

# Geneology of Hacklabs and Hackerspaces

## Abstract

Hackerspaces are workshops organised with an open community model where people with technological interests where can come together to socialise, collaborate, share and expand their knowledge. The last few years have seen an increased activity in this area including the founding of many new locations, increasing collaboration and discussions about the potentialities and the directions of hackerspaces. However, similar spaces called hacklabs have existed since personal computers became widespread, based on an underground political agenda. These new and old school places are often seen retrospectively as part of a single trajectory, and most of the discourse treats the two words as equivalent. Changing this homogeneous perspective through outlining the overlapping but distinguishable geneologies of hacklabs and hackerspaces can contribute to the contemporary debates around this vibrant hacker culture and movement.

## Introduction

Hacklabs manifest some of the same traits as hackerspaces, and indeed many real communities registered on hackerspaces.org identify as hacklabs as well. However, despite the fact that these spaces share a lot of cultural DNA, some of their ideological and historical roots are indeed different. Historically, hacklabs started in the late 80s and became widespread in the 90s, while hackerspaces started in the late 90s and became widespread in the naughties. Obviously, these overlapping developments involved a lot of cultural and personal transfer. Ideologically, most hacklabs have been explicitly politicised as part of the broader anarchist/autonomist scene, while hackerspaces, developing in the libertarian sphere of influence around the Chaos Computer Club, are not necessarily defining themselves as overly political. One more concrete example of these historical-ideological differences is the economics of space: while hacklabs are mostly located in squatted territories, hackerspaces are generally rented.

Libertarianism and the anarchist/autonomist tradition and movement have many overlaps that provide for a certain level of compatibility, but there are also widely contested points, for example around sexism, the idea of authority, and so on. While some ideas that were consciously upheld in hacklabs are hard to find in the hackerspaces, some others have become part of the 'common sense' of this new wave of communities. On the other hand, while hacklabs functioned as a module of a certain underground culturally, and an element of a social movement politically, hackerspaces managed to

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escape these ghettos and gain wider impact and popularity.

Therefore it seems very promising to chart the geneology of hackerspaces from the point of view of hacklabs, since the transfer between these movements have been largely undiscussed and unconscious. A conscious examination will highlight many interesting differences and connections, as well as specific advantages and disadvantages of each movement. In particular, hackerspaces as a viral phenomenon is at its heights at the moment, and while a new wave of fablabs spring up, some people (like Grenzfurthner & Schneider) have started asking questions about the direction of these movements. A critical engagement with these histories could inform and inspire these discussions in a productive way.

This paper is comprised of three distinct sections. The first two parts give a diachronic view of the history of hacklabs and hackerspaces, as well as more synchronic view of their ideology. The third part confronts those results about the different spaces in order to trace the cultural transmissions, describe the debates, and evaluate the divergent results of hacklabs and hackerspaces.

A note on terminology. While much of the discourse, written and oral, uses the words "hacklab" and "hackerspace" as synonyms, this paper uses them to denote two interconnected, overlapping but essentially different phenomena. The reason for this is mainly methodological: such a linguistic distinction is a necessary preliminary condition (one might even call it an axiom) for carrying out the critique that is the contribution of this paper. My thesis depends on it. On the other hand, the first two sections seek to flesh out this initially empty terminology. Even people who use these words interchangeably will recognise that there have been two historically and ideologically distinguishable drifts. Actually, the mingled use of these terms often stems from a limited historical consciousness of the speaker or writer. One objective of the paper is exactly to contribute to that historical consciousness. At the moment, however, let it suffice to say that the distinction is mainly methodological, and these terms are used in a technical manner abstracted from their everyday usage.

## **Section 1: Hacklabs**

The appearance of hacklabs can be attributed to a number of factors. In order to sketch out their geneology, two contexts are expanded here: the autonomous movement and media activism. A shortened and simplified account of these two histories are given here that emphasises elements that are important from the point of view of the emergence of the hacklabs. The hacker culture that is as important as these is treated in the next section in detail.

The autonomous movement followed the "cultural shock" (Wallerstein 2004) of 1968 which included a new wave of contestations to capitalism both in its welfare state form and in its Eastern

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manifestation as "bureaucratic capitalism", (Debord [1970] 1977) as well as the formation of youth subcultures. Its main content has been mass direct action and the establishment of initiatives that sought to provide an alternative to the institutions operated by the state and capital. Its crucial formal characteristic has been a self-organisation that emphasises the horizontal distribution of power. In the 70s it played a significant role in the politics of Italy, Germany and France (in order of importance) and many other European countries like Greece (Wright 2002). The theoretical basis has been the idea that the working class (and later the oppressed in general) can be an independent historical actor in the face of state and capital, building its own power structures through self-valorisation and appropriation. It drew from orthodox Marxism, left-communism and anarchism both in theoretical terms and in terms of historical continuity of contact between movements. The rise and fall of leftwing terrorist movements (like the RAF in Germany or the Red Brigade in Italy), which emerged from the same milieu, has marked a brake in the history of the autonomous movements, after which they became less compact and more diffuse. Two specific practices that were established by autonomists are squatting and media activism (Lotringer & Marazzi 2007).

Resistant groups have always been reappropriating real estate, as much as everything else necessary for life and struggle, since the beginning of history. Sometimes, as in the case of the pirate settlements described by Hakim Bey (1995, 2003), these have evolved into sites for alternative "forms of life" (Agamben 1998). The housing shortage after the Second World War resulted in a wave of occupations, for example in the United Kingdom (Hinton 1988) that necessary took on a political character and produced community experiences. However, the specificity of squatting lay in the strategy of taking occupied houses as a point of departure for the reinvention of all spheres of life without losing the antagonistic relationship to the establishment. While many initiatives remained private homes, concentrating on the former aspect; others opted to play a public role in urban life, incorporating the latter one – these were called social centres. A social centre would provide space for initiatives that sought to establish an alternative for official institutions. For example, the infoshop would be an alternative information desk, library and archive, while the bicycle kitchen would be an alternative to bike shops and bike repair shops. These two examples show how the series of institutions to be replaced included those operated by both state and capital. On the other hand, both temporary and more or less permanent occupied spaces also served as the hinterland, and sometimes front, of an array of protest activities. They provided space for meetings, storage, preparation, fundraising and withdrawal. After the aforementioned brake, squatting transformed into a movement of its own, of course still closely tied to grassroots protest movements. With the onset of neoliberalism (Harvey 2005, 2007), squatters had to fight hard for their territory, resulting in the "squat wars" of

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the 90s, during which enforcement practices, laws and frameworks for legalisation has been established in the UK, Catalonia, Netherlands and Germany. By this time the autonomous movement has lost its impetus and was barely recognisable. However, some of the more powerful occupied social centres (like the EKH in Vienna) and a handful of strong scenes (like Barcelona) in certain cities managed to secure their existence through the zeroes. The last years saw a series of crackdowns on the last remaining popular squatting locations such as the abolishment of squatting related laws in the Netherlands (Usher, 2010) and discussion of the same in the UK (House of Commons, 2010).

Media activism developed along similar lines, building on a long tradition of independent publishing. One important early contribution was Radio Alice (est. 1976) which emerged from the the autonomist scene of Bologna (Berardi & Mecchia 2007). Pirate radios and their reformist counterparts, the community radios, flourished ever since, but reclaiming the radio frequency was only the first step. As Dee Dee Halleck explains, media activists soon made use of the consumer electronic products such as camcorders that became available on the market from the late 80s onwards. They organised production in collectives such as the Paper Tiger Television and distribution in grassroots initiatives such as the Deep Dish TV which focused on satellite air time (Halleck 1998). The next logical step was to expand to information and communication technologies like the personal computer – appearing on the market at the same time – which was different from the camcorder in the sense that it was a general purpose information processing tool, and with the combination of commercially available Internet access it changed the landscape of advocacy and organising. At the forefront of the theory and practice of this move was the Critical Art Ensemble, which started with video works in 1986, but concentrated on using other emerging technologies (Critical Art Ensemble 2000). Although they have published exclusively Internet-based works like *Diseases of the Consciousness* (1997), their *tactical media* approach emphasises the use of the right tool for the right job. In 2002 they have organised a workshop in New York's Eyebeam hackerspace. While many activist projects on this scene operate simultaneously in the new media art world, partly because it is sphere of institutionalised border-crossing where it is relatively easy to acquire funds, this trend is not exclusive. New media activists played an integral part in the emergence of the alterglobalisation movement, establishing the Indymedia network which is comprised of local Independent Media Centres and some global infrastructure to hold it together. Focusing on open publishing as an editorial principle, the initiative quickly united and involved so many activists that it became one of the most recognised brands of the movement, only slowly falling into irrelevance around the end of the decade. Roughly in parallel to this development, the telestreet movement – again spearheaded by Bifo from Bologna with OrfeoTv in 2002 – used modified consumer-grade television receivers for pirate television broadcast (see

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Telestreet, the Italian Media Jacking Movement).

Taking Situationism with its idea of interventions in the communication flow as a point of departure, the media activists sought to expand what they call culture jamming into a popular practice through emphasising the folkloristic element (Critical Art Ensemble 2001). Similarly to the proletarian educational initiatives of the classical workers' movements (for example Burgmann 2005:8 on Proletarian Schools), such an approach brought to the fore issues of access, frequency regulations, popular education, editorial policies and mass creativity, all which pointed in the direction of lowering the barriers of participation for cultural and technological production in tandem with establishing a distributed communication infrastructure for anticapitalist organising. Many media activists adhered to some version of Gramsci's theory of cultural hegemony, taking the stand that cultural and educational work is as important as directly challenging the economic relations, notwithstanding the fact that this work already included overturning those relations in the areas of media, culture and technology. This tendency to stress the importance of information in the mechanism of social change was further strengthened by claims popularised by Hardt and Negri, the former of which took part in some Indymedia work, and the latter of which have been active in the historical Italian autonomist movement and a speaker in activist venues ever since, that immaterial labour and linguistic production are the genemonic mode of production in the contemporary configuration of capitalism (2002, 2004). At the end of this spectrum some would go with an understanding of Baudrillard's theorising that the whole of politics depends on a performance of representation, often technologically mediated, placing media activism at the centre of the struggle. Irrespective of these ideological beliefs, however, what distinguishes these media practitioners in terms of identity is that they do not see themselves simply as outsiders or service providers, but as an integral part of this or that movement.

The most simple way in which these two intertwined tendencies come together in the physical hacklabs is that the hacklabs answer basic needs of these movements: squats, closely embedded in the urban flow, need communication infrastructure like Internet access and public access terminals; while media activists, who are more often than not also grounded in a local community, need venues to convene, produce, teach and learn. As Marion Hamm observes when discussing how physical and virtual spaces enmesh due to the activists' use of electronic media communication: "This practice is not a virtual reality as it was imagined in the eighties as a graphical simulation of reality. It takes place at the keyboard just as much as in the technicians' workshops, on the streets and in the temporary media centers, in tents, in socio-cultural centers and squatted houses." (Translated by Aileen Derieg, 2003). One example of these lines of convergence is the Ultralab in Forte Prenestino, an occupied fortress in Rome which is a noted site for many aspects of autonomous politics in Italy, not specifically connected with media

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and communication. The Ultalab has been identified as an emergent pattern on its website (AvANa.net 2005), stemming from the shared needs of the users of the social centre for a local area network that connects the various spaces in the squat, for hosting server computers with the websites and mailing lists of the local groups, for installing and maintaining public access terminals, for having office space for the graphics and press teams, and finally to have a gathering space for the sharing of knowledge. The point of departure for this development was the server room of AvANa, which started as a bulleting board system (BBS), a dial-in message board in 1994 (Bazichelli 2008:80-81). As video activist Agnese Trocchi remembers, "AvANa BBS was spreading the concept of Subversive Thelematic: right to anonymity, access for all and digital democracy. AvANa BBS was physically located in Forte Prenestino the older and bigger squatted space in Rome. So at the end of the 1990's I found myself working with technology and the imaginative space that it was opening in the young and angry minds of communities of squatters, activist and ravers." (Willemsen 2006) AvANa and Forte Prenestino connected to the European Counter Network (now at ecn.org), which linked several occupied social centres in Italy, providing secure communication channels and resilient electronic public presence to antifascist groups, the Disobbedienti movement, and other groups affiliated with the autonomous and squatting scenes. Locating the nodes inside squats had their own difficulties, but also provided a certain level of physical and political protection from the authorities.

Another, more recent example is the short lived Hackney Crack House, a hacklab located under 195 Mare Street in London. This early Georgian house is comprised of a theatre building, a bar, two storeys of living spaces and a basement that housed a bicycle workshop and a studio space at the time (see Foti 2010). Network access had to be provided throughout these areas, and the local area network hub was located in a basement room where a pool of old hardware, some tables and a couch provided a work environment for the technologically minded. The same room could also house a media server accessible for the residents and the cinema space on the ground floor. As with most hacklabs, members have come from the residents as well as from the extended social network linking the squats and autonomous spaces of the area. Its dual use as a private space for tinkering coupled with a private function during its opening hours and public workshops, for example held in the context of a London Free School event. Participants, including absolute beginners and more dedicated hobbyists, could learn about using free and open source technologies like Linux and OpenWRT, network security and penetration testing. The activities ranged from fixing broken electronics through building larger scale mixed media installations to playing computer games. This way the basement room could be a private hideout and a community resource at the same time. Its physical and local nature could be measured by the fact that during its year of operation it has not been necessary to set up a website for the project.

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These descriptions serve to indicate how hacklabs grew out from the needs and aspirations of squatters and media activists, which have a number of consequences. Firstly, that the hacklabs fitted organically into the series of anti-institutions cultivated by people around the autonomous spaces. Secondly, they are embedded in the political regime of these spaces, falling under the frail sovereignty that such projects develop. Both Forte Prenestino and Mare Street had written and unwritten rules of behaviour to be followed and respected by users. The latter squat had an actively advertised Safer Places Policy, stating for instance that people who exhibit sexist, racist, or authoritative behaviour should expect to be challenged and, if necessary, excluded. Furthermore, both places organised more or less regular meeting where internal matters would be discussed, decisions would be made, and guidelines would be hammered out. Thirdly, the politicised logic of appropriation, specifically the ideology of appropriative anarchism has its consequences too. Both places have been considered communal property in at least three distinct ways. Once, according to the cultural norms of the movement and following the anarchist maxim coined by Proudhon that property is theft (2007 [1840]), such valuable real estate belongs to the people by definition. Twice, in legal terms the local government had responsibility to ensure the best use of these buildings – in the case of the Forte Prenestino simply because it was the owner, and in both cases because they have been listed buildings which are historically significant. The occupiers thus entertained the notion that by taking over these empty and derelict buildings, they are performing these public functions of maintenance and utilisation in place of the negligent local authorities. Thrice, by declaring the space a social centre (which is different from a residential squat), the occupiers are explicitly creating a shared resource for the local community. The political legitimacy of these occupations rests on these three points which can be crucial for its continued existence. Lastly, the state of occupation fosters a milieu of complicity, consequently certain forms of illegality are seen as at least necessary, or sometimes even as desirable. All these consequences will be crucial to the discussion of the differences between hacklabs and hackerspaces in Section 3.

Historically, a rudimentary survey based on website registrations (see Figure 1.), desktop research and interviews shows that the first hacklabs were established in the decade around the turn of the millenium (1995-2005). Their greater number in the south of Europe lead to the organisation of yearly Hackmeetings in Italy since 1998, a gathering where practitioners could exchange knowledge, present their work, and enjoy the company of each other. On the north of Europe, plug'n'politix hosted by Egocity, a squatted Internet cafe, provided a meeting point for like-minded projects in 2001. A network of the same name has been established and a second meeting followed in 2004 in Barcelona. In the meantime Hacklabs.org (defunct since 2006) was set up in 2002 to maintain a list of hacklabs, dead or

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alive, and provide news and basic information about the movement. A review of the advertised activities of hacklabs show workshops organised around topics like free software development, security and anonymity, electronic art and media production. The activities of Print, the hacklab in the Dijon squat Les Tanneries show the kinds of contributions that came out of these places. People active in Print have maintained a computer lab with free Internet access for the visitors of the social centre, and a collection of old hardware parts that individuals could use to build their own computers. They have organised events of various sizes (from a couple of people to a thousand) related to free software, like a party for fixing the last bugs in the upcoming release of the Debian GNU/Linux operating system. On the other hand, they have also provided networking support and many computers with Internet access for a European gathering of Peoples' Global Action, a world-wide coordination process of grassroots activists connected to the globalisation critical movement. In a similar vein, they have also staged various protests in the city calling attention to issues related to state surveillance and copyright legislations. These actions have built on a tradition of setting up artistic installations in various places in and around the building, most striking of which is the huge graffiti on the wall spelling out "apt-get install anarchism", a practical joke on how programs are set up on Debian systems. Another example is Riereta in Barcelona, which is located in its own building and hosts a radio studio ran by women. The activities there also revolve around the three poles of free software, technology, and artistic creativitiy, always politicised. However, showcasing the media activist lineage, most projects and events concetrate on media production like real time audio and video processing, broadcasting and problems of distribution like copyright. The recitiation of examples could continue, but it seems most hacklabs would feature similar patterns of usage, with a set of core activities and some links maintained with alterglobalisation politics, occupied spaces and (new) media activism. As a coda, here is a definition from a seminal article by Simon Yuill (2008):

"Hacklabs are, mostly, voluntary-run spaces providing free public access to computers and internet. They generally make use of reclaimed and recycled machines running GNU/Linux, and alongside providing computer access, most hacklabs run workshops in a range of topics from basic computer use and installing GNU/Linux software, to programming, electronics, and independent (or pirate) radio broadcast. The first hacklabs developed in Europe, often coming out of the traditions of squatted social centres and community media labs. In Italy they have been connected with the autonomist social centres, and in Spain, Germany, and the Netherlands with anarchist squatting movements."

## **Section 2: Hackerspaces**

It is probably safe to pronounce that hackerspaces are at the height

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of their popularity at the moment. Arguably, their popularity and the sheer linguistic generality of the name itself allows the hackerspace movement to encompass a wide array of different phenomena. The case of hacklabs have already been laid out, but it is merely an example from one end of the political spectrum. There are a number of other genres spreading around the world like – in rough order of community-orientation – fablabs, makerlabs, telecottages, medialabs, innovation labs and co-working spaces. What distinguishes the spaces upscale from medialabs from the others is that they are more often than not set up in the context of an institution, be that a university, a company or a foundation, with the mission to facilitate work that fosters innovation, focusing on concrete results like research projects or commercial products. Telecottages and telehouses occupy the middle of the range, typically seeded from development funds to improve local social and economic conditions through ICTs. Even makerlabs are sometimes commercial ventures (like the Fablab in Budapest), building on the idea of providing access to tools to companies and individuals as a service. Fablabs may be the next generation of the hackerspace evolution, focusing on manufacturing custom built objects in the context of re-imagining the factory. What sets hackerspaces apart – along with most fablabs – is that they are set up by hackers for hackers with the simple mission of supporting the process of hacking.

It is exactly because of this somewhat tautological mission that the overview of hacking as a social-historical phenomena is more appropriately outlined here, notwithstanding the fact that hacklabs – as their name implies – are also deeply involved and inspired by the hacker tradition. A separate study could be devoted to these movements' embeddedness in the free software movement, but since both movements are equally contributing in different ways, this aspect is not elaborated here at lengths because the contrast would be more difficult to tease out.

The beginnings of hacker subculture are the stuff of well-documented legend. Interestingly, it also starts in the 1960s and furls out in the 1970s, like the history of the autonomous movement. Indeed, in that sense it can be considered to be one of the youth subcultures that Wallerstein identifies emerging from the "cultural shock" (2004). In order not to be lost in the mythology, and since this tradition would be familiar to many readers of this journal, the story is kept brief and schematic. Two major fountainheads seem to be the kind of university culture epitomised by the MIT Artificial Intelligence Laboratory and cultivated in half a dozen other research institutes around the country on one hand and the phreaker scene that found its expression in the Yippie spinoff magazine TAP on the other. While the former were working on engineering breakthroughs like early computers and operating systems, as well as putting together networks that precursored the Internet, the latter were doing the opposite: reverse-engineering information and communication technologies, which mainly meant telephone networks

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and even more primitive bureaucratic systems. In 1984 AT&T was broken into smaller companies – the Baby Bells, but not before important parts of the network were shut down by phreakers (Slatalla & Quittner 1995, Sterling 1992). The same year saw the last issue of TAP and the first issue of the still active 2600 magazine. The university culture was captured in the Jargon File in 1975 which is maintained until now (Steele & Raymond 1996). However, it remained to the inventor of cyberpunk fiction, William Gibson, to popularise the term cyberspace in his novel *Neuromancer* and start the cyberpunk movement which gave a complete – if not “real” – Weltanschauung to hacker culture. The idea of a dark future where freedom is found on the fringes and corporations rule the world would speak to both sides. The stars of the underground have been persecuted by the authorities for their pranks on the communication giants while Richard Stallman – “last of the true hackers” (Levy [1984] 2001) – just invented free software in 1983 and set out to fight the increasing corporatisation of the universities that brought copyrights, startups and most importantly non-disclosure agreements.

Meanwhile in the Old World, where the history of the movement seems less documented, the Chaos Computer Club was founded in 1981 by Wau Holland and others in the editorial room of the taz paper in the building of Kommune I., the centre of autonomous Berlin (Anon, 2008:85). They entered into the limelight in 1984, wiring themselves 134,000 Deutsche Marks through the national videotex system. The Post Office had practical monopoly on the market with this obsolete product, and claimed to maintain a secure network even after it was notified of the exploit. The money was returned the next day in front of the press. This began the Club’s tumultuous relationship with the German government that lasts until today.

By the beginning of the 90s these developments have put into place some basic building blocks of the colourful hacker scene. In their review of a similar trajectory, Coleman and Golub argue that as far as it clings together, hacker subculture manifests an innovative yet historically determined version of liberalism, while in its manifold trends it expresses and works out some contradictions inside the same political tendency (2008). They concentrate on three currents of hacker practice: cryptofreedom, free and open source software, and the hacker underground. However, they do not claim at all that these categories would exhaust the richness of hacker culture. On the contrary, in an overview article in the Atlantic, Coleman explicitly mentions that the information security scene is underrepresented in the literature (2010). Therefore, the three tendencies identified here differ slightly. Stallman’s legal invention and technical project cemented the free software as one pillar of hackerdom for the next decades. The exploits of the phreakers opened a way for the hacker underground which gradually divided from playfulness towards profit or politics. On the other side of the Atlantic, the stance of the Chaos Computer Club paved the way for independent information security research. Truly, all these approaches concentrate on a specific interpretation of

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individual freedom, one which understands freedom as a question of knowledge. Moreover, this knowledge is understood to be produced and circulated in a network of humans and computers – in direct contrast with the version of liberalism associated with romantic individualism, as Coleman and Golub observes. Therefore, this is a technologically, historically and sociologically determined liberalism. Types of hackers practice carve out different positions within these parameters that are sometimes complement and sometimes contradict each other. The free software community sees the universal access to knowledge the essential condition of freedom. The hacker underground wields knowledge to ensure the freedom of an individual or a fraction. “Gray hat” information security experts see full disclosure as the best way to ensure the stability of the infrastructure, and thus the freedom of communication. Full disclosure refers to the practice of releasing information and tools relating to security flaws to the public. It is widely accepted to come from the tradition of 19th century locksmiths, who maintained that the best lock is the one that everybody understands, but which only its key will open (Hobbs, Tomlinson & Fenby [1853] 1868:2 cited in Blaze 2003 as well as Cheswick, Bellovin & Rubin 2003:120, amongst others). The idea that freedom depends on knowledge and, in turn, knowledge depends on freedom is articulated in the hackers aphorism attributed to Stewart Brand: “Information wants to be free.” (Clarke 2001).

During the course of the 90s the hacker world saw the setting up of institutions that would serve the scene until now. All of the three subtraditions above evolved into an industry of their own, catering to fully employed professionals, precarious workers, and enthusiasts. The Electronic Frontier Foundation was established in 1990 in the United States to defend and promote hacker values through legal support, policy work and specific educational and research projects, occupying a position very different but comparable to the Chaos Computer Club in Europe. Early EFF discourse like John Perry Barlow’s *A Declaration of the Independence of Cyberspace* invokes the Western imagery of an indigineous territory occupied by the civilised East, and refers to the Founding Fathers and the Constitution (1996). Conferences, gatherings and camps addressing the three tendencies above became extremely popular, similarly to how the film industry increasingly relied on festivals. The Chaos Communication Congress ran from 1984 and became probably the most prominent event in Europe, while in the USA H.O.P.E. was organised from 1994 by the people around the 2600 magazine. Hacker camping was initiated by a series of events in Netherlands running since 1989. These experiences solidified and popularised the hacker movement and the desire for permanent hacker spaces was part of this development.

As Nick Farr points out, the first wave of hackerspaces were founded around this time (2009). L0pht stated in 1992 in the Boston area as a membership based club that offered shared physical and virtual infrastructure to select people. Some other places were started in

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those years in the USA based on this "covert" model. C-base followed in Berlin in 1995 with a more public profile, promoting free access to the Internet and serving as a venue for various community groups. These second wave spaces "proved hackers could be perfectly open about their work, organize officially, gain recognition from the government and respect from the public by living and applying the Hacker ethic in their efforts" (Farr 2009). However, it was the third wave that led to the emergence of a movement and an exponential growth in the number of hackerspaces. Several accounts (for example Anon 2008) highlight a series of talks in 2007 and 2008 that inspired, and continue to inspire, the foundation of new hackerspaces. In 2007 Farr organised a project called Hackers on a Plane, which brought hackers from the USA to the Chaos Communication Congress, and included a roundtrip of hackerspaces in the area. Ohlig and Weiler from the C4 hackerspace in Cologne gave a ground-breaking talk on the conference entitled *Building a Hackerspace* (2007). The presentation defined the hackerspace design patterns, which are written in the form of a catechism and provide solutions to common problems that arise during the organisation of the hackerspace. More importantly, it has canonised the concept of hackerspaces and put the idea of setting up new ones all over the world on the agenda of the hacker movement. When the USA delegation got home, they presented their experiences under the programmatic title *Building Hacker Spaces Everywhere: Your Excuses are Invalid*. They argued that "four people can start a sustainable hacker space", and showed how (Farr et al 2008). The same year saw the launch of hackerspaces.org, in Europe with *Building an international movement: hackerspaces.org* (Pettis et al 2008), and also in August at the North American HOPE (Anon 2008). While the domain is registered since 2006, the Internet Archive saw the first website there in 2008 listing 72 hackerspaces. Since then the communication platforms provided by the portal became a vital element in the hackerspaces movement, sporting the slogan "build! unite! multiply!" (hackerspaces.org 2011). A survey of the founding date of the 500 registered hackerspaces show a growing trend from 2008 (see Figure 2).

Notably, most of these developments focused on the formal characteristics of hackerspaces, like how to manage problems and grow a community. They emphasised an open membership model for maintaining a common workspace that functions as a cooperative socialising, learning and production environment. However, the content of the activities going on in hackerspaces also shows great consistency. Technologies used can be described as layers of sedimentation: newer technologies take their place alongside older ones without much obsolescing. First of all, the fact that hackers collaborate are in a physical space meant a resurgence of electronics work, which combined with the established trend of physical computing. A rough outline of connected research areas could be (in order of appearance): free software development, computer recycling, wireless mesh networking, microelectronics, open

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hardware, 3D printing, machine workshops and cooking. From this rudimentary timeline it is evident that hackerspace activities gravitated towards the physical. The individual trajectory of all these technology areas could be unfolded, but here the focus is on microelectronics because they played a key role in kickstarting hackerspaces, as evidenced by the popularity of basic electronic classes and programmable microcontroller workshops in the programme of young hackerspaces. Physical computing was laid out by Igoe and O'Sullivan in *Physical Computing: Sensing and Controlling the Physical World with Computers* (2004), and had a great impact on the whole computing scene. This new framework of human-machine interaction stressed the way people behave in everyday situations using their whole body, and opened the way for exploratory research through the construction of intelligent appliances. The next year O'Reilly Media started to publish Make Magazine which focuses on do-it-yourself technology, including tutorials, recipes, and commentary from a wide range of authors including some celebrities of the hacker subculture. "The first magazine devoted to digital projects, hardware hacks, and DIY inspiration. Kite aerial photography, video cam stabilizer, magnetic stripe card reader, and much more." (Make Magazine 2011) In Europe, Massimo Banzi and others started to work on the invention of Arduino, a programmable microcontroller board with an easy-to-use software interface. This amateur-friendly microcontroller system became the staple of hackerspaces and artists' workshops and initiated a whole new generation into rapid prototyping and electronics work. To put it together, physical computing provided a theoretical area to be explored, and the Arduino became its killer application, while Make magazine and similar media facilitated the spread of research results. Maybe the whole process fitted into the bigger picture of a gradual paradigm shift which marked a move away from the linguistic turn where aesthetics served as a general interpretative tool in any discipline to a more pragmatic one founded on architecture and the body.

The Hungarian Autonomous Center for Knowledge in Budapest is a fairly typical third wave hackerspace. It was founded in 2009 after a presentation at the local new tech meetup itself inspired by the hackerspaces presentation in Berlin (Stef 2009). The location is comprised of a workspace, kitchen, chill-out room and terrace in an inner city cultural centre which hosts ateliers for artists along with a pub and some shops. The rent is covered from membership fees and donations from individuals, companies and other organisations. Members are entitled to a key and a networked sensor system called hacksense signals the opening of the hackerspace through the website, twitter account and a database. Nonmembers are welcome any time, and especially at the announced events that happen a few times every month. These include meetings and community events, as well as practical workshops, presentations and courses. In line with the hackerspaces design patterns, orienting discussions happen weekly on Tuesdays, where decisions are made based on a rough consensus.

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Hacktrons are special events when several people work on announced topics for six hours or a whole day, sometimes synchronised internationally. However, most of the activity happens on a more ad-hoc basis, according to the schedule and the whim of the participants. For this reason the online chat channel and the wiki website are heavily used for coordination, documentation and socialisation. Projects usually belong to one or more individuals, but there are a few collective projects as well. More successful projects include several people who contribute to the implementation and continuous development. There are purely software projects like f33dme, a browser-based feed reader. It is often discussed in the hackerspace and as more people adopt it for their needs, it gets more robust and featureful. Although this is nothing new compared to the free software development model, the fact that there is an embodied user community does contribute to its success. There are also 'hardware hacks' like the SIDBox, which is built from the music chip from the old Commodore C64 computers, adding USB input and a minijack output. This enables playing music from a contemporary computer using the chip as an external sound card. An ever expanding 'hardware corner' with electronic parts, soldering iron and multimeters facilitates this kind of work. There is also a 3D printer and tools for physical work. The members are precarious ICT workers, personnel of security companies, and/or students in related fields. It is a significant aspect of the viability of the hackerspace that quite a few core members work inflexible hours or work only occasionally, so at least during some periods they have enough time to dedicate to the hackerspace. Some of the activities have a direct political character, mostly concentrating on open data, transparency and privacy. In particular, collaboration with groups who campaign for information rights issues in the European Parliament and specific European countries, or helping journalists to harvest datasets from publicly available databases. The hackerspace represents itself through delegation to events of the hackerspace movement, such as the aforementioned Congress and the Chaos Communication Camp, and smaller ones such as the Stadtflucht sojourn organised by Metalab, a hackerspace in Vienna (Metalab 2011).

### **Section 3: Hacklabs and Hackerspaces**

Now that the parallel geneologies of the two idealtypes have been laid out, it is possible to confront these concepts with each other and make some comparative observations. For the sake of brevity three very different points reflections are made in this section. Hopefully, these will further clarify differences and provide useful critical points, providing the ground that can engender further research.

A very interesting occasion presented itself in 2010 when this author had some first hand experience of how the Hackney Crack House hacklab and the Hungarian Autonomous Center for Knowledge

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hackerspace have both constructed an artifact called Burnstation. Even a brief sketch of these endeavours can illuminate some key points deriving from the conceptual and historical differences put forth above. The Burnstation is a physical kiosk that enables the user to browse, listen, select, burn to CD or copy to USB audio files from a music database (Rama Cosentino & platoniq 2003). It was invented in the riereta in Barcelona, which started as a hacklab with a media focus in 2001 and institutionalised in 2005, receiving funding from the local authorities – which means it is more of a hackerspace now –, and for that matter it is also registered on hackerspaces.org. All of these constructions were displayed publicly in various exhibition contexts as well as used privately in their home institutions. Snapshots of how these three Burnstations looked like at some point in their development can be seen in Figure 4 (Rama et al), Figure 5 (HCH) and Figure 6 (H.A.C.K.).

The most striking difference between the two recent reimplementations is that the hacklab people altered the original concept of a music collection that includes exclusively Creative Commons licensed material that can be freely distributed to an anything goes library which included many files which are illegal to copy. Therefore, the message was changed radically from the consumption and celebration of the fruits of a new kind of production regime to one that emphasised piracy and transgression. The framing of the project was also changed in conjunction with this: the public display of the installation was a statement against the Digital Economy Act that just came into force in the United Kingdom which criminalised filesharing and threatened with the suspension of Internet access in cases where intellectual property rights were violated (Parliament of the United Kingdom 2010). Thus the installation was promoting illegal activity in direct opposition to the existing state policies – which was not as controversial as it sounds since the venues and exhibitions where it was on show were themselves on a frail legal footing. In contrast, the Burnstation by the hackerspace appeared in an exhibition on the 300th birthday of copyright in a prestigious institution, showcasing the alternative practices and legislative frameworks to the traditional view of intellectual property rights.

Another aspect of the difference between the two installations was apparent in the solutions for user interaction. The hackerspace version was based on an updated version of the original software and hardware: a user-friendly interface attached to a game controller for navigation. The hacklab version, on the other hand, reimplemented the software in a text only environment and had a painted keyboard, providing a more arcane navigation experience. Moreover, the exhibited installation was placed in a pirate-themed environment where the computer could only be approached through a paddling pool. The two different approaches correspond to the two broad trends in interface design: while one aims at a transparent and smooth experience, the other creates barriers to emphasise the interface in a playful way. To conclude, the hackerspace members

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created an alternative experience that fitted in more smoothly into the hegemonic paradigms of intellectual property and user interaction, while the hacklab crew challenged the same hegemony, foregrounding freedom and desire. At the same time, it is plain to see that many factors tie the two projects together. Both groups carried out a collective project open for collaboration and building on existing results of similar initiatives, using low-tech and recycled components creatively. Ultimately, both projects challenged the status quo in their own way and reified the political-generational challenges around copyright law into a performative artifact.

Another, more abstract issue to address in order to highlight structural differences between these spaces is the policy and practice of inclusion and exclusion. On the one hand, the autonomous or anarchist orientation of the hacklab movement is apparent in contrast with the liberal or libertarian orientation of the hackerspaces. On the other hand, since hacklabs are more integral to a wider political movement, non-technological aspects play a bigger role in how they are run. A concrete result is that while sexism and other exclusionary behaviours are mostly seen as legitimate reasons for excluding an individual from hacklabs, in hackerspaces such issues are either discussed at length (like in Metalab) with few concrete results or simply invisible (like in H.A.C.K.). Having said that, a lecture and discussion at the latest Chaos Communication Camp found that although hacker culture is still overwhelmingly male-oriented, it has become more and more welcoming to women and sexual minorities in the last decade (Braybrooke 2011).

One example where this author has parallel experiences is wheelchair accessibility. While the hacklab used in the above example was not wheelchair accessible, a ramp has been built for the house itself to be so. Then, discussions about open training sessions included the issue, and a temporary computer room was planned on the ground floor. In a similar vein, the hackerspace called Metalab in Vienna was made wheelchair accessible, and even a wheelchair toilet was installed that a regular visitor was using. However, with time it was decided that the darkroom would take the place of the wheelchair toilet, practically excluding the person from the space. A similar change occurred with the shower, which was taken over by the expansion of the machine workshop (Anon 2011). This affected a more or less homeless person who most often came to the hackerspace to play chess. These decisions show the reversal of an exceptionally inclusory social and spacial arrangement because of a prioritised focus on technology, coupled with the primacy of collective interests to minority needs. Hacklabs, especially if they reside in occupied spaces, are less inclined to make such decisions, partly because of the ethos of the public public space that comes with occupations, as explained in detail at the end of section 1.

The last point to be made is practically the conclusion: weighting the political impact of these constellations. It cannot be made

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directly since the hacklabs performed their functions as part of a political movement, while the hackerspaces fit into the hacker movement which is only partially political. However, this tension is very productive and has important consequences that has to be noted. The hacklabs managed to give a technological advantage to the horizontalist movements and pioneer access to information and communication technologies in an era where commercial access to the Internet, sophisticated software, hosting and processing capacity, and most importantly the knowledge to make use of all these has not been available to most consumers. On the other hand, they got stuck in an often discussed "activist ghetto" or an "underground" which meant that even the Burststation project described above was only available to a limited social group that cultivates such subcultural places. Through a process that Granzfurthner and Schneider describe as the capitalist co-optation of the fertile resistance inherent in such scenes ([2009]), the hackerspaces managed to go beyond these historical limits and forge important connections. They continue to have a lasting impact through the technological artifacts, both abstract and physical, that they create, and the innovation and most importantly the education that they do. The case of 3D printers, which Rigi argues can revolutionise production processes and create the conditions for a society based on craftsmanship rather than factories is just one example ([2011]). For the hacker culture that managed to catapult itself to the front pages of all kinds of newspapers in the last few years, it is of immense significance to acquire a global network of real workshop spaces that form an infrastructure. In fact, in the current global political atmosphere of paralytic desperation, this scene is one of the few which shows vitality and direction. However, as the superuser command says, "With great power comes great responsibility".

The appreciation of history is not about passing judgement on the old and the dead, but it is there to inspire the young. As Théorie Communiste argues, each cycle of struggle brings something new based on what happened before, doing its work by expanding the historical limits of the struggle (Endnotes 2008). Most hackerspaces (including hacklabs) managed to perform the three rejections necessary for a systemic critique of modernism: the rejection of the state as authority and bureaucracy, the rejection of capital as accumulation and production for the market, and the rejection of a narrow civil society that traps resistance. They stand at the intersection of the dystopian "geeky workshop paradises" (Granzfurthner and Schneider [2009]) and the utopian reality of genuinely contestant spaces that have wide impact. If more hackers can combine the technological productivity of the "hands-on imperative" (Levy [1968] 2001) with the social critique of the hacklabs, there is a world to win. p

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social anthropology.

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# Figures

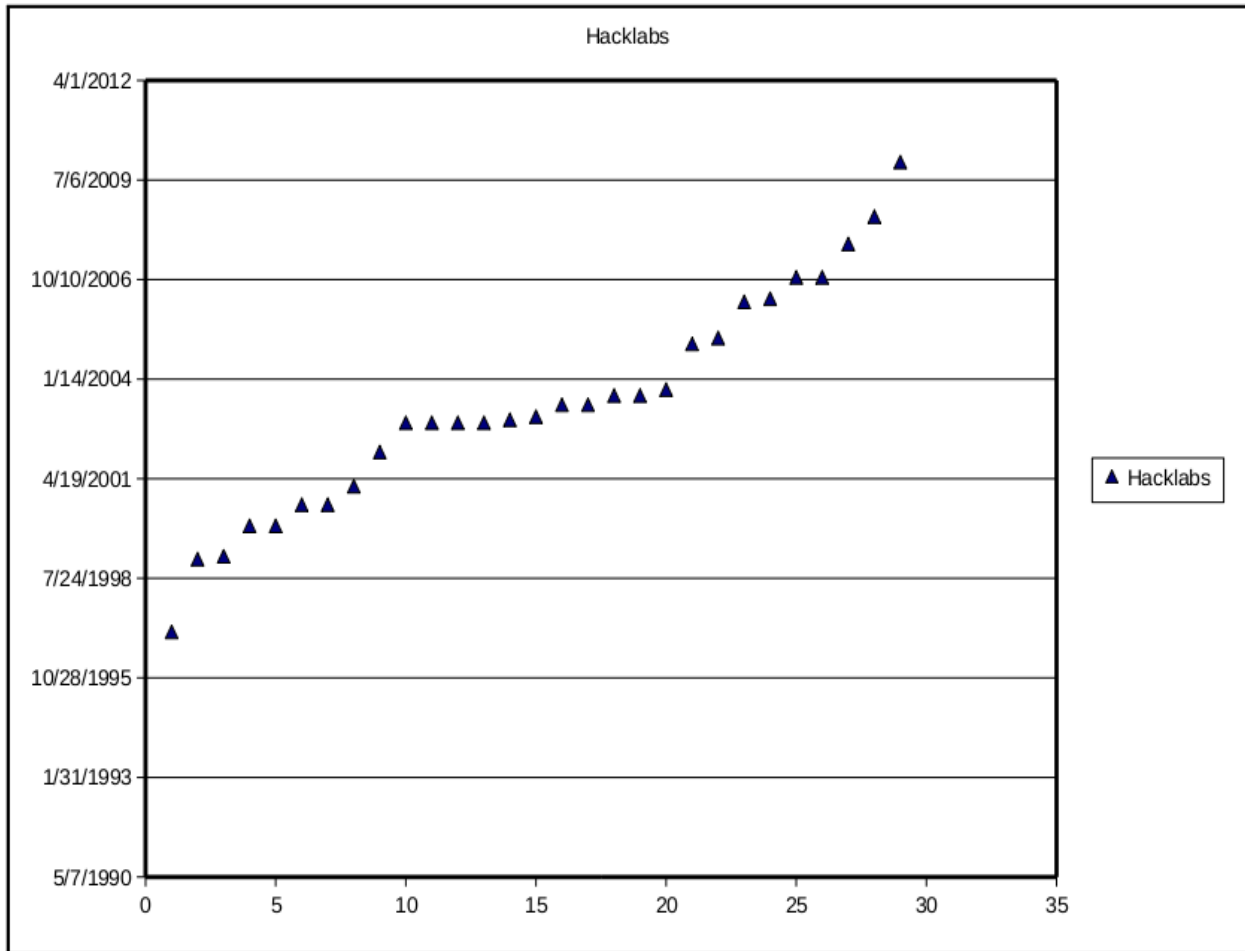


Figure 1. Survey of domain registrations of the hacklabs list from hacklabs.org

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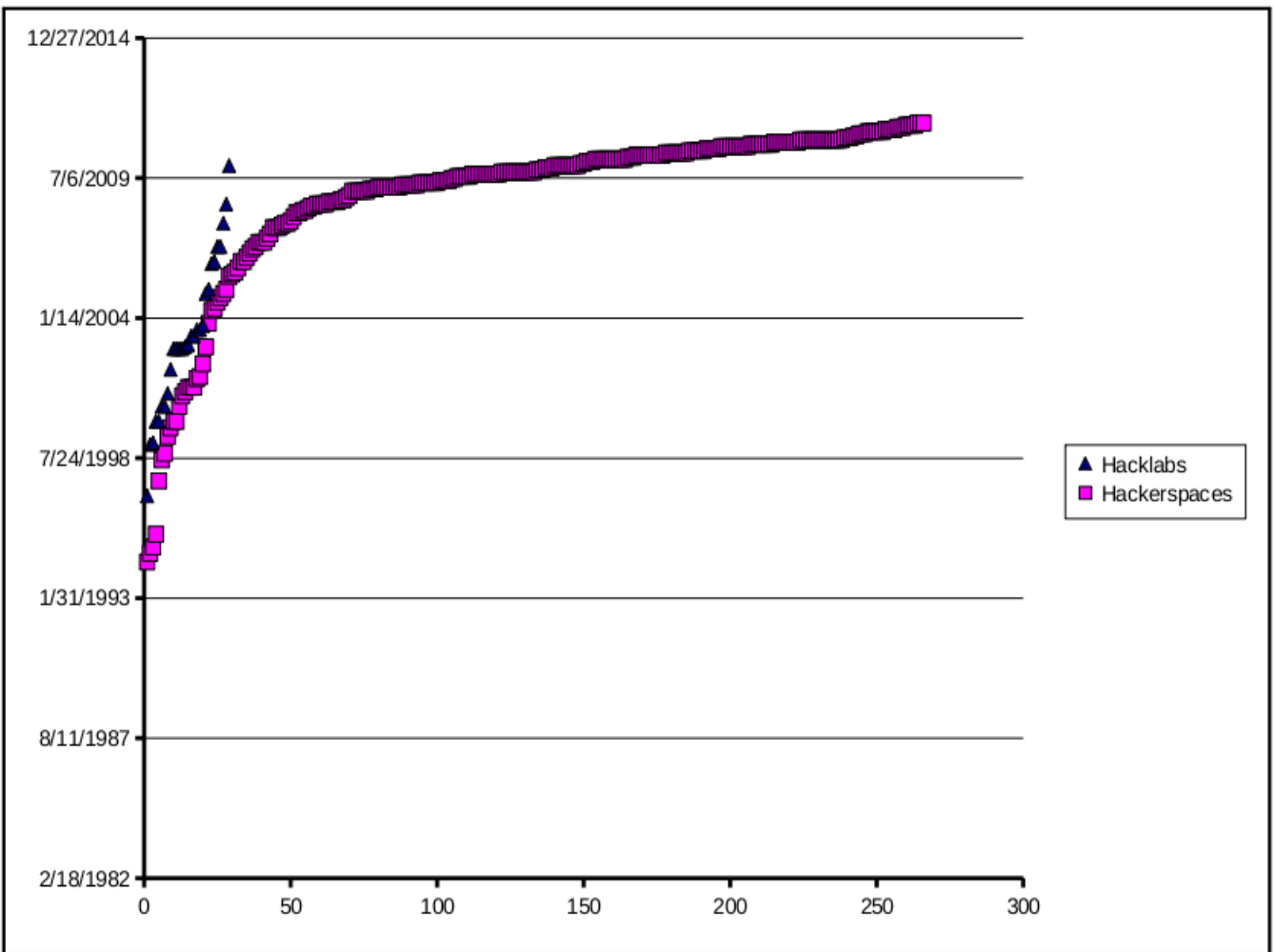
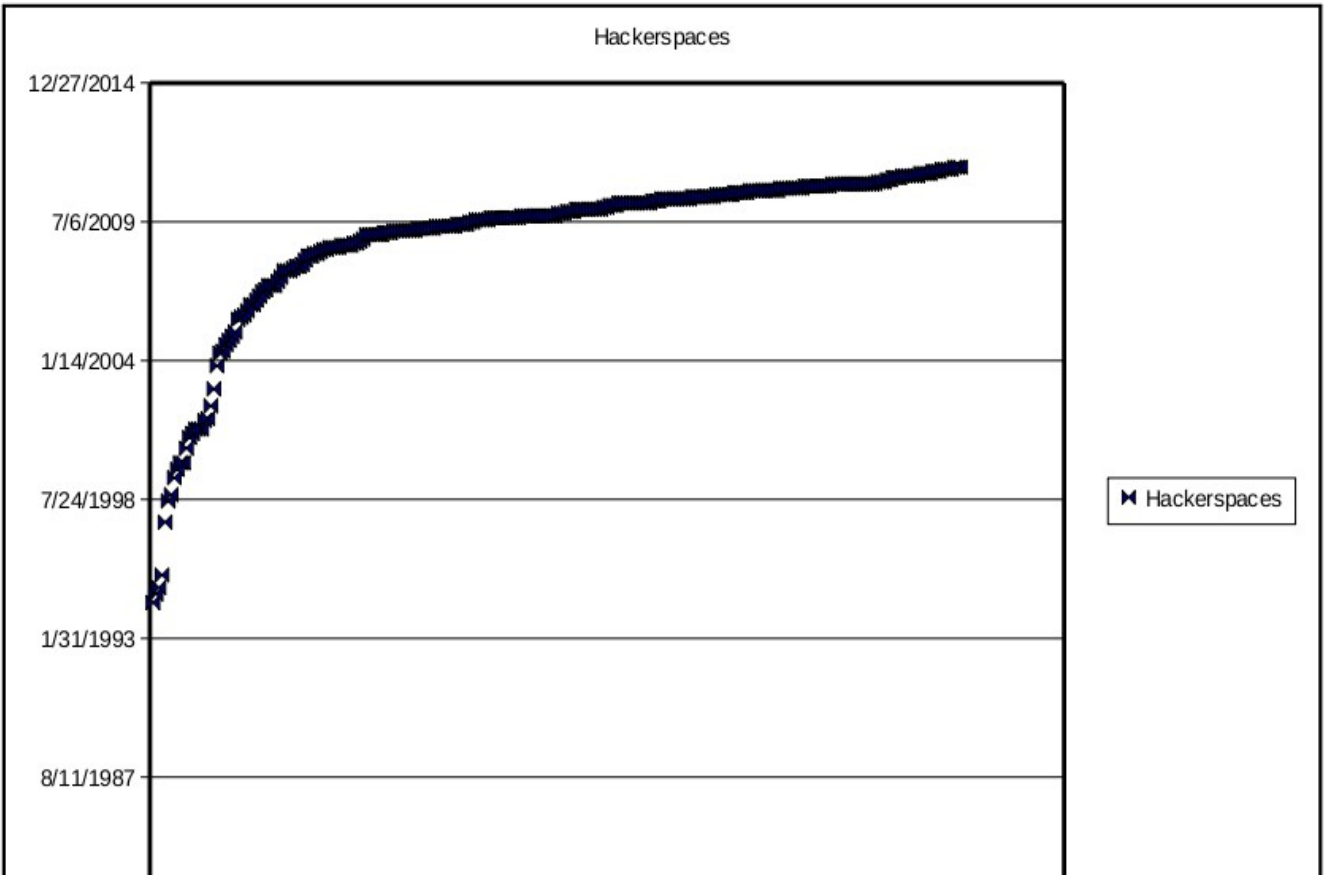
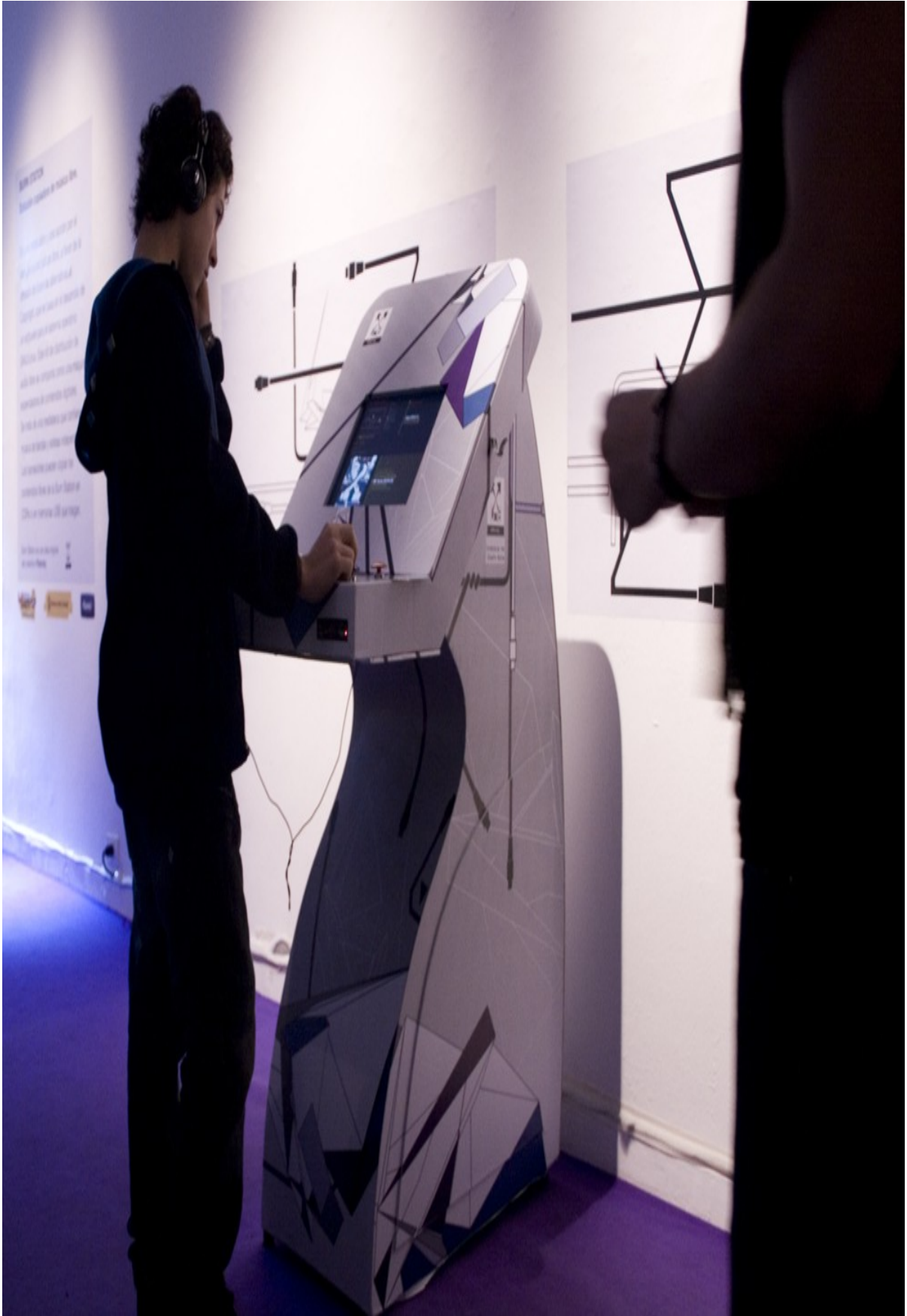


Figure 3. The previous two figures put together (for demonstration purposes).



*Figure 4. Burnstation (Rama Cosentino & platoniq). Emerging Art Festival, 2011, Buenos Aires.*  
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*Figure 5. Piratepond installation from Hackney Crack House at the Temporary Autonomous Art exhibition in London, 2011, including a Burnstation.*

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*Figure 6. Burnstation from Hungarian Autonomous Center for Knowledge,  
exhibited at KOPIRÁJT, OSA Archivum, 2010.*

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