A hybrid interface for designing and building parklets

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Abstract

This paper presents the discussion and development of an interface to deal with a physical-territorial urban context, aimed at designing and building parklets (temporary installations in parking spaces to improve overall public use). The paper starts by contextualising the parklet as a new type of urban space that was institutionalised after the diffusion of tactical urbanism open source interventions. After briefly contextualising the dialectical relationship of tactic and strategy, it explores the idea of using interfaces for autonomous production of space drawing from the concept of political agency (Baltazar and Kapp, 2009). It argues that the design of interfaces contrasts with traditional schemes of agency in architecture and urbanism, which are mainly directed towards end products. It then discusses the role of interfaces as alternatives towards autonomy of citizens in the production of space. This is possible because mediation between final users and produced spaces is no longer done directly by an appointed professional, but conducted with the use of interfaces that are ideally open and do not propose pre-shaped or prescribed solutions. Such interfaces work analogously to architects opening up access to information and imagination, but they are not judgmental of the decisions made and the solutions proposed by those who interact with them. By removing the need of architects in the direct mediation process — which is not to say that architects are not important in the design of interfaces — interfaces might foster greater autonomy for direct users in the spatial production of the city.

The idea of designing interfaces for users to develop their own design solutions began to emerge in the 1960s and has recently been reinvigorated with the design focusing on democratisation using new design and digital manufacturing tools. We particularly highlight the yet little explored potential of parametric modelling tools in the democratisation of urban design and urban planning processes. The potential of these tools has been explored by a few architects to expand their own technical repertoire without sharing it with other agents directly interested in the production of space.

In order to start a preliminary practical investigation into the potential of parametric modelling tools to empower common citizens to take part in decisions regarding urban design projects, we have developed an interface for designing and building parklets in urban spaces. The main objective of such an interface is to improve public use and increase the openness of spaces to unpredictable events.

This paper then describes and discusses the hybrid interface designed, consisting of a modular construction system associated with a digital interface for the design of specific solutions. It is based on a discussion regarding the logic of the objects. For that we bring John Chris Jones and Vilém Flusser. The modular construction system is available in a digital interface that uses Rhinoceros’ Grasshopper plugin and intends to encourage average users to design flexible solutions for parklets. Users access the modules available (the logic of object) and are able to play with them simulating their own parklets.

This paper concludes by stressing the potential of the parklet interface enabling users interested in designing and/or implementing a parklet in the city to do it with a good level of flexibility. The interface offers a system of solutions instead of proposing a single predetermined design product and seeks to address the main technical issues that could be the greatest obstacles for “novice” users to design their parklets. Stimulating the deployment of new parklets across the city, it also encourages the conversion of mono-functional urban spaces — only used as vehicle parking — into potential places for different kinds of uses.

Introduction

A considerable percentage of the urbanised territory of cities is dedicated to circulation. Although the Corbusian model segregating the city in 4 main functions— working, living, recreation and circulation— has been widely adopted after its proposal in the Athens Charter published after the CIAM IV in 1933, it
started to be questioned with the crisis of the modernist paradigm since the 1960s. However, streets are still treated as public spaces which primary function is circulation. This is especially perceived in the formal neighbourhoods of most big cities, at least in the Western world.

In Brazil, for example, every urban expansion project reserves around 15 to 20% of land for the road system. In general, such a urban infrastructure is heavily loaded by the circulation of private cars. Besides the circulation lanes themselves, part of the infrastructure is reserved for parking on the street. Even though parking spaces are classified as public spaces, they normally show a pattern of private use since a parked car can occupy for long hours—or even days—an area of about 10 m², which could be used for collective activities that bring greater vitality and diversity to the public space.

The priority given to the automobile started to be questioned in the realm of tactical urbanism. In general tactical urbanism proposes provocative ephemeral urban interventions which explore loopholes in the bureaucratic structure governing the city, proposing innovative solutions and pointing to new or unexplored possibilities. Robin Abad Ocubillo (2012) identifies the performance art demonstrations of San Francisco artist Bonnie Ora Sherk in the 1970s as one of the earliest anticipations of the tactical approach to evoke a critical analysis of the spaces traditionally reserved for circulation. Sherk’s Portable Parks temporarily appropriated road and highway spaces with references from the countryside, such as trees, picnic tables and animals. In 1997, Santiago Cirugeda proposed one of his Urban Recipes—Skips S.C.—to convert a portion of the street into temporary equipment to be run autonomously by neighbourhood residents without institutional control. This “recipe” consists of applying for a permit to place a construction skip in a chosen space on the street and then filling it with elements that give other uses to that space: children’s playground, information point, reading room, exhibition space, flamenco venue, giant flowerpot etc. A range of initiatives of this kind happened under the “In Town, without my car!”—a campaign that was created by the European Union in 1998 and exported to other continents—to question the prevalence of cars, to promote other modes of transportation and to discuss collective use of public spaces. In 2004, for instance, there was an installation in Belo Horizonte (Brazil) called Rua Viva, which converted a crossing in the central area of the city in a temporary park. Despite the huge amount of people present and the success of this event, it did not trigger an immediate step further in the discussion of the city’s public spaces. Another intervention of this kind was organized and executed by the Rebar group in 2005, in San Francisco. PARK(ing) consisted of a simple “mini-park” that lasted for only two hours—the maximum amount of time that a parking meter allows for a car to remain in the parking space. This one was more successful in triggering debate and other initiatives, because of the propaganda that surrounded it.

Tactical interventions of this kind (also known as pop up urbanism) are concrete ways to help revealing new possibilities, but they are usually not strong enough to promote a step further to actually changing the city. As mentioned by Bryan Boyer and Dan Hill (2013), “what pops up must pop down”: when the interventions are dismantled, the city quickly returns to its previous mode, waiting for the next action to create a new vision for the future. Temporary interventions are valid as tactics but not as strategies, because they rarely have a strong and long lasting transformative potential. Ocubillo (2012) recalls the difference between tactic and strategy proposed by Michel de Certeau (1984) to discuss an evolutionary process that he names Heuristic Urbanism. “(...) tactics are employed by the citizenry while negotiating daily life in the city and strategies emanate from the state and corporations in the form of government regulation and production of public space. Heuristic Urbanism observes how ‘tactics’ become assimilated by the state (or city), thereby transitioning from guerilla action into a sanctioned ‘strategy’”. This transition into strategy might be seen as a crucial process to amplify the territorial and social reach of local interventions. He studies, as a case of Heuristic Urbanism, the institutionalisation of the parklet—a semi-permanent installation that is deployed on existing parking spaces on the street, by citizens, under a permit issued by the local government—after the PARK(ing) intervention gained wide exposition. Despite its restricted time scale, the intervention in San Francisco in 2005 was well documented and published by the Rebar group, giving a concrete example that raised the idea of a worldwide event named PARK(ing) Day. It happens annually every third Friday of September and has been expanding its geographic boundaries every edition. While in the first event in 2006 there were 47 PARK(ing)s distributed in 13 cities of 3 countries, the latest statistics collected in 2011 showed that the numbers raised to 975 installations in 162 cities of 35 countries.

The documentation produced by the Rebar group is considered by Karin Bradley (2015) as a decisive step for the success of the event, since it treats the intervention as an open-source procedure that can be freely replicated and modified. She discusses the importance of open-source tactics in the production of
urban commons—spaces not primarily defined by their formal ownership but by how citizens use them—and states that the construction of practice manuals to be freely copied, used, developed in peer to peer relationships and shared by everyone can produce results that are not private entities but self-managed commons. Recalling Yochai Benkler’s assertion that open-source, commons-based production constitutes a “third mode of production”, she proposes that “open-source urbanism embodies a critique of both government and private led urban development and is advancing a form of post-capitalist urban development that may, however, be supported by the public sector”. This idea connects to what Marcelo Lopes de Souza (2006) calls a “state-critic” approach, in opposition to the traditional approaches “together with the state” and “against the state”. He argues that “it can be worthwhile under certain conditions to combine institutional and ‘direct action’ practices for tactical reasons: not only because of material gains (…), but also for political–pedagogical purposes”. According to him, taking part in institutionalised processes bring some risks when social movements—and citizens in general, we may add—abdicate to think and act autonomously. In this case, we may conclude that for Heuristic Urbanism to be in fact heuristic it is crucial that state-sanctioned strategies do not restrict autonomy of the citizens.

With the process of institutionalisation of the parklet, some local governments started to define parameters for the installation and also to publish manuals to help citizens understand the legal and technical requirements involved in the production of parklets. Examples of this approach can be found in San Francisco, Los Angeles, Seattle, Minneapolis, Vancouver and São Paulo. These manuals normally provide information on the parklet programme running in the respective city, the necessary steps to be taken to submit a proposal for licensing and some design and construction guidelines. In order to facilitate the engagement of citizens interested in building a parklet, skipping technical issues, some municipalities and groups started working on modular construction systems or kits of parts, which can be assembled in a variety of combinations. Examples of this strategy are developed by the City of Los Angeles Department of Transportation (LADOT), called The People St. Kit of Part for Parklets, and in San Francisco the walklet designed by the Rebar Group and the SF Parklet Modular Kit of Parts by the Perkins+Will Innovation Incubator. Such kits of parts undoubtedly offer an easy way for the citizens to design new parklets. Nevertheless, they are limited regarding design exploration, since the range of solutions are tied to combinatorial possibilities of the parts available in their catalogues.

Recognising the potential of the modular kit of parts in opening up possibilities for the citizens to directly engage in the design process, our contribution aims to keep their engagement but also to enable not prescribed and unpredictable outcome, depending on peoples’ desires. For this, we investigate the potential of interfaces for autonomous production of space and the contribution that might be offered by parametric modelling tools. Considering that parklets bring transformation to the public space and that the production of space involves different forms of agency, we understand that expanding the design space and its outcome is a step towards increasing the possibility of user autonomy.

**Interfaces for autonomous production of space**

Discussing the difference between representative and direct democracy, Souza (2010) recalls that in the direct democratic system of the Ancient Greece citizens freely decided on the goals of political activity, but the means to achieve such ends could be delegated to experts. This model circumvents the impossibility of citizens to be technically proficient in all subjects and releases them for the effective power to decide about collective purposes. It does not eliminate the importance of the technical professional and the scientist to contribute to this process with their knowledge, acting as consultants or advisors. However, technical knowledge is not considered the only factor in the decision making process as it would be insufficient to legitimise “technical” choices made on behalf of all and, presumably, for the benefit of all. Once the collective purposes are set, the role of the technical professional on defining the best ways to lead society to them is not automatically exempt from political values. This becomes critical for the democratic society when the political values that orient technical discourse direct decisions according to capitalist interests. Therefore, when considering professionals as consultants or advisors of the community, it is essential to understand their capacity to objectively initiate social transformation. In other words, it is important to look at the possibilities of political agency in order to prevent, or at least minimise, heteronomous and hegemonic trends in the process. Focusing the analysis on the physical-territorial dimension of planning, we look at agency in three schemes of the production of space as identified by Ana Paula Baltazar and Silke Kapp (2009): the Renaissance-Modern design, the participatory-mediated design and the design of interfaces for autonomous production.
The first scheme begun at the Renaissance and persisted in Modern Architecture, when architects are responsible for articulating in space the established economic and political power, contributing to supress people’s political agency and autonomy. Agency in this scheme is delegated to architects who conceive spaces drawing on their technical repertoire to frame problems and propose solutions, and people accept and admire them. That is, the ends are already given when people are called to engage. Even if proposals formulated with the intention to promote transformation can appear in this context—as clearly identified during the modernist times—their actual potential to question existing power relations is quite limited. Garry Stevens (2002) emphasises the fact that architects are unaware of the power relations they are subjected to and, although some of them are confident enough to formulate proposals which are supposed to be transformative, in fact, they operate “creatively” within a predefined boundary, serving to reproduce the social relations of production, as Henri Lefebvre (1976) reminds us.

In the participatory-mediated scheme, the architect becomes a mediator between "people, space and specialised knowledge of technical, aesthetic or theoretical kind" (Baltazar and Kapp, 2009) making room for the "users" to take part in decision making processes. It is indeed one step further compared to the Renaissance-Modern scheme, as it involves greater diversity of actors in the discussions, but it is subjected to pitfalls that hinders overcoming heteronomous forces. It is worth highlighting the asymmetry of power amongst the various actors involved in decision making, which is very difficult to be rebalanced by the technical mediator, and the fact that mediation often occurs within a centralised institutional framework, implying that a real opening in the participatory process is subject to the will and intentions of those controlling the institution. It is also relevant to stress the limitation of participatory processes, which are often purely informative and used as a means to turn decisions that are already defined by the institution into seemingly more legitimate decisions that are supposedly made collectively by citizens (Arnstein, 1969). Agency in this scheme is still under professional control, though advancing from an imposed outcome to a mediation process.

The design of interfaces for autonomous production of space, in turn, is proposed by Baltazar and Kapp (2009) as a more suitable alternative to seek democratisation. In this case, mediation is no longer made directly by the technical professional but by means of interfaces that ideally seek to open the creative potential of the users without proposing prescribed solutions. They work similarly to the architect at opening up access to information and imagination, but are free of judgment about the decisions made and the solutions proposed by those who interact with them. By removing the need of the architects' presence in the direct mediation process, which is not to say that their contribution is not fundamental in the meta-design (the design of the process), interfaces indicate the potential for greater autonomy of users in the production of the city. Agency in this scheme happens as proposed by Bruno Latour (1999), in the intra-actions of everyone and everything involved. It is not a responsibility of a single “actant” but of the collective action.

**Early explorations of digital interfaces**

We draw here from the first ideas for using digital interfaces in architecture emerging in the 1960s, with early experiments in the 1970s investigating the potential of computers in the design process. Most experiments focused on the computer as an assistant serving the professional designer, without problematising the digital interface as a means to empower final users, including them in the design process.

Nevertheless, Yona Friedman and Nicholas Negroponte are two architects questioning this approach and highlighting the importance of direct involvement of final users in the production of space. Friedman proposed the separation of objective and intuitive parts of the design process. While the former is seen as the technical part or the infrastructure—as in the Spatial City or in the Flatwriter—the latter must be assigned to the user in order to make way for effective solutions that really correspond to the users' needs. This approach is similar to the one proposed in the introduction of this paper and intends to free the user from the technical issues involved in the design. Negroponte (1975) has similar concerns when discussing the characteristics of a “Soft Architecture Machine”. He argues that the architect is, in most cases, an unnecessary and harmful middleman in the traditional design process and that the basic activities of the architect would be better performed by computers, which could help architecture recover some of the qualities found in contexts where the architect is absent, such as in vernacular and indigenous architecture. Guy Weinzapfel and Negroponte (1976) developed the YONA system—named after Friedman—offering an interface based on diagrams to allow users to design their own houses. Their assumption is that everyone is a designer, but untrained designers would need specific tools that differ
from the ones built for trained designers. They emphasise that untrained designers need greater assistance in visualising potential design solutions and that the tools created for this purpose would be interfaces that provide such assistance, without falling into the "paternalistic" dimension of the traditional architect activity.

Negroponte also differentiates three perceptions regarding user participation, which resembles the three schemes of agency discussed by Baltazar and Kapp (2009). The first approach is the use of scientific methods to treat data about what the future users want or need. This makes any proposition strongly subject to the professional perceptions and values and leads to generalisations. A second attitude, which he argues is equally protective of professionalism, is the Advocacy Planning discussed by Paul Davidoff in the 1960s, in which professionals tried to influence decision makers on behalf of a certain larger group. The third approach, that he calls the Yona Friedman paradigm, means removing the architect as a translator of necessities and desires of users and giving the latter full control of the process.

The machine proposed by Negroponte to make way for the third scheme of participation would be composed of two sub-machines: one to deal with the user and another with the real world. This approach is quite similar to Friedman’s two-loop system: a private loop would be established by the interface to help users to work on a solution that fulfils their personal needs; an the outer loop would then identify potential conflicts of the proposal in relation to other people and/or the community. This second loop brings the context to the design process.

The discussions brought by Friedman and Negroponte are revisited in a recent thesis by Theodora Vardouli (2012), which argues that the idea of users as designers is being reinvigorated in recent years, through the discussion of the potential democratisation made possible in the context of cyberculture and the development of new design and digital manufacturing tools. She concludes that the infrastructure model—separating the objective and intuitive parts of the design process—is the paradigm that still dominates current approaches and that it only gives limited freedom for the user, which is subject to a limited design space within the boundaries defined by the proposed infrastructure. In this context, we highlight in particular the still little explored potential of parametric modelling tools in the democratisation of design processes, with a special focus on urban planning and urban design. These tools open up new possibilities for developing more flexible structures—the objective part of design—that can be manipulated by the user to expand the design and use of space. The development of the interface for the design and installation of parklets in the public space (discussed below) is an attempt towards designing an open structure leaving for the users the control of its outcome (its final organisation).

**The potential of parametric interfaces for urban design**

Developed from the 1970s to assist the automotive and aerospace industries, parametric modelling tools have been progressively adopted in architectural projects from 1990/2000. However, despite the advances made possible by these tools their practical application is still incipient. Such tools enable the construction of models that dynamically respond to different constraints. A wide range of constraints (spatial, environmental, structural, material, economic etc.) can be used in a model to help investigating a design problem. Considering that design is a cyclical process, enhancing the integration of its traditionally separated phases opens up new possibilities to shift the design focus from the product to the process. This happens because a multitude of possible solutions for the same problem can be easily visualised and tested. This potential enhancement in the analysis of constraints and in the development of design proposals has been used by a few architects to expand their own technical and aesthetic repertoire, without sharing it with other agents directly interested in the production of space. The new possibilities of formal exploration, for instance, have absorbed most of the attention and have restricted research towards other and broader possibilities. The ease of incorporation of environmental and functional constraints to generate complex shapes creates the risk of a "false complexity" that crystallises the final form and does not feed the model back, which could enable novel approaches to the design process. This picture is reinforced when Patrik Schumacher (2008) defends the "Parametricism" as the great new architectural style after modernism, considering postmodernism and deconstructivism transitional states between them. The reduction into style shadows the potential of parametric tools in promoting a more flexible and democratic design. Danil Nagy (2009) suggests that by focusing on drawing indicators instead of broader concepts such as political and social responsibility, "parametricism" risks becoming a reincarnation of the modernist movement, with rationality and optimisation replacing the maximum "form follows function". In this way, design processes and products remain fundamentally formalist.
The greatest potential of parametric modelling appears to arise from the fact that it introduces a new logic in the design process. Robert Woodbury (2010) tries to define the difference between the parametric modelling and the conventional system analysing the design process. While in the conventional system, representation is built in a sequence of actions of "drawing and erasing", which give full independence between parts, parametric modelling inserts relations among parts, adding a dynamic dimension to the model. Representation is no longer seen as a paradigm in the design process but as a tool to aid the dynamic exploration of ideas. Woodbury (2010) observes the use of these tools by a group of architects and designers and draw up a list of new skills and new strategies that the designer must develop to extract the greatest potential from them. One of the strategies he highlights is to "postpone decisions". The construction of a parametric model has not to be halted when some conditions are pending definition if they can be converted into variables that can be modified later and dynamically affect the model. When dealing with projects in urban scale, the constraints become very complex and usually require understanding and debate among various stakeholders before they are framed in parameters that will lead to solutions. Nicolai Steinø and his colleagues (2013) advocate the use of parametric tools in urban design as a strategy to deal with the opposition between the understanding of the problem and the ability to influence its solution along the development of a project. As a project progresses, the understanding of people involved in the proposal grows. On the other hand, the ability to influence it decreases because some important decisions have already been made throughout the development. In a traditional design process, changes generally demand an extensive rework and delays. This problem can also be analysed in the context of separation of responsibilities for defining ends and means, from the autonomist perspective of planning discussed by Souza (2010). In complex situations, it is difficult to clearly define ends before means providing a minimum basis for understanding the issue and visualising concrete possibilities for action. In this case, the ability of parametric tools to postpone decisions seems quite appropriate to enable a dialectical relation breaking the linearity between means and ends, creating ground for more informed and autonomous decisions.

One good example of turning the linearity between means and ends into a circular process is found in Marcus Bernardo and José Cabral (2014) with the investigation of the use of digital fabrication technologies in the non-industrial building context of Brazilian favelas. They observed that selfbuilding is the prevailing mode of construction and uses a variety of materials and craft techniques. They proposed, as an experiment, the renovation and expansion of a house using parametric tools and digital fabrication techniques to enhance and optimise the use of discarded building materials. The main lesson from this is the possibility of using industrial technology in an informal production mode and also to take advantage of the benefits of designing, building and using as inseparable activities to feed the formal design process. Another important approach is the usage of parametric modelling to enhance collaboration and negotiation in urban projects (Jacobi et al., 2009; Steinø et al., 2013; Beirão, 2012; Bier and Ku, 2013).

The next section will describe an interface that was developed to help any user to design and build parklets. The digital part of the interface uses a parametric tool as a strategy to structure a dynamic model that separates the objective and the intuitive part of the design process, as proposed by Friedman in the 1970s. This separation, coupled with the use of modules that can be recombined and modified, aims at offering the user ground for proposing solutions that bring more possibilities to unpredictable events.

**Description of the parklet interface**

The proposed parametric interface was developed in the context of the creation of a parklet programme in Belo Horizonte, Brazil, in 2015. Since the discussions for implementation of the programme began, the Urban Planning section of the local government started receiving a lot of inquiries about legal and technical specifications required for the typology. Besides working on a manual, we also started to investigate in parallel an interface that could aid the user in designing, comparing and producing a broad range of parklet variations. Despite this particular context, the interface can be used to produce parklets anywhere and admits adaptations to meet local specific requirements.

The interface might be classified as a hybrid one, since it has a physical and a digital dimension. The physical part consists of a modular construction system that offers different kinds of modules than can be grouped into two categories: the modules which form the base of the parklet and support its floor and those which are attached to the first group to provide all the elements that rise above the ground, such as furniture, railings, planting beds etc. We will call the second category as “plug in” modules. The base modules form rectangular slabs which dimensions (initially set as 2.20 x 1.00m) can be adjusted for greater flexibility in deployment. The slabs are framed by cold formed steel profiles that sit on adjustable
glides for levelling the platform with the curb, adjusting it in relation to the transversal curvature of the parking lane. The steel profiles are perforated every 10 cm, for attaching the “plug” modules. Different materials can be used as the floor finishing of the base modules, but considering the structural limitations of the deck floors commonly used in a lot of parklet design solutions, the four steel profiles which frame the base modules receive three additional stringers: two longitudinal and one transversal. A metal plate complements the base module and is intended to regularise the small level difference that may remain between the parklet floor and the sidewalk. This piece has also the function to close a gap of about 20 cm left between the floor structure and the curb, which is required for the installation not to interfere with the rain drainage on the curbside. The base modules define the physical boundaries of the parklet, while the “plug in” modules give its spatiality and can take a variety of shapes and configurations. They are also structured in steel profiles and are attached to the base modules by self-drilling screws.

The digital part of the interface is built on the parametric modelling platform Grasshopper, a free plugin for the 3d modelling software Rhinoceros, and aims to facilitate the average user to perform the role of the designer to conceive a parklet through a design methodology that is based on three steps. First, the user-designer defines the general parameters of the project: the available length for the installation (limited to the maximum extension allowed by the local laws that define the parameters for parklet licensing), the available width (normally limited to 2.20m for installation in parallel parking spaces), the module width (initially set to 1.00m, but admitting variations in order to better adjust the modules to the available length) and whether the parklet will receive railings on each of the sides. The second step defines the types of the “plug” modules to be attached to each base module. The interface initially features 10 types of “plug”, each of them with three open variables that can be manipulated by the user-designer through graphic sliders. These variables control specific features for each type: they can change the height, width, length, rotation and relative position of the module, depending on the selected type. The strategy of opening these three variables for user manipulation expands the design possibilities of exploration, preventing it to be limited to mere combinations of the various types of “plug”. The user-designer can also define whether each module will receive back railings, and can also specify the floor material – currently limited to two options, either wood deck or plywood plate covered by a synthetic grass carpet. Finally, once the modules are configured, the third step is to export three-dimensional model and the list of materials needed to build the designed parklet.
Figure 1: Base modules

Figure 2: Some types of “plug in” modules attached on base modules

Figure 3: Example of a parklet design with the proposed construction system
The logic of the object, structure and organisation

The design of a modular construction system with several "plug in" that can be customised, combined and used in many ways, seeks to explore the project under what John Chris Jones (1992) calls the logic of the objects. "He proposes that instead of designing finished objects of use with predetermined functions, we should look at the objects themselves and their intrinsic character in the context of open processes, designing modules as interfaces for people to keep on designing their world" (Baltazar, 2009). This is complemented by Flusser (1999) when alerting to the objective and problematic aspects of objects. For Flusser (1999) a designed object is always an obstacle to remove a previous obstacle. He stresses that “if the ‘object of use’ is not to become a greater problem, it must be dialogical and obstruct as little as possible those coming after us” (Baltazar, 2009). For Flusser (1999) a responsible design is what we call...
the design of interface with which people can play with to design their own world. Such interfaces might work as open structures enabling people to organise themselves their outcome.

Although the types of "plug in" can lead to specific uses, the parameterisation of the project, with combinations and open variables, creates conditions for escaping the trap of over specification of use: the same type of "plug in", depending on the parameters applied via interface, can function as a bench, a table, a partition, a platform and so on, or, depending on the relationship that the user of the interface establishes between adjacent modules, the "plug in" can take all of these uses simultaneously approaching the idea of “transfunctionality” or “open-in-hand” (Baltazar, 2009). Drawing from Heiddeger’s classification of two states of things in the world—“present-at-hand” and “ready-to-hand”—Baltazar (2009) argues that “present-at-hand” are things that do not have attributes, only properties, while “ready-to-hand” are things that have both attributes and properties. She then proposes a third category, "open-in-hand", which includes things that have attributes though they are not determined a priori. In this case, it is important to recognise that the interface alone does not guarantee the “transfunctionality” or the condition of "open-in-hand" to the parklet outcome. It proposes to produce different experiences from the interaction with the user-designer, but the spaces resulting from these interactions may be either "open-in-hand" or "ready-to-hand", depending on the way users organise the structure provided.
Baltazar (2009) also evaluates the concepts of structure and organisation, used in the context of cybernetics. The interface proposed for the parklet seeks to design the space without defining its final organisation, even if its design is predetermined. The organisation remains open, at least during the interaction process for developing a particular design, since the user-designer can configure the parklet in different ways and with specific characteristics. The structure, at first sight, might be perceived as fixed, determined by a predefined modular construction system and by the method of operation of the digital interface which is based on types of pre-set "plug in". But the parameters that remain subject to manipulation promote an open condition to the structure. This recalls the analysis Negroponte (1975) makes of the “banque de données” of Friedman. It can suggest a menu-picking activity rather than a design activity, since the possible solutions are apparently limited to the combinatorial product of the parts. He argues that this limitation is surpassed by Friedman including in the repertoire topologies that do not have a metric, so a limitless variety is afforded when users are able to add metrics themselves. The openness of the structure of the interface can also be analysed in analogy to open source software that admits modification and derivation in its logic. All "plug in" are grouped into well-defined sectors within the visual programming diagram of Grasshopper and there is room for the inclusion of additional new types. Bradley (2015) asserts that the contemporary commons movement expands the notion of
commons from the rural and urban realm to also include digital commons. The idea is that information should be available for anyone to use and redistribute in order to democratise its production and dissemination, “thereby critiquing proprietary capitalist production, corporate control of knowledge and tools for innovation” (Bradley, 2015).

Figure 7: Diagram of relationships in the parametric model, showing the separation of functions that define types of “plug in” modules

The modular construction system is a mere initial reference to facilitate the design process and solutions. A plethora of other solutions are possible in implementing parklets in the city and the proposed system can be modified or completely replaced by other ones. The opening of the structure in this sense enables a considerable expansion of the design towards the responsible design, open to people. However, the search for an open structure and organisation leads to a common dilemma in the design of interface: the higher the level of flexibility, the harder it becomes to keep the ease of use of the interface itself. The proper balance in this dialectical relationship is a big challenge to be faced. The prioritisation of the ease of use, however, carries the risk of "over programming". Ivan Illich (1973) criticises “over programmed” tools stating that they become manipulative and deterministic when eliminating the chance of people who get to operate them to learn from their own actions, which restricts autonomy.

Future work

Some limitations of the interface might orientate future work. The first limitation is the dependence of software that is not free. The Grasshopper plugin is free but Rhinoceros is not so access to the interface becomes limited for citizens who do not have means to get and install the basic platform. A possible solution would be to reprogram the interface in a web platform so it becomes available online for anyone to access and use it. Another limitation is that the current version of the interface focuses mainly on the first loop mentioned by Friedman, which is the dialogue between the user and the computer. The interface in fact incorporates external parameters that promote some channels of dialogue with the real world – the second loop – such as incorporating dimensional limits defined by the legislation for parklet design and implementation. It can also be used to visualize preliminary ideas that can be discussed, for example, with the community of the particular street where a parklet is going to be installed. But the capacity to amplify collaboration and negotiation might be expanded if other elements of context are added and if methodologies for involving multiples agents to design simultaneously – be it different parts of the same parklet or different parklets that relate to each other – are developed. This expansion can also help the interface to be adapted for other contexts of urban planning and design, like projects for bigger public spaces such as parks and squares or for discussing zoning parameters for existing areas.

Conclusion

We assess that one of the biggest potential of the developed interface is to enable users interested in designing and / or implementing a parklet in the city to work with a level of flexibility to provide a range of
solutions. The interface opens up a system for users to play with technical parameters that leads to undetermined outcome (of course limited by the programme) instead of predetermined products. It seeks to address the main technical issues that could be the greatest obstacles for the “untrained” designer to engage in a design process without the supervision and control of a “trained” one. Stimulating the deployment of new parklets in the city, it also favours the conversion of mono-functional urban spaces—only used as vehicle parking—in places that potentially house different uses expanding public space’s capacity to foster unpredictable events. This is no guarantee of social transformation, but surely a step needed in its direction.

References


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