

Prospectus for a Diploma Thesis

**Hackerspaces, postmodern learning spheres
beyond the virtual?**

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Introduction

Hackerspaces, a phenomenon that has first seen light in the early 1990s, has known a renewed major popularity over the last three to four years. Since 2006, more than 100 new so-called hacker-, or makerspaces have been founded mostly in Northern America and Western Europe. It should therefore not come as a surprise that these infrastructures with their postmodern concepts and learning culture have mostly grown in exactly these post-industrial regions of the world. The present third wave of these spaces for *hackers* are in no way dark, closed and elitist rooms full of shadowy figures breaking into bank accounts and faring cyberwar. They are shared spaces open to everyone interested in getting to know better, and tweaking technical or societal aspects of the world we're living in. Hackerspaces have, by one of their foremost proponents in the US, Nick Farr (2009) been defined as

„a place where people can *learn* about technology and science *outside the confines of work or school.*” (emphasis added)

Hackerspaces are thus conceived of as a place where learning takes place offside the traditional educational system. But they are also held in high esteem and possibly even hyped by some of their members as being something that states might need to implement, as „*the next great era of innovation and industrial revolution* to spark the economy from the bottom up.” (Moilanen 2009)

However, in order to transparently and adequately reflect about hackerspaces, especially about their current and earlier roles in society, a rough genealogy of these community-driven spaces seems to be in order.

Motivation and theoretical background

The Hackerspaces concept has been around for at least two decades, but it is still mostly under-theorized and conceptually unexplored. Though some socio-political and philosophical attempts to position and describe Hackerspaces exist in the form of short essays, the implications of those spaces for learning theory remain largely unexplored. The question that inspires all of the subsequent research and that ought to be answered by the end of the thesis is the following:

„In how far are Hackerspaces a prototypal grooming ground for a participative, constructivist learning aside formal education?”

This is not to say that hackerspaces could or even should replace traditional schools and their curriculum. The present analysis is neither elaborated enough to be able to judge such bold claims, nor have Hackerspaces been around sufficiently long enough to prove that they can actually hold their promises.

Thus, the goal of this thesis is threefold. First, to investigate how learning in informal contexts such as hackerspaces takes place and in how far this process comes close to a constructionist (Papert) or even constructivist (von Glasersfeld) form of learning as opposed to traditional instructionist learning theories. More specifically, how do Hackerspaces further the intrinsic motivation of their members?

Second, to analyze how the adaptation of motivational principles and modes of information sharing and knowledge creation from the Open Source and Free Software movement influences participation in the learning environment that is a hackerspace. How is participation explained, what fosters participative behavior and what role does peer reputation play in this context? Are there, as Hemetsberger (2001) put it, „highly motivating social rewards” that in combination with an „individual gain of knowledge”, create a „self-sustaining system of [knowledge] exchange”?

And third, through case studies, to find and explain differences in how hackerspaces in different parts of the world perceive themselves as well as their engagement with society, and in how far that influences their modes of sharing information among themselves and with the outside world.

If learning, as advocated by Papert, is most effective by making tangible objects, then hackerspaces with their plethora of mechanical, electrical, and software projects, their credo of „just f*****g do it” and their many hands-on experiences, should be the ideal environment for this form of construing knowledge in people’s minds. Hackerspaces go beyond the constructivist epistemological question of „How do we gain knowledge” to also ask: „How can we most effectively share it?” The ways in which knowledge is supposed to be shared in and between hackerspaces around the globe can be likened to concepts such as Piaget’s experimental education or other concepts, such as enquiry-based learning, self-directed learning, discovery learning, knowledge building, learning by teaching, or transformational learning. Especially the way in which information is shared between hackerspaces comes very close to the idea of learning as reconstruction as opposed to a transmission of ready-made knowledge. Projects from other spaces are reverse engineered (de-constructed), modified, sometimes improved on and then re-build.

Hackerspaces, in theory and to some length also in practice, stand out as successful realizations of public sphere spaces where a coercion-free, or deliberative discourse as imagined by Habermas, is possible and, again to some length, also practiced. In Hackerspaces, teaching is very naturally replaced by assisting, as people in a hackerspace see themselves as peers and in their strive to learn as much from each other as possible, their teacher-learner positions are constantly reversed in what can best be described as a permanent role play.

Jenkins (2006, 41) sees a similar effect at work in fandom:

„For fans, consumption naturally sparks production, reading generates writing, until the terms seem logically inseparable...”

A tentative enquiry (lacking any scientific claims or control groups) into the differences between learning in formal versus learning in informal contexts reveals that people see the lack of coercion to learn about a specific topic, and as a result, the choice to learn about what *they* choose to as defining the key benefits of a Hackerspace. Contrary to learning in formal contexts, such as in schools, a non-coercive way of learning has neither means nor interest in sanctioning failures but most always applauds achievement. Evidently, as von Glasersfeld (1989) put it:

„[S]ustaining motivation to learn is strongly dependent on the learner’s confidence in his or her potential for learning.”

In this regard, the practice seems to meet perfectly with theory. To the question if and how people in their space show self-initiative, a member of a Dutch hackerspaces responded:

„I figure it's a matter of empowerment, of feeling you have the right to improve the space instead of first asking and discussing and..." (Koen Martens)

Hackerspaces are often not only part of what is frequently described as a permeating open source movement on the internet but their ideologies and *modus operandi* also stem from that movement. This might be hardly news, for this model expands beyond software platforms into „every domain of information and cultural production" (Benkler 2006, 5) and has turned into „new practices and new forms of life." (Kelty 2008, x) However, what makes hackerspaces a learning environment beyond the virtual is that, in some kind of perverted twist, they are real physical spaces housing old-fashioned, yet revamped, communities, as opposed to the virtual communities out of cyberspace. Arguing with Marotzki, Hackerspaces have become, just like the Internet, more than a mere instrument or tool. They have become a cultural and community space. In a similar way, Hackerspaces do not just use technology as an instrument to achieve their means, they actively construct, in the truest sense of the word, things as tangible objects.

However, what Hackerspaces are and what they do, especially how they interact with the society at large is far from being a consensual topic. While some communities and their spaces, particularly those situated in Europe, see themselves as critical, marxist or even anti-capitalist and anti-bourgeois counter-culture movements, others, most notably situated in Northern America, feel very different about their goals:

„Second, I highly disagree with the political nature of the whole thing. There seems to be some weird belief that all of us hackerspaces are little hidey-holes of hardcore leftist thinkers, sitting around drinking coffee in little cups while we vehemently argue about Noam Chomsky essays." (Dave Null)

With the emancipatory political expectation fading away from hackerspaces under a liberal comprehension of society, the proponents of a broad understanding of politics see hackerspaces becoming „tiny geeky workshop paradises" (Grenzfurthner and Schneider 2009) instead of the much heralded 'third spaces', breaking through the bourgeois separation of places to live and places to work. In any case, how Hackerspaces situate themselves in the nexus of an otherwise economically dominated culture-industry (Horkheimer/Adorno) is not irrelevant. Because, as Yochai (Benkler 2006, 6-7) notes, „these nonmarket collaborations can be better at motivating effort and can allow creative people to work on information projects more efficiently than would traditional market mechanisms and corporations." And to come back at what was previously said about one Hackerspace re-building another one's projects, Benkler goes on to say that the outputs of such projects „are not treated as exclusive property. They are instead subject to an increasingly robust ethic of open sharing, open for all others to build on, extend, and make their own." (Benkler 2006, 7)

Research design and methodology

That the author is involved in the hackerspaces movement is equally a chance as a challenge. Far from positivist claims that only objective, impartial research is valid research, involvement in

the community one tries to assess is always accompanied by some awkwardness and exposed to scepticism (compare to Jenkins 2006).

It follows naturally from the above mentioned concepts of constructionist and constructivist learning, that the foundations of this work will rest on a radical (as opposed to a 'conventional') constructivism and a Foucauldian understanding of discourse as a means of defining meaning and exercising power. Passing through the analysis of discourse is necessary because the prevalent narrative of schooling and learning is one that is actively sustaining the present power relationships between teachers and students. Opening up alternatives first requires deconstructing the present discourse and thus tradition of 'naturally' instructionist learning.

The empirical data for this thesis will be gathered in two distinct but temporally interlinked steps. The first will be to observe and analyse, during a period of two to three months, if and how learning happens in the informal context of a specific hackerspace, which in this case will be the Luxembourgian space named „syn₂cat”. These observations shall be accompanied by semi-structured interviews of the most regular attendees of that specific hackerspace, both to get to know what learning experiences they make and to get some feedback from the community members in regard to the findings. The second part will consist of a structured email interview or online survey of several distinct members of other hackerspaces around the world. Both data sets should then be compared to the extent that slightly divergent survey data can be related to each other, in order to see whether there are differences in the views on learning processes.

It might further be interesting to also question a control group consisting of people who have never been to a hackerspace, not contributed to open source projects and not experienced any other form of learning in informal contexts.

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