



Mapping strategies for distributed, social and collaborative design systems of makers, designers and social entrepreneurs

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The practice of designers has recently evolved from a relatively closed ecosystem of professional actors to an ecosystem with less clear boundaries and roles. Makers can be considered (and often are) designers or a new kind of designers working with open, peer-to-peer, distributed and DIY approaches. And both makers and designers increasingly work with social innovation initiatives, becoming thus social entrepreneurs or collaborating with them. Where are makers, designers and social entrepreneurs, how many are there, how do we reach them and network them? This article presents a first exploration of literature, cases and datasets that represent direct or indirect approaches for mapping where they can be found. These formal or informal approaches are clustered in three groups: work, place and community. Each dimension generates a different perspective with different approaches and datasets, which influences our view and definition of makers, designers and social entrepreneurs.

Keywords: Maker Movement, Designers, Social Entrepreneurship, Distributed Design, Mapping

Introduction

The practice of designers (and the reflection upon them) has continuously evolved and the recent technological, social, and economic trends have transformed it from closed and defined processes to ad-hoc and open processes, from a relatively closed ecosystem of professional actors to an ecosystem with less clear boundaries and roles. The Maker Movement is a phenomenon that fits in this trend for at least two reasons: a) makers can be considered (and often are) designers or a new kind of designers, often working with open, peer-to-peer, distributed and DIY approaches; b) the technologies, systems and processes they adopt, build and promote are a key element further reinforcing this trend. Its preeminent characteristic of bridging the local and digital dimension and the often collaborative and social nature of its activities constitute a reason for identifying such movement as a clear example of digital social innovation (DSI) (Bria et al., 2015; Stokes, Baeck, & Baker, 2017). Moreover, this is a concept that extends the definition of social innovation (Murray, Caulier-Grice, & Mulgan, 2010): people, projects and organisations that adopt digital technologies to tackle sociotechnical and environmental challenges focusing on social or environmental impact over financial return, towards openness, collaboration, and citizen empowerment. Digital social innovation can be found in different



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fields such as healthcare, education and employment to democratic participation, migration and the environment. In all of them, maker projects can be found. This represents another connection between the Maker Movement and Design, especially along the reflections about how designers (both expert and nonexpert, formally trained and informal amateurs) are developing and spreading social innovation initiatives toward sustainability (Manzini, 2015).

When creating and deploying social innovations both makers and designers can thus perform, at least partially, as social entrepreneurs, and the connection between design and social entrepreneurs have also been debated in positive terms (Brown & Wyatt, 2010; Fleischmann, 2013). Social entrepreneurs are motivated to address social problems using an entrepreneurial approach, develop and implement their innovative solutions to improve communities and the world in which we live, playing an important role in addressing social, economic and environmental challenges.

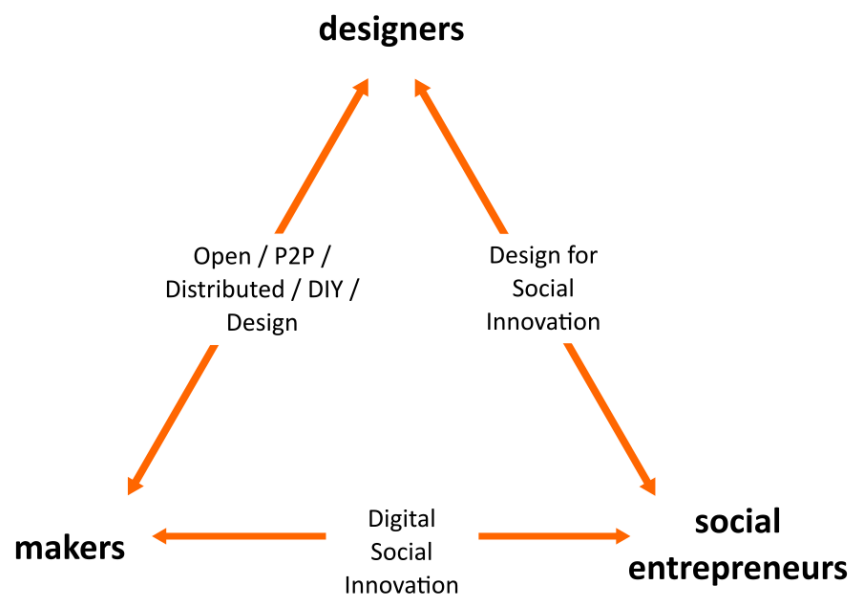


Figure 1: The distributed, social and collaborative system and its actors

While designers and social entrepreneurs have been extensively investigated and defined, the same cannot be said of makers. Both the design practice and research have already approached the Maker Movement, and one of the issues that have not been explored enough yet is the extension and distribution of this phenomena, and how much design could have a role in it. If the Maker Movement is a globally rising phenomenon, how big is it, how much is it growing and how many designers and social entrepreneurs are part of it or could join it? This is a strategic question that addresses how, where and how much the design research and practice could be influenced by and influence the Maker Movement, in the development of products, services and of social innovations. One of the main obstacles is the vagueness, complexity and uncertainty regarding the definition of makers. The meaning of being a *Maker* is broad, and it is related to *how* to clearly identify who are the makers. These characteristic are an arguable consequence of the loose and widespread nature of the definition of the term *Maker*, since its conception when Make Magazine was launched by Dale Dougherty in 2005 to promote technology, creativity, and fun (The Blueprint, 2014). Chris Anderson slightly narrows and improves its definition, considering specific practices and principles divided into three different features: a) the use of digital desktop tools for designing and prototyping artefacts; 2) the adoption of common cultural practices and collaborative processes of sharing these designs with their communities; 3) the production of artefacts with the use of digital manufacturing technologies, spaces and services (Anderson, 2012).

By exploring the size and distribution of the Maker Movement, Design and Social Entrepreneurship, this research aims

- a) to understand how designers can join the movement;

- b) to elaborate further research and strategies for connecting designers, social entrepreneurs and the makers;
- c) to improve the definition of makers;
- d) to strengthen the connection between these three actors, and therefore their work on creating and implementing social innovation.

A better understanding of this phenomenon is an exercise for both exploration and exploitation, especially if it is done with the goal of linking it to design. Moreover, it has a self-reinforcing nature: mapping helps at thinking about the identity(ies) of these actors, and the identity(ies) adopted inform our mapping. The article does not focus on the issue of the identity of makers, designers or social entrepreneurs per se, but it contributes to a small advancement in this direction if we consider that working on the identity of makers is a strategic design initiative, especially when developed with the focus of improving designers' practice and research.

Measuring and communicating the value of design is a strategic effort, and this article approaches it at the system level. Measuring the extension and distribution of the community of designers is another way of evaluating and assessing the value of design, not at the scale of single projects, but at ecosystem scale. Furthermore, understanding how designers, makers and social entrepreneurs are distributed is a further contribution towards understanding the social impact of design not just with industry but with citizens too, and the first step towards measuring it and making it visible. Innovative business initiatives often generate indirectly more jobs and economic value locally (Moretti, 2013), so the impact and importance of makers, designers and social entrepreneurs could also be higher than what expected, and this approach could be lay the foundation for further research upon the general value of design initiatives to society and economy. The main research question of this article is then: *Where are the makers, designers and social entrepreneurs, how many are there, how can we reach them and network them?* Operatively, as a first step towards answering this question, the article works with a more structured research question: *Which are the main approaches for mapping where makers, designers and social entrepreneurs can be found?* Exploring such approaches would enable us to choose the more appropriate strategies for mapping them, possibly quantifying the extension of the Maker Movement, Design and Social Entrepreneurship, and lay the foundations for the further steps of effectively mapping and networking them (and them with designers and social entrepreneurs). Therefore, it would contribute to measuring bottom-up and distributed social and collaborative systems in other contexts, adopting a triangulation of profiles for better understanding actors from different systems.

Strategies for mapping makers, designers and social entrepreneurs

This section represents a first exploration of literature, cases and datasets that represent direct or indirect approaches for mapping where makers, designers and social entrepreneurs could be found. The clusters emerged from the literature review and works on two levels: the first one can be found in the distinction between formal and informal work. On the second level, three clusters represent potential dimensions for mapping: by work, place and community. These are sometimes overlapping or connected dimensions and represent different perspectives for considering how to define the identity of makers, designers and social entrepreneurs.

Formal and informal (social and creative) work

All the mapping approaches documented in this section can be categorized as either a) based on formal definitions (and therefore formal datasets and procedures) or b) based on informal definitions or definitions of informal entities (and therefore informal datasets and procedures or indirect datasets and procedures). By definition the difference between the two categories lays in the existence of and accordance with officially recognized forms, structure or rules for the definitions or not, and in the independent and official and legal nature of the activities or not (Oxford Dictionaries, 2018a, 2018b).

Formal approaches mainly fall into official statistics and their related methodologies for measuring formal economy through employment, unemployment and underemployment. According to OECD¹, employment rates are typically defined as a measure of the extent to which available people to work are in the labour market, calculated as the ratio of the employed to the working age population. As most household domestic and personal services are not produced in the market, there are no market prices that can be used for

¹ <https://data.oecd.org/emp/employment-rate.htm>

measuring them and including unpaid domestic and personal services produced for own final consumption within households would lead to considering the whole adult population as employed and therefore with no unemployment at all. Unemployment is defined in the labour force framework as an extreme lack of work, and situations of partial lack of work are normally considered as partly employment, or underemployment. Within formal statistics, population is usually divided into three mutually exclusive and exhaustive categories: employed, unemployed, and people not in the labour force (or not currently active); the first two categories compass the active population.

Formal approaches for identifying makers, designers, and social entrepreneurs could be then based on official statistics or on their related methodologies, that explicitly do not consider activities outside the market, for which informal approaches might be more suitable. Conceptually, the “informal economy” is defined as “all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements” (ILO, 2002). More than 60% of the world’s employed population earn their livelihoods in the informal economy and it represents more than 90% of Micro and Small Enterprises worldwide. More than 60% of the world’s employed population earn their livelihoods in the informal economy and it represents more than 90% of Micro and Small Enterprises worldwide. According to WIEGO (Vanek, Chen, Carré, Heintz, & Hussmanns, 2014), the components used to measure informal employment inside the informal sector is comprised of all employment in informal enterprises, including employers, employees, own account workers, contributing family workers and members of cooperatives. A review of indirect methods includes (Williams & Schneider, 2016):

- the discrepancy between national expenditure and income statistics;
- the discrepancy between national the official and actual labour force;
- the transactions approach refers to a constant relation over time between the volume of transactions and official GNP (Feige, 1989);
- the currency demand approach considers who considered the correlation between currency and tax pressure (Cagan, 1958): this approach assumes that shadow (or hidden) transaction are undertaken in the form of cash payments, so as to leave no observable traces for the authorities (Tanzi, 1999);
- the physical input (electricity consumption method).

The key argument for direct methods is because they provide deeper understanding regarding the structure of the shadow economy, in opposition to indirect methods crude assumptions and that are far from being proven (Thomas, 1992; Williams & Windebank, 1998). In short therefore, as an exploratory analysis of what makes a good measure to identify makers, designers, and social entrepreneurs in the informal economy, the combination of these two main approaches can be suggested:

- A residual approach identifies a part of the population in relation to the total, an objective measurement.
- A multidimensional approach (“multilateral” or “direct methods”) is a distributionally-sensitive metric (Alkire et al., 2015) related to normative choices, in terms of dimensions, indicators, weighting, the unit of measurements, and aggregation.



Figure 2: Formal and informal definitions and approaches

Considering the work dimension as a mapping strategy

The work dimension of makers

This dimension is where the new, emerging and under constant changing nature of the Maker Movement is connected to both informal practices and expectations, and forecasting of future working conditions (both formal or informal). If makers were considered as typical manufacturing professionals (just like craftsmen or manufacturing employees) formal jobs could be then easily found with official statistics and mapped accordingly, but the definition adopted here points to more informal profiles. For this reason, the main contributions about the work dimension of makers that were found in the literature review adopted in-depth interviews, focus groups and surveys as the main approach, and therefore are limited in scale and cannot be considered as representative of the whole movement. Joint Research Centre (JRC) provides insights into the expectations of the Maker Movement towards the future of work using eight thematic narratives: Automation, Globalisation, Micro-Factories, Sharing Economy, New Skills, Green Economy, Ageing, and Migration (Valente De Jesus Rosa, Martinho Guimaraes Pires Pereira, & Ferretti, 2018).

The *Makers' Inquiry* investigated the socio-technical and professional dimensions of makers in Italy, with a survey of 134 participants (Bianchini, Menichinelli, Maffei, Bombardi, & Carosi, 2015; Menichinelli, Bianchini, Carosi, & Maffei, 2017). Even with the limits in terms of participants and geographical focus, the research provided insights about at least three interesting issues related to this article. Firstly, it investigated three different profiles of makers: a) makers as technologically advanced people who tend to use digital technologies for communicating, manufacturing and sharing their projects (Anderson, 2012); b) (Indie) Designers: Individual design actors that own or manage all the competencies related to design, production, and distribution processes, thus becoming self-producers (Bianchini & Maffei, 2012); c) managers of Maker Laboratories. Secondly, it showed that regarding the formal working conditions (eg, work contracts) of makers, 38.7% of subjects that are self-employed individuals (with or without VAT), 17.1% have open-ended contracts and 5.2% fixed-term contracts, showing that making is mainly an independent and autonomous activity, a new way of working professionally and not just a hobby, even if a secondary or supplementary activity. Thirdly, there is an interesting overlap between the territorial concentrations of Italian makers within historical industrial districts and urban contexts, contributing an interesting insight: makers could be found within cities, creative and industrial districts.

The work dimension of designers

Given the historical connections of design with industry, traditionally formal work positions are arguably the most proper dimension for quantifying the number of designers. A report published in 2006 by BEDA (the Bureau of European Design Associations) aggregates statistics at national level from European countries and found, overall, a total of 410,000 designers in Europe that generated an annual turnover of 35 billion euros (Design Austria & BEDA, 2006). The report is made from aggregated data from different sources, so it is unevenly structured, and the focus is not only on the number of designers but also to their contribution to national economies. The importance of the contribution of design to business and industry is documented also in the *€ Design | Measuring design value*² project that aimed at providing tools for policy makers and decision makers to measure the positive impact of design to the economy. Another recent and relevant example in this direction is the *Design Economy 2018* report published by the Design Council about the state of design in the UK, which found +1,067,600 designers; the report is also relevant for its calculation of the economic impact of design, for the identification of local clusters and for the clear documentation of the methodologies adopted which could be then replicated in other countries (Benton, Miller, & Reid, 2018). At European level, Eurostat collects data about cultural employment by including all persons working in an economic sector defined as cultural, including all occupations relating to culture, finding around 8.4 million people in cultural employment across the EU (3.7 % of total employment)³.

Data regarding professional designers could be extracted also from other non-official sources, like the LinkedIn platform - through the overview page of designers⁴, its search results (showing 7,280,175 designers at the time of writing)⁵ or with more advanced techniques (Dai, Nespereira, Vilas, & Redondo, 2015). Similarly to the

² <http://www.measuringdesignvalue.eu/>

³ https://ec.europa.eu/eurostat/statistics-explained/index.php/Culture_statistics_-_cultural_employment

⁴ <https://www.linkedin.com/title/designer>

⁵ <https://www.linkedin.com/search/results/people/?keywords=%22Designer%22>

Makers' Inquiry (and an inspiration to it), the Designers' Inquiry (Cantiere per pratiche non-affermative, 2013) also describes the profiles of Italian designers with a survey. Regarding the work dimension, the majority of them (41.3%) is a freelancer while less than a quarter (22%) is an employee and even less is a studio owner (10.6%); 57.8% of them does not have a contract, 36,4% has a second occupation of which 54,8% is still in the area of design. It is important to note that 48% of the Italian freelance designer does not have VAT, depicting thus the work of many Italian designers as closer to the informal economy.

It is important to mention that designers have often interacted with what is commonly regarded as informal economy (Kaya & Yagız, 2011) in poorer countries, but the presence of informal jobs is clear even in countries with an established design industry like Italy, and not just for designers but also for manufacturers of designers' products in the fashion industry (Paton & Lazazzera, 2018). Home work here is probably caused by the lack of a national minimum wage, the fragmented structure of the sector, the common practice of outsourcing. National statistics estimates that in 2017 there were 3,647 home workers in the manufacturing sector, operating with regular contracts, but other researchers calculate that there are 2,000 to 4,000 irregular ones (Toffanin, 2016). The informal dimension of design is becoming increasingly important with the current trends of design democratisation and the rise of social media (Gerritzen & Lovink, 2010), alongside with the growing ties between design, social innovation, citizen participation (Manzini, 2015). Moreover, the emerging possibilities at the intersections of design with open source, peer-to-peer, decentralised, distributed and diffuse design projects (Abel, Evers, Klaassen, & Troxler, 2011; Menichinelli, 2016a) also enhance the informality of design practice.

The work dimension of social entrepreneurs

In order to identify measurements for mapping professional social entrepreneurs, the Global Entrepreneurship Monitor (GEM) constructed a dataset on social entrepreneurial activities in 49 countries (Lepoutre, Justo, Terjesen, & Bosma, 2013). In an attempt to overcome country-specific definitions and differences in legal status, the researchers used telephone or face-to-face household surveys in the national languages that indirectly (to exclude country-specific legal or bureaucratic definitions of social entrepreneurship) identified social enterprises through questions on the predominance of a social mission with the creation of social value, the importance of innovation by delivering innovative products and services, and the role of earned income. The survey data was then weighted based on age and gender (and education and ethnicity whenever appropriate) to reflect the national population and harmonized with the other countries. The national context plays in fact an important role in shaping the characteristics of social enterprises in terms of sectoral specialisation, funding and employment: among the countries, higher rates of traditional and social entrepreneurial activities are correlated.

Mapping the third sector is a measurement for identifying where social innovations and social entrepreneurs are: for instance, by locating NGOs and Foundations registered in public institutions (Anheier, Krlev, & Mildenerger, 2019). Another possibility can be found in mapping B Corporations, business initiatives that balance profit with social and environmental performance and accountability (Cao, Gehman, & Grimes, 2017; Hickman, Byrd, & Hickman, 2014). Moreover, seeking funding for the idea of the social enterprise might require buy-in from public sector or third-sector agencies whose governance is in the public domain. Therefore, identifying where funding opportunities for social entrepreneurs comes from could be another indirect way of mapping the location of social entrepreneurs.

Considering the place dimension as a mapping strategy

The place dimension of makers

Makers often gather and meet in a series of local laboratories but that are often networked regionally and globally: Fab Labs, Makerspaces, Hackerspaces and so on. These laboratories act as schools, community hubs and professional centres where the Maker Movement has been emerging and building social and collaborative initiatives. The number of these laboratories is always changing, making it difficult to completely track them. However, because they are bottom-up initiatives, several platforms have been established through the years to map them, such as Fablabs.io⁶, Hackerspaces.org⁷, or the recent list⁸ of makerspaces elaborated by MAKE

⁶ <https://www.fablabs.io/>

⁷ <https://wiki.hackerspaces.org/>

⁸ <https://makerspaces.make.co/>

magazine. Such numbers could be a) considered as a proxy of the number of local makers, maybe assigning average quantities or b) each laboratory could be directly contacted to receive a more accurate estimate.

A JRC report was elaborated recently using several sources of data, including some of these platforms, reporting that Fab Labs account nearly for half of the makerspaces in the European Union (48%; 397 laboratories), Hackerspaces are 40% (327 laboratories) and then there are other type of laboratories for 12% (102). The average number of makerspaces per country is 29.5. France, Germany and Italy represent 53% of the makerspaces within the European Union (Rosa, Ferretti, Pereira, Panella, & Wanner, 2017).

The place dimension of designers

In a similar way, the number of designers and their distribution could be either estimated or asked directly to design schools and design businesses. The 2006 BEDA report (Design Austria & BEDA, 2006) provides some numbers regarding schools and design businesses, but it is unevenly structured, so more organized and complete databases should be found or created for this task.

A global list of art and design universities is maintained by the Cumulus International Association of Universities⁹, which lists 286 members from 57 countries in 2018¹⁰. The DESIS Network is a network of more than 40 Design Labs based in design schools and in other design-oriented universities and operating with local, regional and global partners that connects designers and social entrepreneurs and aims at using design knowledge to co-create social innovation initiatives (Cipolla, 2018). The different clusters (food, ageing & ingenuity, distributed and open production, city-making, public & collaborative, etc) help to map how design for social innovation and sustainability is being built in theory and practice. The Service Design Landscape¹¹ is a research project developed by Politecnico di Milano and addressed to the forthcoming students of service design: a crowdsourced online map, lists 192 higher education programmes, 420 consultancies, 53 research centres.

The place dimension of social entrepreneurs

Depending on the business life cycle or specific needs, social entrepreneurs can rely on different physical spaces for developing their ideas and initiatives, which can then work as entry point for mapping the geographical distribution of social entrepreneurs. Coworking, incubators and accelerators are typical examples of place dimension for social entrepreneurs. Several coworking act as spaces for social entrepreneurship, where ideas are advanced through collaboration. Impact Hub¹² is the largest network focused on building entrepreneurial communities for impact at scale; it reports more than 100 locations in more than 50 countries, for a total of more than 16,000 members. The Centre for Social Innovation¹³ is a coworking space, community, and launchpad for people who intend to change the world, and it operates nearly 100,000 square feet of space and supports more than 1,500 members by providing the spaces and tools they need to succeed more quickly and to have a far greater impact.

Considering the community dimension as a mapping strategy

The community dimension of makers

The social and collaborative nature of the Maker Movement has the consequence that the community dimension is relevant and present in different ways, at least on three levels: 1) a global community of local events and laboratories: the global Maker Movement, Fab Lab network, and so on; 2) local communities that form in and around local laboratories; 3) the communities that form around the development of projects, especially the ones that are shared and developed openly as Open Source Software, Hardware or Open Design, which then become community-based initiatives.

On the first level, a global community can be analysed and quantified through the analysis of social media platforms like Twitter (Menichinelli, 2016b); or through the analysis of specific platforms of the Maker Movement like Thingiverse, the most popular platform for sharing and downloading 3d printable models (Özkil, 2017; Voigt, 2018). Such analysis typically involves not only the quantification of users, labs and

⁹ <https://www.cumulusassociation.org/homepage/what-is-cumulus/>

¹⁰ <https://www.cumulusassociation.org/homepage/members/>

¹¹ <https://www.servicedesignmap.polimi.it/>

¹² <https://impacthub.net/>

¹³ <https://socialinnovation.org/>

projects, but also of their connections and interactions through a social network analysis approach, resulting thus also an exploration of the social dynamics and structure emerging from makers and building the context for their work and further interactions and dynamics. Furthermore, such analyses are also able to quantify the output of such communities: the number of designs, innovations, collaboration and so on, providing thus a step towards understanding also their value generation and impact.

On the second level, local communities that form in and around local laboratories such as Fab Labs have been analysed especially through ethnography: a more qualitative approach, but also able to shed light about the dimensions of a local community and potentially also of its evolution over time (Ghalim, 2013; Maldini, 2014).

On the third level, the communities that form around the development of open source projects are often analysed in terms of their social structure, providing an overview of the outcomes generated by social networks of interaction (Bonvoisin, Buchert, Preidel, & Stark, 2018; Menichinelli, 2017). The participation in open and collaborative projects provide data and methods for assessing the geographical location of the participants: inferring locations from the top-level domains of participants' email addresses; self-reported locations or time zones of developers on platforms like GitHub; self-reported time zones (Gonzalez-Barahona, Robles, & Izquierdo-Cortazar, 2016; Takhteyev & Hilt, 2010). These approaches have enabled researchers to investigate geographic and organizational of projects (Bird & Nagappan, 2012), the impact of location over acceptance of individuals' contributions (Rastogi, Nagappan, Gousios, & van der Hoek, 2018) and the effect of geographic distance on social relationships (Heller, Marschner, Rosenfeld, & Heer, 2011).

This social dimension can be also considered as the context for research that aims to uncover the phenomena of lead users or user innovators (be them firms or individual consumers): consumers who develop or modify consumer products (von Hippel, 1988, 2005). These can be considered also as relevant for the Maker Movement, especially for their tendency to develop and share innovations freely, without intellectual property rights and with grassroots innovation processes (von Hippel, 2016). Research initiatives along this direction were able to estimate, with phone surveys and a database of consumers, the number of consumer-innovators aged 18 and over in UK (2.9 million), USA (11.7 million) and Japan (3.9 million) and their expenditures, which is sometimes larger than the expenditures of traditional firms (von Hippel, Ogawa, & PJ de Jong, 2011). It is also important to note that the work of lead users and consumer innovators is not only related to products and technology, but it extends from them to social innovation when coupled with Technological Reflectiveness (TR) (Schweitzer, Rau, Gassmann, & van den Hende, 2015), with the commercialisation of products and services for social purposes with social enterprises (Koers-Stuiver & Groen, 2015), with their connection with participatory design (Morjaria, Ross, & May, 2013) and service design for sustainability initiatives, like the research that originated the DESIS network (Meroni, 2007).

Research on lead users and consumer innovators has developed several rigorous approaches for mapping, identifying and reaching them. The first and most common approach is through mass screening of entire populations (a parallel search strategy) with written, phone and online surveys; the inefficiency of this approach and its requirement of a specific and established population have pushed for the introduction of new methods. One of them is broadcasting, where experts self-select according to their expertise after an initial communication of the problem, in a process similar to crowdsourcing (Jeppesen & Lakhani, 2010). More advanced methods work on the social dimension of lead users: one of the main methods is pyramiding (a sequential search strategy, where improvements can be done between iterations), a variant of snowball sampling, a process based upon the exploration of social structures where participants, thanks to their expertise, identify other participants to be contacted (von Hippel, Franke, & Prügl, 2009). Lead users have also been studied in terms of their position in social networks and commonly found in-between different social groups (Kratzer, Lettl, Franke, & Gloor, 2016). More recently, these approaches have been extended to online communities and digital methods, thanks to their flexibility and to the vast amount of accessible data, for example with netnography approaches (Belz & Baumbach, 2010), with focus on a single social media platform like Twitter (Pajo, Verhaegen, Vandevenne, & Duflo, 2015) or multiple social media platforms (Tuarob & Tucker, 2015). A further evolution of this direction can be found in digital anthropology, which allows a better accountability of the data through triangulation of different sources (Sánchez, Giacalone, & Goduscheit, n.d.).

The community dimension of designers

Considering designers mainly as professionals, within the scope of this article, their community dimension mainly consists of a) association professionals or online or b) global or online communities.

There are several associations of design professionals, mainly working at national or regional level, that promote their members and their interests and therefore typically maintains a list of their members and sometimes of their projects: each could be contacted, the gathered data organised in a coherent way for all of them. Examples can be found in the Italian association ADI (Associazione per il Disegno Industriale, founded in 1956), which claims to have more than 1,000 members¹⁴ and maintains also a database of their projects, registered as an IP protection strategy. AIGA (American Institute of Graphic Arts, founded in 1914), a US-based professional association for design, comprises of more than 70 chapters and more than 25,000 members, that are listed in the Designer Directory¹⁵, a database that allows search for AIGA members by name, location and/or area of practice. Furthermore, AIGA suggests searching for designers by browsing their AIGA Member Portfolios, posting a job or internship on the AIGA Design Jobs board or by contacting an AIGA local chapter. IDSA (Industrial Designers Society of America, founded in 1965) is an association dedicated to industrial design and consists of a network of Professional Chapters and Student Chapters in the United States, organised into five Districts based on geographical region¹⁶.

More recently, global associations have emerged thanks to digital platforms and thanks to the now global extension of the design discipline, especially regarding more recent fields: IxDA (Interaction Design Association, founded in 2003), is a global network of more than 100,000 individuals and over 200 local groups dedicated to the discipline of interaction design¹⁷. SDN (Service Design Network, founded in 2004), is an online platform dedicated to connecting service designers, with 42 local chapters and 1,381 registered users¹⁸. Continuing this trend, from national official associations to global online organisations, now digital platforms are increasingly emerging for the promotion of designers with the sharing and discussion of projects like Behance (Halstead, Serrano, & Proctor, 2015; Kim, 2017). Such platforms might be easier to for accessing data and analysing it but represents a different way of community-building: fewer official organisations, less interest in collective political discussion, promotion and lobbying and more on individual or professional promotion.

The community dimension of social entrepreneurs

A range of social innovation organisations has emerged to network social entrepreneurs. Ashoka cultivates a community of change leaders that collaborate to transform institutions and cultures around the world, so that everyone can be agents of positive social transformation. Ashoka has elected more than 3,500 fellows from 92 countries, and the community of its fellows has been analysed (Meyskens, Robb-Post, Stamp, Carsrud, & Reynolds, 2010). Social Good Brasil¹⁹ exists to enhance human skills and exponential technologies so that more people and organizations act to solve society's problems. It is made up of organizations and individuals who are protagonists in creating, collaborating and sharing innovations. here are 59 fellows, and 130 local and international mentors. SIC (Social Innovation Community)²⁰ is a Horizon 2020 Programme funded project that aimed at exploring relevant topics for researchers and setting out a roadmap for the future of social innovation research. Over 350 representatives from over 19 EU countries have played a role in co-producing a vision and 10 policy ideas related to the theme. The DSI Digital Social Innovation initiative²¹ has been developed by several European organisations and currently has 1,440 projects and 2,230 organisations related to fields such as education, healthcare, democracy, environment, and employment.

Conclusions

This article presents a first exploration of literature review, datasets, different cases (digital platforms, organisations, research projects) that shows how the social and distributed design systems of makers, designers and social entrepreneurs could be mapped. These contributions work with formal and informal definitions, procedures, sources, and with direct and indirect focus at different granularity levels: country, region, city, organisation, and project. Adopting these approaches would bring closer the formal and informal

¹⁴ <http://www.adi-design.org/associazione.html>

¹⁵ <https://www.aiga.org/designer-directory>

¹⁶ <http://www.idsa.org/communities/districts>

¹⁷ ¹⁷ <https://ixda.org/community/local-groups/>

¹⁸ <https://www.service-design-network.org/community>

¹⁹ <https://socialgoodbrasil.org.br/>

²⁰ <https://www.siceurope.eu/>

²¹ <https://digitalsocial.eu/>

nature of such actors, since makers are still informal actors, designers are increasingly becoming informal through freelancing, and the use of digital platforms is becoming an unofficial community space and source of data. Therefore, it is not a surprise that contributions regarding Lead Users are probably the ones with more experience and richness: they bridge the gap between amateur and professional, between bottom-up and top-down. After a first manual clustering of the contributions, several common approaches can be identified, be them existing formal or informal sources, or research methods to be applied (figure 3):

- data from traditional official organisations (public, associations, networks, businesses);
- surveys, interviews, ethnography;
- data mining of social media services and digital platforms;
- places related to actors' education, work, and their community hubs;
- methods based on the social structure of these systems (pyramiding, social network analysis).

This article is the starting point for a simple framework for future research on social and distributed design systems, and both the three profiles (makers, designers, social entrepreneurs) and the three dimensions (work, place, community) should be further investigated in depth. This exploratory analysis should be transformed into a more in-depth analysis; approaches and literature should be expanded, datasets checked, organisations contacted, their data evaluated in order to compile a more rigorous list of compatible approaches and how they could be integrated. Missing or not easily accessible datasets should be investigated and published openly; data should be made coherent among countries and at global level, and geographical differences between developed, developing, emergent countries should be weighted, analysed and highlighted. Future research should address these limitations and provide more coherent approaches and datasets: it should investigate how much these approaches influence the definition of the actors, their understanding and promotion. The social, economic and political dimensions of these approaches and therefore of the representations of the actors and of their social diversity should be considered: gender, ethnicity, language, race, religion, sexual orientation, cultural beliefs, age, class and the intersectionality linked to these social identities. These datasets and approaches are contributing towards a further definition of designers, makers and social entrepreneurs: such definitions are now temporary, and future research should address this topic more, with both data-driven and design-driven approaches, for example by clustering data with machine learning algorithms or with a research through design approach (Redström, 2017).



Figure 3: The main contributions for mapping the actors of distributed, social and collaborative systems

One of the consequent next steps would be to define a set of approaches and adopt them for creating a global dataset of the distribution of these actors at country and regional level, besides the creation of a simple multi-composite index that would then convert several measurement into a simple 0-10 scale for easy visualization and communication (OECD & JRC, 2008). Such index, a SDD Index (Social and Distributed Design Index) could then be used for comparison with other indexes, for example of well-being indexes (OECD, 2011, 2014) or the Digital Social Innovation (DSI) Index (Bone, Codrina, & Stokes, 2018). Moreover, the knowledge and insights that can be generated from such dataset or index could be the starting point for further studies, for example the measurement of generated financial value, employment and social and environmental impact, for example by connecting it with the metrics of the Sustainable Development Goals (SDGs).

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