

## Communities of production : designing socio-technical systems of fabrication from a first-person perspective

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- *Menüfest de l'irruisibible*.
- Judit Tremosa (student) + Daria de Seta (Faculty).
- *Intervenció o accident: exploració de límits espacials* Mar Gaté (student); Albert Paster (Faculty).
- *Prisjons de la memòria*.
- Julia Llorens (student); Daria de Seta (Faculty).
- *Reubrir, Negjendo terreno*.
- Laura Badia (student); Daria de Seta (Faculty).

IN THIS BOOK: Plug-ins (DxCM in Barcelona), 113, 212; Paura, 101.

#### EL TIEMPO DE ESPERA

#### EN UN MOMENTO STAND BY

#### SSE: MARGES URBANS

#### TOPOS

#### SSE: HABITAR EL VACÍO

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PROGRAM: Elisava Research.

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#### COMMUNITIES OF PRODUCTION:

#### DESIGNING SOCIO-TECHNICAL SYSTEMS OF FABRICATION

#### FROM A FIRST-PERSON PERSPECTIVE

Oscar Tomico and Danielle Wilde

Industrial and economic practices profoundly shape a city. In Barcelona, for example, craft and industrial practices impact personal behavior, infrastructure, and urban planning in profound ways. The everyday lives of the city's inhabitants are shaped by where and how they work; where people live in relation to where they work impacts how they live, travel, shop and enjoy leisure time. The city's infrastructure has been made for or by industrial production. Many iconic buildings have an industrial past; the materials used to construct the city's streets and public spaces and the decorations that give character to peoples' living spaces are largely industrially produced. At the level of urban planning, the names of neighborhoods and streets in Barcelona are based on guilds once located there, products sold or exchanged there, or industries that have their production plants there.

Technological development, social pressures and the ecological emergencies we face demand a re-evaluation of industrial and economic practices and their relation to cities. In recent decades, many have championed moving production out of the city.<sup>1</sup> In contrast, we advocate keeping industry in the city, reinventing industrial practices to contribute to economic, social and environmental sustainability and to play a much-needed regenerative role. For this to be possible, it requires a paradigm shift—a move from globalized and centralized mass-production practices to open, circular, local and distributed on-demand, even digital, manufacturing.<sup>2</sup> In this new paradigm, designing and making become key transformational agents, disrupting the life cycle of products and transform how we design, develop, produce, deploy, use and recycle them. Such disruptions transform so-called linear extractive processes into circular sustainable ones, create new pathways for reducing environmental impact, redistribute value among the community, and reinvestigate local craft and industrial practices to play a much-needed regenerative role.

To both realize and leverage such transformations requires considering production from a systemic perspective and approaching change from the bottom up. It isn't just the designed object that impacts society and the environment. How that object interacts with and creates the socio-technical systems of production necessary to its fabrication<sup>3</sup> must also be considered. We propose that being involved from a first-person perspective (1PP)<sup>4</sup> in the actions of *conceptualizing, developing, sourcing, producing, distributing, selling*, and *end-of-life* of a product service system (BSS)<sup>5</sup> can have

a profound impact on a city. This impact depends on who collaborates in each step of the process: who finances it or provides digital infrastructure, where materials are sourced, where the product is produced, sold and used, and service touchpoints. As we will demonstrate, each of these actions can regenerate physical spaces, the economy, and the community in a neighborhood.<sup>6</sup> To exemplify our discussion, we focus on the project D×CM “Productive Citizens”. This project included multiple design activities involving design engineering and design students at Elisava as part of final bachelor projects (City and Maker Culture, 2018), second-year bachelor courses (Empowering local crafts networks, 2019) and third-year bachelor courses (Digital and physical productive communities, 2020). Over three consecutive years, D×CM invited students to design, from a first-person perspective, regenerative socio-technical production systems for Barcelona.<sup>7</sup> D×CM begun from the bottom up and scales out rather than up. It did this by “being with” three foci (one per year), each building upon the knowledge generated the previous year(s). (These foci: i) tapped into *material flows* of the city through material explorations; ii) focused on *community intra-relations*, leveraging them to support local crafts; and iii) critically engaged with *socio-technical systems of production*. We describe these foci and provide exemplary projects. The projects can be understood as alternative presents<sup>8</sup>—scenarios that can become a reality if adopted by local actors, including the municipality, other public institutions, the industrial sector, cultural associations, and grassroots movements. Before discussing our cases, we briefly characterize a 1PP approach to design.

When designing from a first-person perspective, the act of designing becomes personal.<sup>9</sup> It positions designers within communities. It situates and gives meaning to locally conducted research,<sup>10</sup> accounts for individual and communal situated experience, and empowers diverse, often marginalized actors in bottom-up transformation processes. The designers design for themselves, co-creating and sharing their outcomes; or they design for their community from within. These ways of designing require continually reassessing relationships that arise between people, places and purposes, in order to better understand and respond to the complex interplay of needs and values in situ.

#### BEING WITH THE MATERIAL FLOW

*Being With* the material flow means situating the design process in a local context and working with the available resources of a specific place. It requires shifting from “out-of-the-box thinking” to “inside-the-box thinking”, transitioning from a perceived situation of overabundance to forced scarcity where resources are limited on

purpose. With this stance, designing from a 1PP can assist a designer in working at a human scale and engaging with the ethics of how their professional practice can be more responsible.



Fig. 1. *The Extruder*. A project by S. Jense, 2018.

In the first year, *City and Maker Culture* explored the possibilities of circularity in digital fabrication to make cities more economically, socially, and environmentally sustainable. This topic is broad. As a starting point, each designer was invited to begin from the skills, knowledge and attitudes that define their identity. Making design explorations onto a personal level in this way—by designing for oneself with the materials at hand—allowed the final-year undergraduate students to frame their opportunities faster. Moreover, designing from and for where they live gave them the sense of reassurance needed for this open-ended exploratory project. The 1PP stance assisted the designers in focusing their explorations and achieving more robust outcomes. They experienced the implications of how people perceive the world and interact throughout the design process from a personal perspective.<sup>11</sup> The 1PP approach situated and gave meaning to the designers’ activities. It gave a sense of direction, anchoring the designers when everything else was complex, undefined and unknown. The three projects that exemplify the work undertaken in the first year of D×CM are *The Extruder*, *This is not a temporary solution*, *this is Velt*, and *Inter-*. They combine material explorations and activities with reflections on personal

interests, motivations, effort, place, ethical concerns and issues in the designers' everyday lives. The descriptions from the examples directly address the reader to make each designer's personal motivations and context easily accessible:

- *The Extruder* (Figure 1): If you like artists such as Etwan Bourouillec and Pierre Charpin, and your father knows about soldering, you might design something akin to "The Extruder". The Extruder transforms construction waste into sculptural public furniture pieces, to be shared and used in the area where you live, to create new meeting points for your community, in the streets and parks.
- *Velt*: If you are a graphic designer with an interest in experimenting with the materials you have at hand, a broken chair from your home can become the star of a communication campaign advocating for mending and repair. A modified "Velt" can become an easy-to-use repair kit advocating the act of repair as a permanent, rather than a temporary solution.
- *Inter*: If your hobby is fashion design and you are passionate about textiles inspired by architectural structures, used bubble wrap can become a fancy tote bag. An "open source" bag, whose structural pieces can be produced in FabLabs and Maker Spaces at a minimum cost, breaks from the idea of exclusivity communicated by current fashion brands.

These examples demonstrate the added value of limiting material selection to the resources at hand and what the designer can work with accounting for their biographical legacy<sup>12</sup> and prior experience. The act of making is always personal. Involvement from a 1PP stance makes it possible for prototyping and material explorations to become a way to connect and integrate local crafts, resources, people, and infrastructures. The 1PP stance creates sustainable value flows to reinvent a city's local production, as exemplified in the example of *Inter*'s material flow diagram (Figure 2).

#### BEING WITH COMMUNITY INTRA-RELATIONS

Taking the stance of being together with others in a neighborhood situates designers within the community as they work. A 1PP stance further positions them as community stakeholders. This stance, thus, adds the capacity to include and create bridges with others to the action of designing. Being in relation with the community doesn't just happen during the action of designing but throughout the day. It requires the designer to be vulnerable; to reframe the system from a relational attitude of care.<sup>13</sup> A 1PP stance supports this process. It demands the designer be responsible to personal, material, community and societal tensions and willing to teaching

others to take a 1PP. Doing so strengthens design choices. It affords community-based ownership of the transformation process, including analysis and review of (interim and final) outcomes, giving rise to bottom-up transformation.

In Barcelona, local craftspeople rarely collaborate with artisans, designers, customers, public institutions, companies or other entities in the neighborhoods in which they work or live. This situation makes them vulnerable to changes in society and the economy. During the second year, *Empowering local crafts networks* examined the potential of digital communication and fabrication technologies to provide opportunities for establishing local connections for collaborations and services. Our interest encompassed the acts of designing, producing, buying, selling, promoting, distributing, teaching, sharing knowledge, utilizing a space, or any other activity undertaken in the neighborhood and in the act of designing.

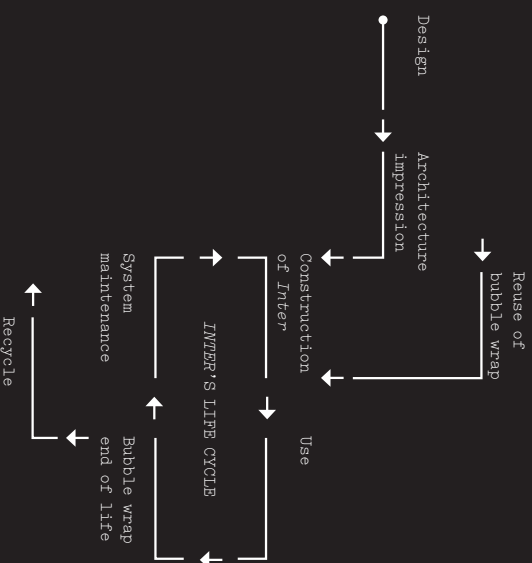


Fig. 2. *Inter*'s material flow diagram

At first glance, taking a 1PP stance when collaborating with other designers and craftspeople might be considered strategic product design, service design or business innovation. Once multiple stakeholders are added to the equation, the "existential" need to know everything about the subject of study can push designers to take a top-down perspective. However, a bottom-up approach to mapping and articulating new "business" strategies can also be

taken. 1PP in this context means becoming part of the community: being there, diving into the neighborhood, just being around.

The designer as *local*, as *fráñer*, has the opportunity to become aware, to experience everyday personal relations and pre-existing collaborative activities. Having a coffee with the local clientele; allowing someone from the neighborhood to hang a poster on the studio door; explaining to customers what the craft is about; giving directions to a semi-hidden atelier that sells the same things; even taking care of lost tourists passing by. All of these activities can become design activities when the designer takes a 1PP stance

The three projects that exemplify the work undertaken in the second year of DxCM are *Hope*, *Instruma*, and *Atemporal*. All of them focus on empowering local craft networks by expanding the connections between different neighborhood actors.

- *Hope* (Figure 3): People at risk of social exclusion, such as homeless people that hang around near your design studio, can become part of your design process. In “Hope” the designer collaborates with vulnerable individuals in the production of jewelry, sold on the Rambles in Barcelona. The collaboration provides a new source of income and dignity for the vulnerable individuals involved. This collaboration gives voice to a community. It makes visible an often-hidden characteristic of the neighborhood. It transfers craftsmanship skills, while offering possibilities for the craftspeople to work with NGOs and other public institutions. It thereby strengthens their identity and communication channels.

- *Instruma*: Knowledge sharing can help a luthier to develop new relationships with their neighborhood. They can keep local culture and traditions alive and vibrant, and educate the community, while promoting their business. In this example, inspiration was taken from the children you can see in the streets every day, walking around with their phones playing videogames. “Instruma” is a sensory video game tailored to school students and families, an interactive device that reveals the local production narrative of handcrafted instruments. The device enriches the experience of visitors to the local museum and others in the vicinity who can see this activity as a fun and active way of expanding their knowledge.

- *Atemporal*: Adding a new machine to the studio and collaborating with a junior designer-maker can support a radical change in how an established crafts-person sells and distributes locally made shoes. “Atemporal” combines established jute-sole making techniques with digital fabrication to raise interest in the community, strengthen product promotion, and support local transmission of

traditional craft techniques. *Atemporal* is a timeless product that fills a gap in the slow winter sales period. It meets locals’ individual needs through personalization, achieved by implementing laser cutting techniques in design and production.



Fig. 3. *Instruma*. A project by C. Althbe, A. Baéz and R. Prat. for a luthier in Barcelona, 2019.

Implicating themselves personally in the design process affords designers new relations at various levels—from the network, infrastructure and expertise that comes from their professional practice to the people, activities and things that fill the rest of their day. It is the combination of the individual and the place where the design action happens that acts as the connector, creating new relations in the neighborhood, both human and non-human. Figure 4 shows how augmenting existing practices and starting new ones from a bottom-up and emergent perspective can empower local networks.

#### BEING WITH SOCIO-TECHNICAL AND ENVIRONMENTAL INFRASTRUCTURES

If businesses are to be sustainable, they must shift from profit as the primary motivator to an interwoven, interdependent relationship between profit, people, place and purpose. Such a shift requires engaging with social structures, technical infrastructures, ecological systems, and cultural behaviors. In a profit-driven paradigm, few organizations can support designing from a 1PP stance. However, in a people-, place-, purpose- and profit-driven paradigm, a 1PP stance ensures impact beyond the specific, situated, and temporally bound circumstances of the design process. This shift requires reevaluating vision and purpose as a space of opportunity

and exploring new roles for iterations, multiplicity in action, and diversity in decision making.

During the third year, *the Digital and physical productive communities project* focused on regenerating Barcelona during COVID-19. Foreseeing the economic difficulties that industries faced due to the pandemic, the project explored how open, circular, local and distributed on-demand digital manufacturing could support the creation and distribution of value within local communities in the city. The goal was to bring a product service system (PSS) to market where the students live (Barcelona) and within their communities.

The end-result was a Kickstarter campaign ready to be launched following a people-, place-, purpose- and profit-driven paradigm. 1PP design interventions at the level of the “socio-technical system of production” have the potential to reshape a city’s infrastructure, identity and everyday life. They can support the transition from the current extractive economy to a more sustainable regenerative economy based on local, open, distributed and circular socio-technical production systems. The projects selected to exemplify this work are: *Entrrega’m*, *Te invito a una copa*, and *Picante*. These projects all involve multiple local agents in Barcelona, including the municipality and other public institutions, the industrial sector, cultural associations and grassroots movements.

- *Entrrega’m* (Figure 5): Designing a PSS around the symbolic act of giving away flowers and plants to show love, affection, kindness and well-being affords the opportunity to support habitat and biodiversity restoration where you live. Adding an online platform can help to create a lively community around the PSS for you and others to share articles and guides on plant care, recipes, and home harvesting. You might blog the stories of people who, like you, participate in the various activities offered or have a direct chat with botanical experts who can help you, and the others with you, to answer questions about your plants. “Entrrega’m” achieves all of these things. It is a locally crafted seed bomb. Each purchase helps people to show gratitude to friends and family and supports small neighborhood businesses.

- *Te invito a una copa*: If you want to create a cocktail set (a trendy activity in Barcelona, during COVID-19 lockdowns), a PSS could help you find a market for your designs, while supporting local crafts, food and liquor production. “Te invito a una copa” creates a community around cocktail glasses designed by emerging local designers, recipes from local mixologists from local cocktail bars using local liquor brands, kilometer zero fruits and other ingredients.
- *Picante*: If you are interested in normalizing themes that

may cause shame to some, you might design “Picante, Picante, Picante”: a sex-themed board game that you can play with your friends. Apart from the standard game, you may like to create extra card collections produced by local organizations that deal with specific topics, such as feminism, LGBTQI+ or fetishism. You could collaborate with artists from those communities to create the cards and distribute them in various locations, from hospitals to sex shops. Taking this hyper-local approach can help communities and artists gain more visibility while supporting sexual health.



Fig. 5. *Te invito a una copa*. A project by B. Abad, M. España, L. Masden and G. Vilá, offers a unique experience with the best cocktails in town, 2020.

Mapping 1PP design interventions and scenario-building activities from a community of designers to their city (Figure 6) can assist us in reflecting on that city’s emerging and future production possibilities, taking into account materials, activities, actions, infrastructure, spaces, organizations, institutions, companies and other non-human agents. It shows the potential of scaling a 1PP to a series of collective actions. A 1PP stance on design does entail being individualistic or egocentric. On the contrary, it acknowledges the richness of differences among humans and non-humans, making the design process more inclusive. It means designing from within.

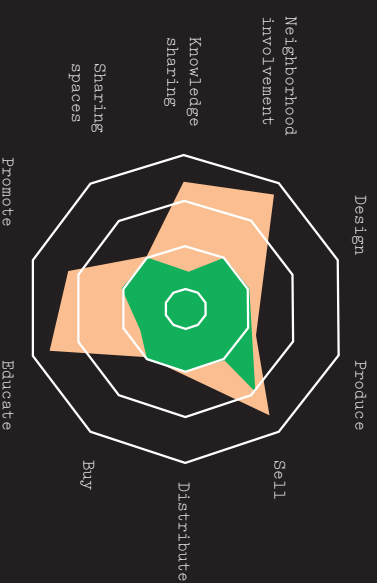


Fig. 4. New relations created in the local networks of a luthier in Barcelona by the design of *Instrumca*, 2019. Green shows the web of relations before taking 1PP stance; peach shows an expansion of impact, with the addition of 1PP. This example clearly demonstrates how 1PP can transform a designers' relations with the community, to the benefit of all.



Fig. 6. Stakeholder mapping for *Picante*, *Picante*, *Picante* (blue), *Entretega m* (purple) and *Te invito a una copa* (orange). Points on the maps represent schools, universities, maker spaces, craftspeople, local businesses, co-working spaces, designers, cultural centers and organizations, and public spaces.

#### TOWARDS A SOCIALLY, ENVIRONMENTALLY AND ECONOMICALLY REGENERATIVE PRODUCTION

Over three years, the DxCW Productive Citizens project opened design spaces for understanding the value of being with i) material flows, ii) community infra-actions, and iii) socio-technical and environmental infrastructures when producing designs in cities. The outcomes described here demonstrate how a 1PP stance can assist designers in actively reorienting production processes towards socially, environmentally, and economically regenerative communities of production. They work at the level of the individual, the community, and the city. They propose ways that we might live and design, moving forward, that are fair, just, and sustainable; that leverage technological advances; and that are people-, place-, purpose- and profit-driven. We see this work as a stepping stone towards a plurality of design propositions that can actively assist us in making this urgently needed paradigm shift.<sup>14</sup>

#### NOTES

- 1 Scott 1992, 111-114.
- 2 Nachtleigall, Mironicka, Tomico, Feljs 2020, 274-292.
- 3 Sicklinger, Tomico, Pei, Buono 2021.
- 4 Tomico, Winthagen, van Heist 2012, 180-188.
- 5 Nachtleigall, Mironicka, Tomico, Feljs, *op. cit.*
- 6 Wahl, Baxter 2008, 72-83.
- 7 Tucker 2004, 246-260.
- 8 Wacker, Makkary, Mensveen, Hupfeld, Tomico 2020, 351-364.
- 9 Kirsh 2013, 1-30.
- 10 Lucero, Desjardins, Neustaedter, Höök, Haassenzahl, Gochinatto 2019, 365-388.
- 11 Desjardins, Ball 2018, 753-764.
- 12 Neustaedter, Sangers 2012, 28-33.
- 13 Puig de la Bellacasa 2017.
- 14 Acknowledgements: This project would not have been possible without the support of V. Aconciola, A. Armaste, J. Camino, P. Llovach, M. Medichinelli, R. Sanglisa, C. Tavernier, M. Tejero, and S. de Ubieta.