DIY networking as a facilitator for interdisciplinary research on the hybrid city

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Abstract. DIY networking is a technology with special characteristics compared to the public Internet, which holds a unique potential for empowering citizens to shape their hybrid urban space toward conviviality and collective awareness. It can also play the role of a "boundary object" for facilitating interdisciplinary interactions and participatory processes between different actors: researchers, engineers, practitioners, artists, designers, local authorities, and activists. This position paper presents a social learning framework, the DIY networking paradigm, that we aim to put in the centre of the hybrid space design process. We first introduce our individual views on the role of design as discussed in the fields of engineering, urban planning, urban interaction design, design research, and community informatics. We then introduce a simple methodology for combining these diverse perspectives into a meaningful interdisciplinary collaboration, through a series of related events with different structure and framing. We conclude with a short summary of a selection of these events, which serves also as an introduction to the CONTACT workshop on facilitating information sharing between strangers, in the context of the Hybrid City III conference.

Keywords: DIY networking, offline networks, hybrid space, collective awareness, interdisciplinarity

I. INTRODUCTION

The rapid advances of information and communication technologies (ICTs) and mass online participation have increased the expectations for the long awaited visions of e-democracy, e-participation, and more recently for the vision of the smart city. In these visions citizens play a central role, and both construct dialogues and/or provide information for pre-determined inquiries, within paradigms such as e-deliberation, citizen science and crowdsourcing. Collected data is constantly processed by sophisticated algorithms to create collective and individual awareness about the multiple threats, among others, which our society is facing nowadays at social, environmental and political levels, and make decisions with respect to more efficient uses of resources, eventually toward sustainability. In context, however, there are still many challenges that need to be addressed related to privacy, data ownership and control, and various types of digital divides to be overcome.

This interdisciplinary collaboration wishes to address a specific objective of critical importance: the bottom-up generation of information and knowledge through local interactions between people in physical proximity over short or long time duration; a grassroots collective awareness at the local (even hyperlocal) scale.

To achieve this objective in a way that provides autonomy, and ownership of the design process and the information generated, to those involved –the citizens themselves–, we combine various independent strands of research and action:

1. the advances of wireless technology and open hardware that make local wireless community networks, or DIY networking, easier to deploy,

2. the free and open source software platforms for distributed online social networking, collaboration, and data collection and analysis,

3. the emerging interdisciplinary fields of urban informatics, community informatics and urban interaction design that try to address the growing complexity of hybrid, physical and digital, urban space,

4. the numerous variations of citizen engagement practices in design within different fields and research methodologies including participatory planning, participatory design, informal learning, design research, action research, and living labs.

5. the growing social movements for the right to the city, privacy, freedom of expression, self-determination, sustainable lifestyles, and the provision of local solutions for local problems.

To bring together effectively all these different perspectives, we have chosen to follow a methodology which is, on the one hand, ambitious regarding the level of diversity of actors involved, and modest, on the other hand, in the expected outcome of the corresponding exchanges and collective actions. More specifically, starting from the Dagstuhl seminar on Do-It-Yourself Networking in January 2014 [5], the authors have participated in various events, which followed a number of common principles: 1) a balanced mixture of many different perspectives, 2) a high-level introduction of the background and knowledge of each participant, not necessarily implying efforts for integration, 3) a very specific question to be addressed, for instance, "Why DIY?", and 4) an urbane and somewhat convivial atmosphere providing opportunities for socialization as well as for keeping a detached and reflective attitude. There were also important differences in key organizational details including the overall framing, the duration, and the specific competencies.

In the following, we briefly introduce the concept of DIY networking and its important role for empowering citizens to claim their right to the (hybrid) city [3]. We then provide an overview of different existing perspectives on the concept of design informed from the fields of engineering, urban planning, urban interaction design, design research, and community informatics. Finally, we summarize the outcome of a selected set of events that the authors participated. Note that in this paper we do not attempt to provide a synthesis of our activity so far, and even less final conclusions, as we keep the key questions opened to be answered over time through future exchanges and applied activities within the proposed interdisciplinary research methodology, which include the CONTACT workshop at the Hybrid City III conference.

II. DIY NETWORKING

Wireless technology, low-cost open hardware and FLOSS software make it increasingly easy for people with less-technical inclinations to build their own local networks. They can thus become hosts of local communications between those in physical proximity, without a need to be connected to the commercial Internet, and to buy a domain name or online space in commercial platforms. The coverage can vary in range, and thus the relevant types of applications, depending on the number of connected network nodes.

In the simplest scenario, a single wireless router can host the local application, and the coverage radius could extend up to several hundred meters. Through the formation of a network of such devices (which may be technically configured as a 'mesh'), often called a wireless community network, the network can organically grow according to the voluntary contributions of individuals or communities. Links between distant locations can only be prevented by physical obstacles, and thus such a network can expand as far as line-of-sight allows.

Depending on the number of their nodes they can cover geographic areas of various sizes, ranging from a small public square or a small urban neighbourhood [20][7]; to a small town like Leiden in the Netherlands [35]; or large city-regions such as Barcelona (guifi.net), Berlin (freifunk.net) and Athens (awmn.net). Most of the existing operational wireless community networks are built by groups of tech savvy users, and outsiders see them mainly as gateways to free Internet access (e.g., [18][36]).

However, one of the most important qualities of these WiFi networks is that they can offer options for communication outside the public Internet as highlighted by Antoniadis et al. [2]. There are community wireless networks today that prioritize the importance of local communications such as the Redhook WiFi initiative [7]; or the Air-stream wireless community in South Australia.

As stressed by the ethnographer Kat Jungnickel [29], one of Air-Stream's "unique features is that it is not built for the purpose of sharing *the* internet. While many community wireless groups around the world use WiFi to provide free or low-cost access *to* the internet, Air-Stream are essentially making their own version *of* the internet, hence the description, 'Ournet, not the internet'". (p.26). But even in such cases the core communities of highly motivated and tech savvy members hardly succeed to open up their local services beyond their close social circles (ibid, p.51-2).

To build communities of proximity over local wireless networks, one must build applications of high quality that are both highly attractive and usable, but also easy to adjust to the specific local context (i.e. what Facebook and Twitter are not able to do, given the nature of their construction). The Redhook WiFi initiative illustrates that this is an attainable objective, and the availability of guidelines on how to install and deploy a local wireless network (such as the *Commotion Construction Kit* or the numerous online guides on how to transform a Raspberry Pi to a local wireless network) provide the means to many people interested to innovate in this area.

Despite the technological advances and the increasing interest on DIY networking, for this technical approach to be adopted by communities –as a means for enabling locally focused community interactions– there are many challenges to be addressed. Perhaps the most important is the ease of access to well-established and publicized Internet based community platforms, such as Facebook, which offer highly developed existing social spaces. However, these commercial platforms come with risks to users' privacy, freedom of expression, diversity, and self-determination due to their underlying business models. A number of high profile stories covered by international media have recently brought the risks to a

wider public awareness, along with discussions of alternatives.

On the other hand, DIY networking based solutions as an alternative, or complementary, option to Internet-based community platforms, specifically for mediating local interactions, do not come without their own challenges. For example, the capabilities of the technology are not well communicated, its usability is not yet at a satisfactory level, novel governance structures and legal frameworks need to be devised to avoid abuses, and the complexity of the design space requires the combination of different skills and knowledge to enable informed decisions at different levels.

Note also that the tendency of many urbanites to protect their anonymity and autonomy, by avoiding 'the other' and interactions with strangers (selective exposure), appears as an important barrier for the proliferation of such technology that is meant to promote local exchanges. "I don't really want to interact with my neighbours" is the answer of many people being introduced to the capabilities of DIY networks. Should we accept and respect such tendencies or try to reverse them in the name of social cohesion, conviviality, and collective awareness?

Sociologist Mark Gaved's PhD research [21] explored challenges to implementation of DIY networking within a community following a participatory design approach to develop their network infrastructures and software services for two groups, which proved to be very difficult; a number of challenges were encountered, which lead to 8 hypotheses for why researchers might find limited community take up in this context, drawing in part from three key approaches [6][13][22]: H1: **Critical mass** – the need for sufficient users, lead volunteers, and content; H2: **Unsuitable application of technology** – the technology does not suit the purpose of the participants (e.g. a monthly shared community meal might be better at developing community interactions than a social media platform); H3: **Local versus ego** – based interactions: people may value relationships based on interest more than location – not so interested in who lives next to them, more interested in friends across the city who like the same social activities; H4: **Local resistance to outside intervention** – community technology is not perceived as having come from within the community but has been pushed by outsiders: resistance at being told what is good for them by outsiders; H5: **Domestication** – the 'solution' may be alien to people's social practices, and they can't get used to it, it doesn't fit into their daily routines. As a result it is dropped; H6: **Sponsorship** – technological and political support of the concept. Locally respected community leaders need to support the project. Financial and other resource sponsorship; H7: **Upkeep** – resources to keep a community tool running. Ongoing management of the service (making sure it runs well, solving people's problems, updating content); H8: **Surprise** – new content and new resources to make sure users find something new and interesting on the service, new innovations in functionality.

One of our key objectives is exactly to highlight the important reasons why local communities should invest in building their own local network infrastructure and provide the means to do so in a participatory way, in order to address the above challenges.

To see the importance of DIY networking one needs to notice that in addition to providing cheap access to the Internet, DIY infrastructures offer a rich set of special characteristics and affordances for offering local services, that are operated outside the public Internet: the **ownership and control** of the infrastructure and the whole design process; the **de facto physical proximity** of those connected (meaning that all users are physically present within the reach of the WIFI signal) without the need for disclosing private location information, such as GPS coordinates, to third parties; the **easy and inclusive access** through the use of a local captive portal launched automatically when one joins the network; the **independence** from network providers and big tech companies; the opportunity for **private interactions** within a local network and not share details beyond the network, and have the option of **anonymity**; the **materiality** of the network itself; a **novel mode of communication** that can attract curiosity and interest.

Then there are many potential benefits by taking advantage of these affordances during the design process, such as

- The design for intimate communication, yet without commitments, between those in physical proximity, and collective action by building the community network.

- The empowerment of citizens to claim their right to the hybrid city, including access, participation, representation, and ownership.

- The availability of useful complementary infrastructures in case of disasters that offer resiliency.

- The facilitation of interdisciplinary exchanges around the design of hybrid space and the role of ICTs in society.

III. THE RIGHT TO THE HYBRID CITY

The "right to the city" formulation that French philosopher Henri Lefebvre coined in 1968 [31], has been used in the last four decades as a form of resistance to the homogenizing planetary urbanization, and as a ubiquitous 'cry' for the democratization of urban space (refer to [11][19][26][31]). The right to the city becomes, according to Mayer, "rather an oppositional demand, which challenges the claims of

the rich and powerful" ([11], p.71), manifested through resistance and political action.

It seems, however, that there is little awareness of the public role of technical professionals engaged with urban issues, not only through the spatial materiality of their work but also through their potential informed engagement in the civic life.

At the end of the 1960s, Lefebvre urged us to take seriously into consideration the political struggle for the right to the city, as a means to renew the urban society and to renovate centrality –an essential right– that means "regrouping of differences in relation to each other" ([31], p.19). The right to difference "is a 'right' whose only justification lies in its content; it is thus diametrically opposed to the right of property, which is given validity by its logical and legal form as the basic code of relationship under the capitalist mode of production" ([30], p.396). It provides the access to the city as specific places, and by contrast, top-down decision-making processes turn urban locations into abstract spaces. That applies as well to the hybrid space that the global and non-specific Internet infrastructure lays over localities. The abstract 'conceptual' space denies differences, by disabling that natural ability to produce them. Thus the right to difference is a perpetual struggle necessary to generate living space.

For example, in the neighbourhood of Exarchia in Athens, an empty lot that the municipality meant to turn into a car parking was transformed into a public park by the name 'Parko'. After years of activists' struggle, in the summer of 2009 volunteers self-organized, and brought this small place under citizen control following the slogan "Their parking, our park" (similar to the "Ournet, not the internet" motto of the Air-stream wireless community network in South Australia, cited above). They liberated the ground from the asphalt, they planted instead trees and flowers, and created an urban garden and a children playground. The neighbourhood residents 'own' this space as they have fought for it, created it, use it intensely and keep defending their rights over it, in order to preserve this small green oasis in the centre of Athens.

To be more specific, as part of the struggle for the right to the city, the following important individual rights help to draw analogies between physical and virtual, digital, spaces: the right to access the core resources of the city; the right to be represented, to be part of the collective identity; the right to participate in important decisions regarding urban policies and design; the right to ownership of the urban commons, referring to commonly held property, use, stewardship and management of the available and produced resources.

It is important that these different fundamental rights are also conveyed—explicitly or implicitly—to those active in the digital space of the hybrid city. Unlike the physical urban space that it overlays, this new and rapidly emerging "virtual" space has practically no capacity constraints. However, it is subject to inequalities in terms of access, representation, participation, and ownership. Indeed, today it is mostly large corporations like Google, Facebook and Twitter that control the digital social interactions at a global scale, but also at localities offering, among others, location-based services, or locative media, that allow people to connect with friends and similar others while in physical proximity [16]. Alas, to offer this service, these companies record over time the locations of all interested parties, and store them in servers located very far away from the actual place where these ICT-mediated "contacts" occur, a huge privacy cost which is not necessary if DIY networking technologies are used [4].

Note that even if these online social networks have been positively connected with recent urban uprisings and political struggles for the "right to the city" (e.g. Gezi Park in Istanbul), they are themselves highly privatized spaces. Their owners have significant power over the design of important software details and the management of all collected data, ranging from multimedia content (e.g. photos and videos) to private information (e.g. location and profile) and patterns of activity (e.g. reactions to stimulation and time spent online). This complete lack of ownership and control of these platforms on the users' behalf poses significant threats related to privacy, surveillance, censorship, and manipulation, which should not be underestimated (e.g., [33][42]).

These concerns raise the issue of the citizens' right to the digital city, and if both the physical and virtual are considered together, the "right to the hybrid city" [3]. However, there is a gap today between those that fight for our rights to the city with those that fight for our rights to ICTs, despite the fact that in the times of the smart city, these two objectives are more and more interwoven. To this end the role of DIY networking can be critical since it provides the means for building local network infrastructures that can be owned, designed, and controlled by citizens themselves.

But hackers and technology enthusiasts are not always sensitive to the potential social impact that these networks could have if they were opened to the wider population (or if they are, they do not always have the skills required to engage the local communities). At the same time, urban scholars and activists are not always aware of the capabilities of technology and often underestimate the threats by the domination of a few tech corporations in mediating our online interactions in the city.

IV. PARTICIPATORY PRACTICES AND DESIGN

A. Citizen participation in planning processes

At the time when Henri Lefebvre published his revolutionary ideas regarding the right to the city, an American activist engaged in community development

studies for the commons, Sherry R. Arnstein wrote a paper on citizen participation from her experience with community work in the US [1]. She proposed an hierarchy of different degrees of citizen engagement in decision-making processes, which she called "the ladder of citizen participation", aiming to provide a finer grain of detail to this generic and ubiquitous term that implies various degrees of citizen power in urban politics. Until today this journal article became a reference for the topic, despite the more 'top-down' organization of participatory processes that she experienced at the time of writing it. So she argued that the degrees of power granted to citizens in participatory decision-making processes vary on eight rungs of the ladder, from nonparticipation (i.e. manipulation, and therapy) through tokenism (i.e. informing, consultation and placation) reaching citizen power (i.e. partnership, delegated power and citizen control).

Since then there are variations of practices to engaging citizens in decision-making processes, which have been theorized under different names such as participatory, deliberative, communicative, or collaborative planning (e.g., [17][25]). Despite all these efforts, there are many concerns regarding the effectiveness of these processes due to various challenges related to the limited time allocated to political activities, and also necessary skills, in addition to power games, top-down settings etc. In spite of many voices claiming that ICTs can solve some of these problems, the promises of e-planning, e-deliberation, and e-democracy are still to be realized; however, the issue of digital divides adds to all of the previous concerns that do not seem to be properly tackled in the digital scenario as well.

B. Participatory design

When decision-making refers to the design of technology to address social needs, Participatory Design [37][38] has been gaining attention worldwide and refers to the activity of designers and non-designers working together in development processes. The concepts of living labs, action research, and co-creation are all variations of the main principle behind the Participatory Design practice: the people who are being addressed by design are no longer seen simply as users, consumers or customers. Instead, they are seen as the experts in understanding their own ways of living and working. They are valuable partners in the development process.

Although Participatory Design has been rewarded with much attention, at the same time some critics have raised concerns about idealized and un-reflected assumptions and the neglect of power relations. Thus the intent for a more inclusive and emancipated design raises high hopes, but also some important questions: What are the mechanisms through which people can be triggered to become active members in their communities? How can a participatory procedure be sensible to actors with unequal resources? And who

should be integrated in the design process anyway? In this context, community informatics is a field that works closely with local communities to design ICTs toward social cohesion and conviviality, among other social objectives. Experience has shown that it is very important to gain community trust and commitment – if a project is seen as an outside intervention with no lasting value it will be rejected. This is particularly true of an intervention, which involves not only an infrastructure but also a repository for community resources and conversations: if the 'intervention' is removed or fails to function there is not only a loss of infrastructure but also of community memory [34]. One of our critical concerns of our investment in DIY networking as the base for hybrid space design is to understand whether we'll just be re-encountering the same challenges or the new developments (critical mass of Internet users, privacy threats, etc.) will change the game.

C. Critical design

Another approach in empowering citizens to become part of decision-making processes is to provide concrete and tangible potential future scenarios. These accessible and provoking scenarios can be used to inspire activities that lead to strategy discussions and agenda setting. Critical Design [14] presents design as a catalyst or provocation for thought. It is a strategy for exploring the space that lies tantalisingly beyond the current and the now. By contextualising this approach at the edges of our knowledge, it is possible to use design to create 'design fictions' [9]. The role of design fictions is to activate the imagination rather than specify technology or make claims about the future. The key attribute of design fiction is that it is meant to start conversations [10].

For example, Lukic, in his book entitled NonObject [32], created an array of near-future objects as a means of surveying the bounds of the believable and pressing against the perimeter of the possible. This characterisation of design as a means of 'cultural research' closely parallels the aspirations of Critical Design. The UrbanIxD project [39] provided examples of fictions that challenge our assumptions and preconceptions about the role that products and services play in everyday life. The challenge facing such early stage concept generation is to project forward by tapping into higher level needs and desires that are often not obviously apparent.

D. DIY culture and infrastructures

Another way to empower people to shape technologies according to their own needs is the DIY culture, which is based on provision of general tools and methodologies that provide the means to non-experts to become designers of their own technology without the intervention of researchers or decision-makers. These novel ways to easily produce and sell something through digital tools like online marketplaces and Open Source resources, shared online

enable virtually anyone to become "a designer", as Gerritzen & Lovink put it [23]: "sharing open source, allowing open access, and fostering open innovation are principles of a digital society that speeded up production processes, innovation and even research processes. Through adapting, recycling or remixing, it becomes much easier to create value" [28].

In an era where not just engineers or designers are in fact undertaking acts of innovation, it becomes clear that the fantasy of professionally anticipating and fulfilling of people's needs, wishes and preferences has to be adapted. The public is no longer expected to silently appropriate the things served to them, and, consequently, designers and engineers have to experiment, to study, to adapt and to learn [27].

One promising development of participatory design was described by Pelle Ehn and colleagues as **Design as Infrastructuring** [8][15]. This approach foresees experimentation through the construction of long-lasting structures and the development of design tools in order to understand and shape the capabilities of professionals and layman alike to partake in the shaping of our societies in a socially, economically and culturally sustainable way. Instead of looking at the designer as the problem solver, Design as Infrastructuring creates possibilities, in and through which others can create their own solutions to their own issues. Depending on the given particularities, these structures can consist out of virtually anything like tools, physical spaces, shared language or protocols.

This approach to deploying the resources of designers and technologists are often seen as potentially more sustainable, as societal, political, neighbourly problems are by definition constantly evolving and thus can never be entirely solved: "Having durable socio-material structures in place that enable neighbours to tackle their own problems equipped with novel tools and methods can have more long-lasting and profound societal impact on a neighbourhood than the solution to a concrete problem" [27].

E. Engineering

From an engineering perspective, technology is treated as a generic enabler, as a tool, and the objective is to make it work well according to various performance metrics in order to be used by others in ways that are often considered only in a speculative way, if any. Many technologies were indeed made popular for different purposes than those initially anticipated, even for cases that today might seem obvious such as the phone or the SMS. The Internet is perhaps the best example for such a technology made by engineers without asking different "communities" about their specific needs, but which was appropriated in numerous ways to address exactly such needs. As argued by David Clark, one of the Internet's architects, and his colleagues [12], the Internet was built according to the "design for tussle" principle, according to which network designers should avoid to implement hard decisions in the network core, allowing it to adapt according to different social or economic conditions, and other forces.

V. INTERDISCIPLINARY INTERACTIONS

Despite the numerous research projects and different technological solutions for the design of ICTs for communities, there is a long way to understand the complexity introduced by the hybridity of space. The most challenging question to address in the future is the extent to which single actors, institutions or local communities can together imagine tangible possibilities, urban interaction design fictions [39], and structure the available design options at different levels. Can then those individual efforts generate shared knowledge and improve the usability and customization options of the developed tools?

In this context, the question of interdisciplinarity in the design of the hybrid urban environment becomes urgent. Social scientists need to become more aware of the capabilities of technology and also get involved in the design processes, while engineers should tackle legitimate local social issues and their inherent complexity, by coming to an understanding beyond simple optimization techniques and data analyses.

In the following sections we provide a brief summary of our team experiments with interdisciplinary exchanges related to the design of hybrid space, which have treated DIY networking as their main "boundary object."[1]

F. The Dagstuhl seminar on DIY networking

The DIY Networking community was initiated during a successful Dagstuhl seminar in January 2014, when also the term was coined [5]. A balanced mix of researchers from the fields of networking, media studies, human-computer interaction, urban and community informatics, together with artists and activists worked together on different applications areas of hybrid space design based on DIY networks. Among various collaborations initiated in that seminar, a series of interdisciplinary workshops on DIY networking will be hosted every year in a conference of a different related field; see http://diynetworking.net.

Some key lessons learned from this first gathering include the importance of low expectations, the balance between different disciplines and perspectives, but also the requirement to focus on the problems that are collectively identified as urgent or necessary to be addressed, rather than on the need to develop novel technologies. As Mark Gaved mentioned, from his research experience with community catalysts "the two

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1   More details, multimedia material, and summary reports on all the events are available at http://nethood.org/events.php

technologies that turned out to be important for social networking were 'tea' and 'cake'" [5].

G. The EINS summer school

Just as DIY networking was placed as a boundary object at the crossing of various disciplines within the Dagstuhl seminar, in July 2014 we initiated the first of a series of summer schools that place the city at the core of the collaborative work. The 2014 case aimed to initiate a collective and interactive portrait of the city of Volos in Greece, by means of creating points of interest and exchanges between citizens. For instance, among the imagined hybrid urban applications by the urban interaction design working group, led by Michael Smyth and Andreas Unteidig, in collaboration with the DIY networking group, led by Mark Gaved and Harris Niavis (University of Thessaly), is a colourful chair together with an explanatory board, which could attract the attention of passers-by – locals as well as tourists – and invite them to take pictures of themselves (selfies) with that particular urban frame in the background, becoming a promotion sign of the city. These images are then automatically uploaded to a website that can only be accessed by a local network at the location, as the chair has a Raspberry Pi device that can connect smartphones with the website in a local network. Once four pictures were submitted and displayed next to each other, the older pictures vanish with the submission of new ones, creating a playful and ephemeral approach to representing oneself in a semi-public, hybrid space.

During the feedback session with representatives from the city authorities, Pantelis Skayannis raised the issue of density for the placement of these chairs, as well as the difficulty of sustaining interest in them over time. For this and other potential hybrid applications, bureaucratic obstacles, security and safety issues like the need to protect the containers of different devices were raised together with concerns about, the digital divide/knowledge gap; many participants valued Vasilis Sgouris' suggestion to combine within a project entity the different proposals technically, and especially administration-wise.

H. The Community Now? symposium

At the Community Now symposium, in Berlin in February 2015, we organized the workshop "Empowering Citizens to Shape Their Hybrid Space." The goal of this workshop was to explore a variety of methods for empowering citizens to build understandings of the fast evolving hybrid space of their cities, in order to participate more actively in city formation, and to use it for (self-)representation and engagement in local interactions. This process will increase the possibilities for claiming our right to the (hybrid) city from profit-driven development and tech corporations.

In this context the concept of diversity plays a key role. First, the design process needs to integrate elements from urban studies, social sciences, urban interaction design, and computer science, among others, which means that people with very different backgrounds and perspectives need to work together. Second, in practice, the developed ICTs that aim to facilitate hybrid interactions, like those based on DIY networking, have to address the diversity of people that happen to be in physical proximity for small or long time durations. Within this logic, after a short presentation of the workshop aims Ileana Apostol and Panayotis Antoniadis invited the participants to introduce themselves through a personal story on experiencing with diversity, and these thirty, approximately, narratives shaped the workshop content.

Every personal experience brought a new element in better understanding the concept of diversity and its role in facilitating contact between strangers in the city. The exchange levels varied from the simple exposure, (eye) contact and awareness, through speech expressed in language –also touching the issues of using different vocabulary in deliberations– to actions, where the examples ranged from knowledge sharing and service exchange, to personal strategies to 'survive' in either diverse or in homogeneous environments, to collective engagement, governance and long-term practices, including the provision of alternative media, collective construction of knowledge, and education.

A brief overview of the possibilities that DIY technology open up generated a discussion in light of the previous stories, on how to use and also advance the technology as mediator of collective awareness and/or triangulator between strangers in public life. On the one hand, it was suggested that people may be more motivated to use it creatively, if digital technology has a physical expression and a more 'human' friendly face, which could turn it attractive, as well as the inclusion in the design process of perspectives toward better usability, that do not always come from tech-savvy users. On the other hand, it was generally agreed that some sort of moderation is needed while using the technology, with the possibility over time also to reverse 'anonymity', as well as customization according to values toward affirming differences without exclusion.

VI. CLOSING NOTES

As one may draw from the above narratives, our recent interdisciplinary exchanges around the topic of DIY networking opened up various avenues for collaboration, yet this is an ongoing process of shaping shared vocabularies, understandings, and practices.

Perhaps the most important lesson we have learned from the above collaborations, and many more not covered in this paper, is that interdisciplinary research is a challenging process that cannot easily advance under tight deadlines and ambitious plans. As such, it is critical to devise clear frameworks and 'boundary objects' for collective action, and allow for reiterations and turns into the spiral-like paths of the hybrid design process for localities, which finds inspiration in the laboratory of everyday practice.

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