside of the participants personal experience. For clarity and reading convenience, the claims and arguments made by the participants are presented as factual statements and are organised into coherent themes in the following text. Where appropriate, references to literature is being provided and adequately highlighted to distinguish from participant statements which form the main portion of the this report.

1. Shared activities and technologies (based on workshop discussion)

First of all, it's difficult to draw clear boundaries between makerspaces and hackerspaces. In many contexts the two terms are used synonymously even though multiple authors[1] call for a clearer distinction between the different spaces.

The tools of digital fabrication are commonly found in both spaces, however while a workshop is indispensable in any makerspace, it might not always be present in particular hackerspaces that have a stronger focus on computers and information freedom. Hackerspaces (as well as some makerspaces) are not only concerned with these topics though and often also offer activities and tools for bio-hacking, sewing, knitting, pottery and various other craft-related creations.

The main focus of hackerspaces is to enable people to "open" technological processes and finished products (physical and code-based), tinker around with them to understand how the system works, and then being able to modify it, repair it, etc.

Figure 1: Activities of a hackerspace

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[1] See e.g. Horvath, J., & Cameron, R. (2015). What's a Makerspace (or Hackerspace)? In *The New Shop Class* (pp. 59–71).
Van Holm, E. J. (2012). What are Makerspaces, Hackerspaces, and Fab Labs? *SSRN Electronic Journal*.
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In contrast to makerspaces that put a strong emphasis on the "making" of things, hackerspaces are highly political spaces where political discussions and actions are often core activities of the space. The community of members in hackerspaces appears to be much stronger developed than in makerspaces, consisting often of close-knit groups of friends. Members of hackerspaces regard their activities typically from a political, community and hobby standpoint, rather than a business perspective. The focus on the development of privately marketable prototypes appears to be limited to makerspaces as open source licences are the standard

Figure 2: Mobile 3D printing roboter driving through 33C3

approach in hackerspaces. MAKE-IT's case study sample shows that there is a diversity in makerspaces ranging from initiatives that are strongly business-market oriented to makerspaces that are much closer to the hackerspace model of engaging in activities for the benefit of communities rather than personal financial gain.
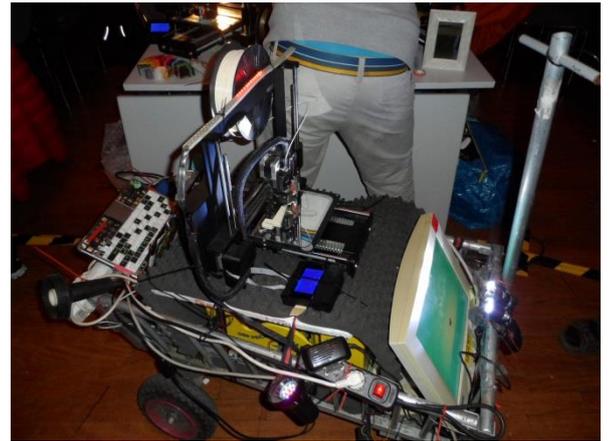
2. Shared history (based on workshop discussion)

While hackerspaces have already a long history (the Chaos Communication Congress met for the first time 33 years ago; Germany's most popular hackerspace C-Base was officially founded in 1995), the terminology of makerspaces came about more recently. It is important to acknowledge how makerspaces historically emerged from the hacker scene to understand key aspects of the Maker Movement ethos and makers' approaches to technology.

The first German makerspace "Attraktor" emerged in 2008 in Hamburg as a **secession** of members from a local hackerspace. The founders of Attraktor were engaging in digital fabrication activities in their local hackerspace, but became increasingly annoyed by its culture of "too much talking, too little making". Being aware of the emerging Maker Movement in the U.S., they decided to brand their newly founded community space as a makerspace, in order to dissociate themselves from the hacker scene for two reasons. First, the emphasis was placed clearly on the making of

things, rather than political discussions of how things should be made. **Politics** in makerspaces are more implicit (and as we know from our MAKE-IT case studies very diverse on the spectrum commercial vs. community oriented) and follow a hands-on "show-don't-tell" approach. Second, the Attraktor members wanted to make their space **as accessible as possible** to the wider public and sought to dissociate themselves from the "hacker" image which is stained with negative associations by media reports that present hackers as people who illegally breach IT-systems, steal data, disseminate malware, etc[2].

Figure 3: Aesthetics in the 33C3 heart: the hacklab

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[2] In the hacker scene, people executing such activities are called „crackers".

Thus, while maker activities have been practiced already for a long time by hackers, the conscious **rebranding** of hacking activities into the maker movement was done to gain wider acceptance in the mainstream. Makerspaces can thus reach out to audiences who would otherwise be deterred by the public perception, political image and/or aesthetics of the hacker scene. You are much more likely to be able to cooperate with established institutions (universities, research institutes, schools, libraries, museums, etc.) if you call yourself a makerspace rather than a hackerspace. The same holds true for the willingness and ability to acquire external **funding**. While hackerspaces usually finance themselves on models of solidarity economics (i.e. by pooling of resources and voluntary donations from their members) and are sceptical of acquiring funding from external sources, makerspaces follow more business-oriented financial models through tiered membership fees, acquisition of external funding and institutional support from larger organisations.

3. **Shared ethos (based on workshop discussion, literature and personal observations on the congress)**

Ethics are a core part of the hacker movement and numerous books[3] have been written about the hacker ethic. While computer security and freedom of information are core tenets of the hacker ethic, there is much more to it that decidedly informed the ethos of maker movement.

Sharing is a core value in the hacker scene which clearly spilled over (albeit in a somewhat diluted form) into the maker movement. Open source licenses and cooperation tools (like GitHub) are the *sine qua non* on which the global hacker community and their decentralised peer-to-peer production processes rest. The sharing of physical resources (i.e. making production tools available to the wider public which is the core feature of makerspaces) stems from the hacker scene's ambition to proliferate free access to computers to the wider public in order to teach society that "the world opened up by the computer is a limitless one". The first community computer installed in a public space was placed outside of Leopold's Records in Berkeley, California, in 1973. In a similar vein, makers from our case studies reported in their interviews that they want to make their digital fabrication technologies available to as many as people as possible, so that everyone can overcome the limitations of being a mere consumer and get empowered to make their own things.

Figure 4: "Hackers, share your work! A community that shares is a caring and resilient community."

Social inclusion is a shared value between the hacker scene and the maker movement. In our case studies we see that many maker activities specifically target disadvantaged groups like refugees or people with physical disabilities. Levy (2001) articulates that criteria such as age, sex, race, position, and qualification are

Figure 5: Practices of gender inclusion at 33C3

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[3] See e.g. Himanen, P. (2001). *The Hacker Ethic and the Spirit of the Information*. New York: Random House. or Levy, Steven (2001). *Hackers: Heroes of the Computer Revolution* (updated ed.). New York: Penguin Books.

deemed irrelevant within the hacker community. To make a point of social inclusion, the organisers of the 32C3 asked a female refugee who had no experience with computers to deliver the opening speech of last year's CCC. While the hacker scene suffers from an equally strong gender gap as the maker movement does, conscious efforts are being made to reduce that gender gap. At the 33C3, a whole floor was a dedicated "kids space" with an elaborate playground, supervised games and private breast-feeding areas.

Sustainability is another shared aspiration between the maker movement and the hacker scene. Both communities make efforts to develop high- and low-tech technologies that contribute to a more sustainable society. While many makers develop marketable prototypes that are more environmentally friendly (e.g. Dezentrale's mushroom research) or address needs in a sustainable manner (e.g. the water purification tool Wadi), the hacker movement uses reverse engineering techniques that uncovered for example the VW emissions scandal by demonstrating how algorithms steering the emissions control unit identify whether a car is taken through a test-run by controlling authorities or in everyday use by regular consumers, and adapt the emissions output accordingly.

Decentralisation plays a core role in the maker movement's grand potential to lead to a future of commons-based peer-to-peer production. The infrastructures and community-orientation towards decentralisation stem from the groundwork of the hacker scene that actively promotes decentralisation and mistrusts authority, as hackers believe that bureaucracies, whether corporate, government, or university, are flawed systems. Makers benefit from the decentralised infrastructure and tools put in place by hackers and are often in favour of decentralised production processes, but are more pragmatic when it comes to collaborating with established bureaucracies.

Figure 6: Decentralised congress organisation

According to Levy (2001), many of the principles and tenets of hacker ethic contribute to a common goal: the **Hands-On Imperative**, which many participants in our interviews described as the core feature of makers. Levy articulates that "hackers believe that essential lessons can be learned about the systems—about the world—from taking things apart, seeing how they work, and using this knowledge to create new and more interesting things."

Conclusion

To understand practices and values of the Maker Movement, it helps to look into its historical linkages with the hacker scene. Both communities share similar technologies and practices, yet there are subtle differences between the two which can be traced back to the founding stories of first makerspaces that wanted to make things differently from the hacker communities they emerged from. In particular, a strong emphasis of making over discussing politics, the conscious rebranding of the Maker Movement to get rid of the stigmata surrounding the hacker image, and a pragmatic approach to funding and collaboration with established institutions are points that set the Maker Movement apart from the hacker scene. Notably, the maker ethos of applying a hands-on imperative for sharing, decentralisation, social inclusion and sustainability is strongly informed by hacker ethics that were developed several decades ago.

Figure 7: Hacking practice: sewing

Figure 8: Hacking practice: soldering

BEFORE TAKING PHOTOS OR FILMING, ASK EVERYBODY IN THE PICTURE IF THEY AGREE!

Figure 9: Emphasis on privacy

Figure 10: Hands-On Imperative: Wash your own cup