Design and Public Space
The University Campus' Open Spaces Between Rituality and Non-Normativity

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Abstract
The university campuses, in relationship with the sustainable development goals and with the contemporary criteria of urban quality in the public spaces, are nowadays configured as real grounds of experimentation for the design activities and for the strategies of urban regeneration: inclusion, security, sustainable growth and quality of services pass through the radical reinterpretation of the public spaces' potentialities with reference to the deep changes in the access system to services and information for extremely different levels of users, more and more open source and based on sharing platforms. In this mark, and in a condition in which the necessity to define non-normative strategies for the social use of the spaces becomes stronger and stronger, the question arise as to how could the industrial design discipline and the new digital technologies give a contribution to enrich and strengthen these new forms of "social connection" between people and between users and places. The article aims to investigate the strategies through which new information and communication devices can improve the physical and social quality of the public spaces in the university campuses. Starting from the analysis of the relationship between people, space and new technologies, making reference to some specific study cases, the paper presents some design experimentations which constitute examples applicable also in the urban context, as far as the campus' public spaces are seen as a common ground for the investigation of a new idea of city, more open, collaborative, accessible and based on a non-normative citizens' participation.

Keywords
Environmental design; university campus; public space; interactive device; non-normativity.

Introduction

The relationship between uncertainty and non-normativity has a specific interpretative approach in the field of design and, specifically, in its relationship with the public space of the university campuses. The new paradigms and the new rituals in the students' everyday life as well as the new sensibility towards the environmental sustainability requirements, introduce a new system of aesthetical and ethical references which radically changes the relationships between people and open spaces in the contexts of the university campus. The coincidence of the concept of sustainability with those of resilience and adaptability, now essential elements of the whole system of urban public spaces, requires a reflection on the relationship between what is "permanent" and what is "temporary" in the definition of the cultural identity of the contemporary social context which are the university campuses. Moreover, the line that connects the permanent and the temporary intersects another important dichotomy: the relationship between reality and virtuality, that means the dialogue between the virtual dimension of things and the physical conditions of the places. Otherwise, the important requirements of inclusion, participation, quality of services, security, etc. are strictly depending on the potentialities of the public space: the deep changes in the systems of access data, information and services by an increasingly more diversified public (more and more open source) and based on sharing platforms, makes now the traditional relationship between "institution" and students a sort of condition of "closed normativity". In this mark, the role of design and new technologies applied to it can give us a chance to reinterpret this relationship enhancing the public space of the university campuses with the aim of defining new forms of "social connections" between the different categories of users.

Non-normative relationships between people and public spaces

The contemporary public spaces are nowadays affected by a process of continuous transformation due to a radical and constant change in their uses and functions which are getting more and more unconventional, hybrid, "virtual" and made of new social meanings: this leads to a deep transformation in the social and cultural relationships and to new aesthetic and geographic configurations.

In relationship with people intended as "users", a first characteristic that we can trace, paraphrasing the words of Tomás Maldonado, is that these spaces are places where the persons involved in any kind of action pretend to intervene constantly and actively and not any more in a condition of "probation", as usually happens in a traditional public space in which the levels of freedom are limited (Maldonado, 1992). Moreover, the transformation processes themselves are changing, following the radical modification of the social rituals and the free movement of information: weakening the traditional paradigms, from linear and complex they become simultaneous and variable, from "formal" they become "informal".

In this mark, the open spaces of the campuses become interactive and relational environments in which the ways of use by the users define a strategic and flexible "new order" based on a new logic that breaks the traditional normativity and goes to a reactive, resilient, open and permeable nature (Gausa, 2015.

Big squares, large green areas and crowded meeting points but also silent or hidden spaces, secret gardens, green passages and routes that lead nowhere, according to their environmental, physical, morphological and semantic values, the open spaces of the campuses may be included in different categories: from central to marginal spaces, from natural to built areas, from interstitial to crossing ambits, they always have the capacity to be "connective tissues" for the social community (Table 1).

Nature of public spaces	
	Outdoor spaces Covered areas Spaces in between Voids Empty spaces Interstitial spaces Enclosed spaces Fluid spaces Hybrid spaces
Categories of public spaces	
Surfaces	Squares Outdoor rooms Platforms Corners Green areas
	Gardens
Lines	Passages Corridors Bridges Galleries Ramps Climbs Descents Staircases
Points	Entrances Accesses Doorways Thresholds

Table 1. Nature and categories of the campus' public spaces

Furthermore, if we consider the meaning that the different categories of users may attribute to these spaces and the way they use them, we can distinguish another system of categories, in which there are overused and underused places, study, free work and everyday areas, gathering spaces, spaces for thoughts and reflections, etc., in which everyone can express his sociality in a dimension that is both individual and collective (Table 2). Under this point of view, the relationship between people and public spaces is socially based on the concept of "community", that is not a group but a "system" of people sharing common social, ethical values, interests, practices and habits whose rituality is made of rules, norms and customs which are not "imposed" or "institutional" but produced by conscious choices of rational individuals (Pils and Trocchianesi, 2017).

Categories of users	
Permanent users	Students Professors Workers
Temporary users	Student's relatives and friends Visitors

Table 2. Categories of users

The role of technology: from tool to system of connective possibilities

The new technologies become nowadays really important not any more in terms of "tools" but in terms of "possibilities": this means that the production of new services and technological devices (hardware and software, i.e. Arduino, open source applications, etc.) is not based on pre-determined targets (use for) but on the will to ensure that people can take advantage of them in a free, open and participative manner. This condition transforms the technological devices into "performative" products aimed at creating new "rituals", new forms of social relationships: the rituality is a practice made of rules organized in a systematic order but at the same time it's a creative process in which the participant have an active role also in the possibility of changing the rules themselves.

In this context, the design process can act on the products' affordances, definable as the qualities of the objects that allow people to perform actions with them in a specific cultural context (Gibson, 1979).

The inclusion of technological devices (using low, medium or high technology according to the specific requirements) and the definition of new ethical design strategies can help creating new systems of training, research and access to services, enhancing at the same time the creation of innovative occasions of physical and social "connectivity" between the different categories of (stable or occasional) users and the public spaces, so to reach the goals of better conditions of functional organization, social inclusion, economic development and environmental sustainability.

Also in this case, this goal can be reached working on the dialectics between "real" (physical) and "virtual" (digital) and between "small" (the design scale) and "big" (the space scale): in the latter dichotomy, we have on one hand the "recycle" of many underused areas within the campus and on the other hand the "repetition" of small objects intended, in their entirety, as a multiple insertion of repeatable elements defining a system, temporary or permanent, ephemeral or durable, but always made of brief forays of shared, connected, interactive, smart, multifunctional objects.

Design and environment: a non-normative approach

The enhancement of the public space system passes through the ability to listen to places and goes directly to a design approach that is systemic and ethical for the environment and for the cultural context. Correct design strategies are asked to stimulate participatory processes useful for the whole community by acting directly on spaces and products and translating identity elements and signs of memory of the common social history into new forms and configurations. Hence, each design action needs to start from the analysis of the cultural behaviors, social needs and individual requirements and, addressing the complexity with a never-ending interdisciplinary dialogue, has to give answers to the contemporary critical issues and emergencies trough the definition of objects, systems or services capable of activating new innovative ritual forms always following the continuous social, cultural and economic transformations: a "think different" philosophy in which design can play a hinge role between fields of knowledge that could reconcile the different disciplinary sphere, in the last decades too separated one from each other by a condition of over-specialization, in order to allow new innovative scenarios and to manage the local complexities considering the plurality of factors and driving their integration and interdisciplinarity (Table 3). In this mark, we can outline a new design paradigm

Design strategies	
	New visions and innovative scenarios New kinds of spaces New types of objects and products New meaning for the objects New uses and functions New social behaviors

Table 3. Design strategies

which doesn't act any more directly on the shape of things but on the conceptual framework of the products, so to leave users free to "build" their own configuration in terms of connection with the social and physical context. Starting from the main basic requirements of an extended system of users, such as education, communication, accessibility, use of tools, services, infrastructures and open spaces, sharing of information, etc., we can have two different "directions" of design strategies: the first one is a top-down approach, in which, sharing a common ground of visions and horizons, the design of objects becomes less figurative and more con-figurative, less formal, static and esthetic and more multi-level, multi-relational and ethic, while the new technological systems and the innovative targeted measures are asked to promote and encourage responsible behavior by the users. The second one is "from below", an approach that let the users free to modify and use the space and at the same time permits an innovative use of the existing resources and expresses in real-time new demands for services

that can more easily be intercepted.

The union of these two directions produces a product-process with characteristics of interaction, variation, dynamicity, non-normativity, sensible towards the surroundings, inter-connected with other objects and reproducible only with the active free participation of users: a holistic and dynamic development made of at least four aspects related one to each other: human factor (social sustainability), engineering (technical feasibility), aesthetics (form giving) and marketing (economical affordability).

Finally, the relationship between final product and environment will follow the intrinsic temporalities, rhythms and rituals of the environment, so to make the new product a medium through which people can interact with the environment without giving up their always changing basic needs: a "campus making" behavior through human centered design activities as a response to the homologation of the traditional institutional rules and as a contemporary image of new collective cultural, social and spatial expressions, a "storytelling" of the community's aesthetic and ethical codes, developed both in the physical

Characteristics of products for the public spaces	
Structure	Modularity Communication Informal processing Reactivity towards environment Forming (not formal) Smart objects Interaction Informative Multi-level
Production	Low maintenance Low price Made of recycled materials and/or components Long-lasting materials and/or components Diversity Projectivity which induce, lead and modify t
Use	Mobility Multiplicity (multiple actions, methods, formats, exchanges) Dynamicity Systemic Interconnection (object-environment, object-object, object-users) Interchange (users-citizens, city-territory, cultures-habitat) Flexibility

Table 4. Characteristics of products for public spaces

(public spaces) and in the virtual dimension (social networks), able to define new non-normative relationships (Table 4). Among the many recent design experiences in the international context, there are some interesting examples that may constitute key points of a possible trajectory in the definition of this "non-normative" approach which can be adopted for the university campuses' open public spaces. As a first study case, the "Stair Squares" temporary installation at the Brooklyn's Borough Hall in NY by Mark Reigelman (2007) is an interactive public installation which takes advantage of the morphological characteristics of the stairs, designing a repeatable object which creates a place to sit that can be used also as a table for two: a simple, site-specific interactive installation able to enhance the social non-normative dimension of the place, reducing at the same time its austere monumental and institutional image. Designed for more ordinary kinds of urban contexts, the second example is the "Totem AJC" by Roldán + Berengué Arquitectos (2010), produced by URBADIS – Microarquitectura, a system of elements for public spaces that may take different forms, starting from a common structural origin constituted by a metallic box combined with another material such as wood, stone, HPL, etc.: according to the users' desires, the result can be a signage totem, a bench, a liter bin, a lamp, a jardinière or a pillar.

The third project is the "Little free library" by Stereotank, installed at St. Patrick Old Cathedral School in Nolita (NY) in 2013, a small urban project made of an upside down plastic tank on a wooden frame which creates an inhabitable free library where people can take, borrow and/or exchange books, having a continuous visual connection with the exterior space, watching the surrounding park through some "selective" perforations around the tank. A similar design intervention, this time without any specific function, is the "Heads" by Rob Sweere, installed at the Hoek van Holland beach in 2014: in this case we have a series of four elements which people can actually go into and admire the landscape, sit or just lie in the sculpture, or put the heads through the opening.

Especially significant are the prototypes produced by P5 Studio, an assembly of furnishing business unit based in Singapore, in collaboration with the Danish furniture label Montana, within the "Freeplay Vol. 1 project" in 2019; between them, two particularly interesting examples are the "Interlock" by Provolk, a multidirectional furniture piece that is a side table or a drawer module which can be installed anywhere and easily transportable, and the Totem designed by WINK, which can be used as an organizer, a stand-up cabinet or a reading shelf.

In 2013 the IBM brand has achieved an advertising campaign called "People for smart cities", conceived to give a value to the relationship between people's everyday life and public space, perfectly combining product design and marketing presentation: the idea foresees a series of billboards installed along the walls or on the steps, offering passerby to sit (long benches) or shelter (protective coverings from the rain).

Last but not least, the "Dead Drops" project by Aram Bartholl is an anonymous peer to peer file-sharing network installed in the public spaces of New York City in 2010. The concept is to inject a USB drive (each dead drop contains a readme.txt file explaining the project) into a wall which is accessible to anybody: people can drop or find files plugging their own pc or laptop, sharing any kind of file and data. What these examples have in common is a low level of used technology, a free possibility not only to be used but also to be installed and modified, an ontological condition not based on their physical

aspects but on their relationship with the space and with the social context: the ambits are different but all of them are united by a common ground which consist of an unconventional non-normative design approach able to generate new and always changing social relationship.

Interactive information devices: a non-normative design experimentation for the University Campus

A design experimentation, specifically held for the University Campus of Bari, is a theoretical and practical research on the new product development strategies applied in a specific context: a methodological and critical investigation on the potentialities of design as a factor of physical and social connector between users and environment. The working methodology follows the concept of "open design", an approach based on the public sharing of information, on the free and open source use of hardware and software and, ultimately, on a design co-creation in which users become key actors. At the same time, the design methodology is also "social", due to its attention in enhancing the designer's role and responsibility, the priority of marginalized user groups and the relationship between interaction, communication and environment: a social use of objects and processes with the elimination of deep impacts on people's ordinary life, maintaining a continuity with the social memory. Another particularly important aspect that frames the design experimentation into a non-normative dimension is the idea of innovation: we are dealing with a specific interpretation of "innovation" which is not completely planned and rationally organized, nor totally structured, but, starting from the bottom and coming from the awareness of the continuous and constant change in the users' needs and requirements, is based on an implicit drive towards the elimination of uncertainty by means of opportunity, flexibility, simplicity, empathy. Therefore, not a design driven but a "curiosity driven" innovation as a result of systemic processes in which technological, social, economic and cultural aspects act simultaneously influencing each other, capable of transforming the scarcity (lack of resources and economic restrictions), the diversity (co-existence of different kinds of users with their experiences, values and expectations) and the velocity (the social and physical lifecycles are shorter and shorter) into opportunities and also capable of giving new senses and new meanings to the university campuses' public spaces and, therefore, to users' social everyday life (Table 5). The first example is a "linear crossing space", a structure made of linear elements forming a system of modular metal boxes supporting a pre-finished PVC outer casing with five possible mounting configurations; the boxes are made up of standard components joined together by a single type of structural node with the possibility to be positioned side by side so to obtain a sort of "covered passage" through which people can have access to information, interact and share documents. The concept is to link together the passing of information with the passing of people, totally changing the static idea of places appointed to provide information and, at the same time, naturally following the rituals and the movement of people. The boxes, placed in waypoints or crossing points of the campus area, are equipped with an interactive system made of a projector, an AUX port, a microphone recorder and a USB port: these devices make possible the free interaction between people and environment and the sharing of information between people and the academic institution and/or with the student associations

The second project is a way finding device designed to be installed in the campus and faculties main accesses: it's an open stainless steel structure on which some small freely rotatable plywood cubes are mounted using a simple nylon thread; on the cubes there are QR codes, I-Beacons, Braille systems containing information (in form of maps, apps, routes, texts, vocal assistance, etc.) about the locations of departments, offices, laboratories as well as cafeterias, shops, services, etc., directly placed autonomously by the students. The concept is based on an open source low tech platform configurable by the users and containing any kind of information regarding official and institutional as well as secondary functions that people need or want to reach within the campus area: a system which gives users the opportunity to connect, interact and share any kind of document or information (Figure 1.

A third experimentation is an "interactive portal" which provides a double interpretation of the idea of "gate", both under a real and a virtual point of view: on one hand, there's the real access to specific places of the campus having environmental qualities or significances and, on the other hand, the virtual access (through USB ports) to a platform (controlled by an app) where students can be connected and share documents and/or information. The structure is made of two elements (one linear and one L-shaped) made of, respectively, stainless steel and larch wood in which is inserted a low tech system consisting of a USB port, a router cloud, a small solar panel and a projector, this useful to visualize the contents of the pen drives on the floor

The fourth and final example is a multifunctional totem made of different blocks separated by function, freely accessible by people, which gives new useful interchangeable, replaceable and integrable possibilities: electronic devices, access to wi-fi, opportunity to print and get free drinkable water or simple

Critical aspects of the open spaces	
Difficulties	Abandoned and/or unused spaces Not well-maintained spaces Difficulty in accessibility Difficulty in orientation
Lacking	Lack of efficient communication system
	Lack in number of books in the campus libraries Insufficient study spaces Insufficient spaces for student representatives

Table 5. Critical aspects of the open spaces

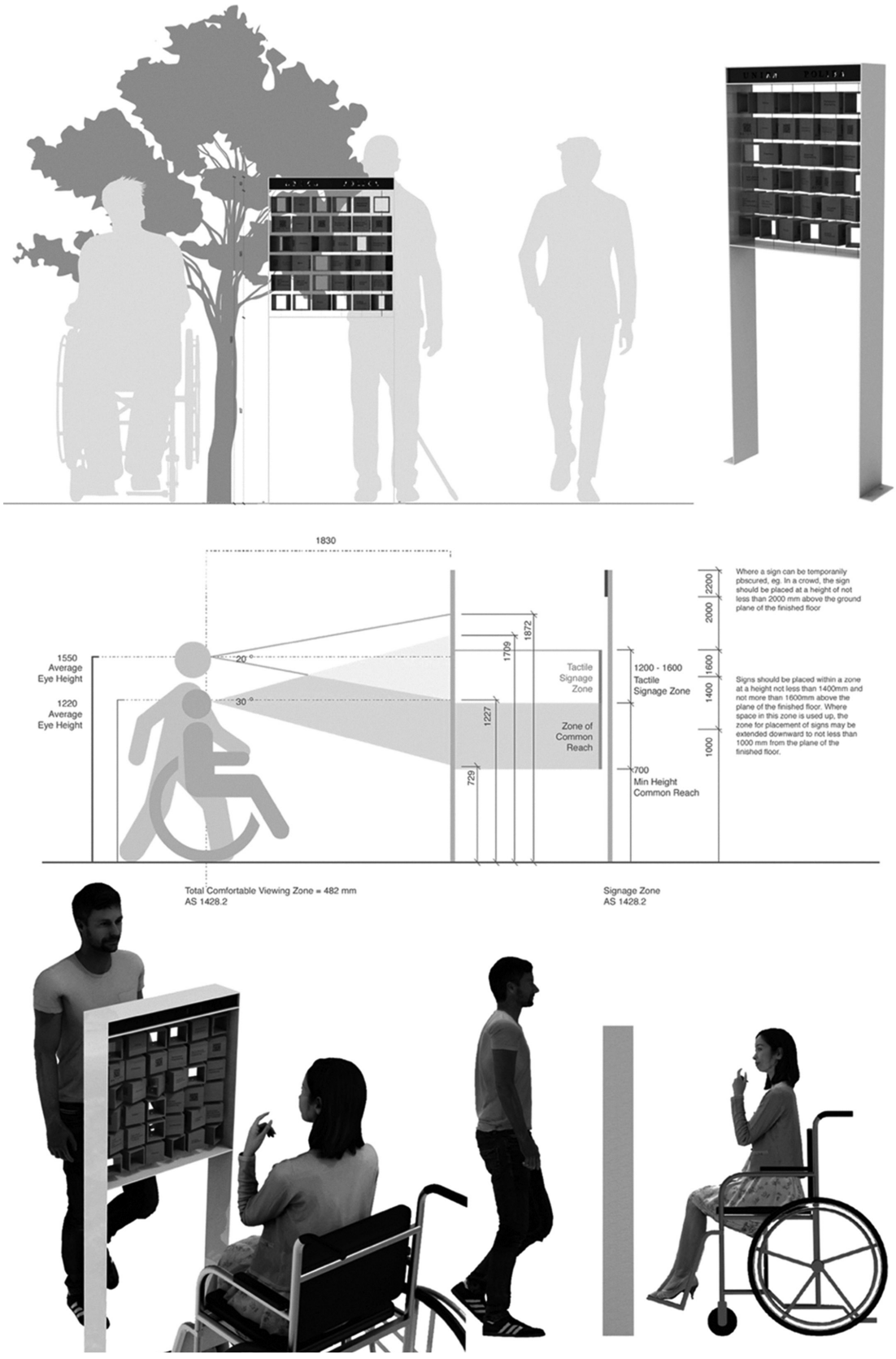

Figure 1. DICAR-Poliba students (Federica Gentile, Marina Ricci, Adriana Romeo) of Master Degree in Industrial Design (course of New Product Development - Prof. V.P. Bagnato, Prof. E. Pantzartzis, Prof. C. Torre)

wayfinding and/or information systems can be inserted in aluminum cubes organized on top of each other and held together by a vertical steel core containing electric lines, powers and adductions which start from a base module up to the upper cover. Modules system variations can be set up according to the specific requirements and depending on place where the totem is located and, at the same time, the modules themselves can be created by customers inserting new functions and using any kind of digital or technological device.

Conclusions

In the university campuses there's always a strong relationship between social rituality and non-normative way of experiencing the public spaces and of using any kind of service. The regeneration of the campus areas cannot nowadays pass only through the physical transformation of the public spaces but it's asked as never before to "listen" to the "social narration" that comes from the interaction between people, space and cultural environment. In this mark, as the examples and the abovementioned experimentations have demonstrated, the role of design becomes fundamental because the new requirements in terms of places' qualification undermine the traditional approach based on the urbanistic and/or architectural physical transformation and increasingly require intervention on the social dimension as well as on a new relationship between reality and virtuality. Therefore, acting on the small scale (the scale of objects), the experience of design can offer an environmental interactivity between places and people building an open source system of things in which people can actively participate in this social transformation.

As a brief conclusion, without claiming to be exhaustive, we can affirm that this approach which puts the objects (industrial products) at the center of the regeneration processes has a double immediate advantage: on one hand it becomes free from depending on "radical" actions, often useless and expensive when not completely wrong; on the other hand, being interactive and inclusive, it's at the same time open and non-normative, free and modifiable by the users, then able to reduce uncertainty in its conception, production, use and modification according to the new social requirements.

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