Universal Design 2016: Learning from the Past, Designing for the Future
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On the Relationship Between 'Universal' and 'Particular' in Architecture

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Abstract. In 1998 Molly Follette Story, James Mueller and Roland Mace published the book *The Universal Design File*; that can be considered the result of a long way, started by Mace in 1985, towards a design approach based on the principles of Universal Design. In 2010 the Centre for Active Design publishes the *Active Design Guidelines: Promoting Physical Activity and Health in Design*.
Between these two milestones, this article offers some ideas about the evolution of the universal approach to design.
Assuming that Universal Design approach can present limits, this article aims to reflect on the relationship between universal and particular in developing a theoretical approach to architecture and design, supporting the idea that the wide *gray area* of the population who need specific access solutions can find answers to their needs only through successive adjustments, time by time plugged on universal solutions. This implies a process of requirement-based retrofitting of existing spaces and goods, to get qualities or perfecting performances otherwise inadequate.
From this perspective the project for accessibility should be seen as a *never ending process*, and not a *fix* and *final* product, and Universal Design should be considered as a methodological approach ideally tending towards accessibility as a goal.
Having this in mind, the article explores the issues related to how to blend universal and particular in a human centred design strategy, how to combine design actions and awareness by the users to allow an effective mutual adaptation between people and their living environment.
The article aims to be further food for thought regarding research to be implemented in future works.

Keywords. Universal Design, design strategies, accessibility, social sustainability

1. Introduction: The Social Dimension of Sustainability and Shared Values for an Effective Inclusion

In 1987 the Brundtland Report has defined sustainable development as the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [1]. The definition focuses on the question not so much the ecosystem, and therefore the survival and well-being of all living

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species, but rather the human generations. Therefore, catering the needs of present users should not compromise development, at the same conditions, of the future communities.

According to the most recurring literature, meeting the needs of human generations is the result of the balance among four factors: social sustainability, environmental sustainability, economic sustainability and cultural sustainability.[2]

From this view and from the concepts which its implies, it is clear that sustainable development has a strong anthropocentric characterization, and that the environmental sustainability is one of the factors that, among others, allows to achieve wealth and well-being.

However, over the years, it has been observed that the social dimension of sustainability compared to the others (particularly to the economic one), is the one that has had less attention and importance [3] by lightly affecting the national and international strategies. If we then look upon the issue of disability (also to bring up the issue of accessibility) framing it in the context of sustainable development and, more specifically, declined in comparison with the social dimension it turns out, for example, that in the academic literature that has dealt with social sustainability out of 5165 articles only 26 refer to people with disabilities [4].

Nevertheless, it has been noted that more subjective key themes emerge nowadays, complementing and/or substituting the traditional one for social sustainability: sense of places, social participation, quality of life among the others. Moreover it has been acknowledged [5] that the built environment – which provides space to grow and involve community – can foster the new criteria for social sustainability, among which Accessibility, Equity, Empowerment, Participation, Cultural Identity and Institutional Stability play a critical role to allow a socially correct distribution of benefits (and costs) coming from the environment's management [6].

In its broader meaning of "process for creating sustainable, successful places that promote well-being, by understanding what people need from the places they live and work", social sustainability fosters the design of human habitat (private and public living spaces and facilities) to allow active participation and inclusion [5].

Only very recently the concepts of sustainability (social, environmental, economical and cultural), health, well-being, inclusion, active participation and accessibility along with many others have been discussed and placed in relation to each other in the Resolution adopted by the UN General Assembly on 25 September 2015 [7]. The document points out seventeen very ambitious and perhaps utopian goals to be achieved by 2030 in respect of the UN Global Compact's Ten Principles derived from: the Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the United Nations Convention Against Corruption.

In conclusion the social dimension of the sustainable development pivots round the dialectical relationship between individual and environment and "designing expresses the close and binding connection between health and environment and guarantees well-

[2] In 2001 UNESCO added a further crucial element, culture, stating that "...cultural diversity is as necessary for humankind as biodiversity is for nature" and that "it is one of the roots of development, understood not simply in terms of economic growth, but also as a means to achieve a more satisfactory intellectual, emotional, moral and spiritual existence" [2].

being if the environment satisfies the status of health or illness, and even better of disability, if seen as a health condition in an unfavourable environment" [8].

2. Equity, Equal Opportunities and Living Environment: The Role of Inclusive and Universal Design

It is interesting to observe that in architecture the strong drive towards the universality stems from theoretical research in the field of accessibility and social inclusion. "At a society level, Universal Design is based on equality and equal opportunities as values. For the individual this strategy should be linked to plurality, inclusion and self-respect" [9]. This critical assumption should support to bridging the gap between the theoretical approach to design and the pragmatic solutions adopted.

Once acknowledgment of Universal Design in art. 2 of the UN-CRPD [10], WHO points out the role of Universal Design in shaping living environment as "the most promising framework for identifying facilitators" [11].

Tracing the history, theories and ideas that led to the Universal Design definition, implies to try to define what is the relationship between person and environment. Any transformation made by human beings involve a design decision taken somewhere by someone, and if it is true that changes regard environment, undoubtedly they affect people, their health and well-being [8]. This gives a practical sense to the definition of Healthy Cities [12]. Active Design [13] which relies upon health research showing that design can impact today's biggest challenges around physical, mental, and social well-being of communities, properly fits the framework with an approach which fosters an enabling and training environment by promoting an healthy life style so that "good design must not only work for as many potential users as possible but must also enhance everyone's experience" [14].

The design issue of relationship between person and environment has been deeply and significantly influenced by relevant WHO documents. The ICF [15] describes the person in his/her indivisible value body-function-environment, thus shifting the focus from disability to the overall functioning of a person in relation to his/her temporary or permanent state, and to ~~and~~ the interaction with a set of conditions. ICF highlights that functional limitation becomes disabling at the intersection of the individuals and their multiple environments: physical, information, communication, social or attitudinal and political. This intersection creates situations of potential 'vulnerability' or 'risk' - different types of barriers – and it may induce discrimination.

Human-environment relationship calls for mutual adaptation. Therefore, any attempt to transform living environment should support the process to minimize disadvantages (and this regardless the presence of a condition of disability). Very pragmatically such an attempt goes through acting on the individual for its adaptation to the environment (medical-rehabilitation approach) or, on the other hand, through the intervention on the environment for its adaptation to the individual (technical approach design). These two approaches should not be regarded as alternative, but must be implemented in a synergistic way so as to maximize the result

Providing the living environment with facilitator elements to allow overcoming unintentional limitations it is not enough: human-environment relationship, mediated by design, cannot leave aside consideration on users capabilities, as well as their expectations and attitudes. Design process should therefore consider the emotional

dimension of the spatial experience, that can help overcoming the limits by the person, even relying on the empathy of the result and its ability to promote susceptibility by the users and a positive attitude to enjoy less familiar project solutions (thus driving, while mediating expectations, the willingness to accept them).

It is widely acknowledged that Universal Design is also the landing point (not actually the final) of a reasoning about the question 'who we have to design for?'. We come from the standard represented by Leonardo da Vinci's Vetriuvian Man or by Le Corbusier's Modulor, to the "to the greatest extent possible of users" (hence introducing a limit) which obviously does not mean 'all' because designing 'for all' recalls an abstract concept that in a single definition tries to encompass all the differences, losing sight the complexity of the real world[3].

It is in this attempt to define the subject of architectural design, in the transition between the analytical phase (that characterizes the project setting when virtually all the stakeholders are present and express their needs), to the synthesis (that is the conclusion and expression of the project itself), that *universal* and *particular* intersect, collide without finding a solution of continuity and giving rise to that *gray area* of unresolved situations that can be translated in the sense of the limit mentioned above.

In 1971 Victor Papanek tried to describe the *universal* as the result achieved, *ex-post*, from solving many *particular* situations: "*Is this designing for minorities?* The fact of the matter is that all of us are children at one point of our lives and that we need education throughout our lives. Almost all of us become adolescent, middle-aged, and old. We all need services and help of teachers, doctors, dentists, and hospitals. We all belong to special need groups. We all need transportation, communication, products, tools, shelter, and clothing. We must have water and air that is clean. As a species we need the challenge of research, the promise of space, the fulfilment of knowledge. If we then lump together all the seemingly little minorities of the last few pages, if we combine all these "special" needs, we find that we have designed for the majority after all" [16].

Moreover it is clear that the maximization of the result does not presuppose its final solution (elimination of disadvantages), but it requires an ongoing process, in the awareness that there is no cure, or solution, but rather a taking care, a daily and long lasting attention.

In this perspective Universal Design has the 'sense of limit' both with respect to the solution because any solution can present some difficulties for a specific user, and with respect to the situation because the humanity's complexity is not due to immutable patterns: there will always be special situations which require customized solutions.

3. Accessibility and Disability

Accessibility is one among the critical emerging measures for social sustainability [17] and it can be accomplished through Universal Design implementation in the built environment: it is a dynamic concept and it develops over time along with the society which express it. The meaning of the term "accessibility" has been deeply reviewed in the recent past, in relation with the development of concept of "disability" to which is closely related.

[3] Designing 'for all' is tautological and can only lead to the definition of a standard.

Until the release of ICF (2001), disability was considered a condition of the person, and not the result of a complex interaction between "people with impairments and behavioural and environmental barriers that prevent their full and effective participation in the society based on equality with others" [10, 15]. Disability is therefore "an umbrella term for impairments, activity limitation and participation restrictions" [15]; the new definition from WHO's ICF mainstreams functional limitations as a universal human experience and described disability as a contextual variable. As mentioned above, functional limitation becomes disabling at the intersection of the individuals and their multiple environments: physical, information, communication, social or attitudinal and political.

This change of paradigms implies the integration of the "perspective on disability" in all the phases of the decisional process. In other words, policies on disability should shift from special policies to ordinary one and they should concern the life span of a person considering the diverse and changing abilities over a lifetime.

Accessibility was implemented similarly. Approaches to architectural design such as Design for All, Life Span Design, Inclusive Design or Universal Design express the primacy of inclusion on separation, and strongly contributes to the root a "design" vision of accessibility.

With the aim to prevent discrimination of persons with disabilities and provide a better environment for the entire population, governments from several countries decided to strongly face commitment for Universal Design, fostering its development in many fields, setting specific measures and placing responsibility for their implementation. Despite these efforts to enlarge the vision on accessibility as a driver for the empowerment of a community, the concept is still bounded to the compliance of regulation which assess the usability of inner (much more that outer) spaces by limited group of users (persons with more or less visible impairments). Further and effective efforts are required to switch to a different perspective of accessibility as a process which affects the implementation of a living environment (including the mobility chain), sustaining person in the lifespan.

4. Universal Design and its Limits: Universal *vs.* Particular Solution?

If it is true that a sectorial approach cannot control the process of transformation of habitats, is just as true that 'designing for all' implies several theoretic and operative difficulties.

Since a long time we use obstinately to homologate humans into predetermined categories and then to separate them into spheres of reduced permeability. Tending to segregation of person with disability - which also the religious architecture didn't escape - has been for a long time such a rooted habit that hindered even the most innovative policies aimed to overcome any barrier to their social inclusion [18, 19, 20].

In the past, the barrier-free design approach has often led the designer to spatial, organizational and functional specialization and the development of *particular* solutions ('dedicated' environments and services or 'special' equipment) intended to meet, with Cartesian precision, the needs of certain user groups. In many cases, these special solutions were stigmatizing for people with disabilities and not consistently integrated into the overall design concept. At the present, human requirement-based design research asymptomatically tends towards universality, namely towards solutions aimed to achieve suitable uses of places, goods and services for the broadest range of

the population, through a *mainstreaming* process which integrates and 'generalizes' knowledge, experiences, innovations and specific requirements [21, 22, 23].

This evolution bases on operative, managerial, economic and semantic reasons, and moreover on scientific evidence which call for the need and urgency to recover an integrated vision of life, able to combine holism and specialisms - even too sophisticated, the *whole* and the *detail*. As argued by De Rosnay [24] it would be necessary to alternate the use of the microscope, to understand the problems in detail, with the "macroscope" - a symbolic tool of synthesis, being able to get an overall view of problems, to filter details, highlighting connections and bringing out similarities.

The universal approaches to design involve a 'top-level' category of thought, highly interdisciplinary, with a large margin of error, which demands the architect to assume "a method for accessing the meta-point of view on different points of view, including the point of view of the person inscribed and rooted in a society" [25] and to synthetically prepare a plurality of experimental data.

According to the Universal Design philosophy, the products and environments should be "usable by all people, to the greatest extent possible, without the need for adaptation or specialized design" [21]. Over the time, the expression *for all* has become a successful slogan, missing on the way some problematic issues which need to be investigated.

First of all, the 'universal' approach is difficult to implement in the architectural project which is supported by a creative 'synthetic' process. This approach implies an expertise by the architect, an ethical tension and an awareness of the social role he/she plays, and of the consequences from the choices on people's lives: unfortunately, this kind of expertise is not very common. It requires a complex investigative phase in order to acquire the needs of different categories of users; the process is time consuming and involves costs and resources that generally the project lacks of. It must be also remembered that the requirements expressed by users are 'weak' instances of the architectural project and easily put on the background if compared to others (economic, aesthetic, iconic, etc.) that are considered prevailing.

The Universal Design solutions, moreover, can never the most suitable for all since each user profile has specific needs and not infrequently what represents a good solution for someone may not be suitable but even detrimental to others. This very typical human condition – that we can call "divergence of effects"- [18] is an example of "heterogenesis of ends", that according to Italian philosopher Giovan Battista Vico, indicates a phenomenon in which human actions can reach unpredictable results (different, or, often, quite opposed) if compared to the intentions or intended goals. As known, appreciable differences occur when person with reduced mobility and person with sensory impairments are involved in the assessment of person-environment interaction. Just to mention a few, we can consider the hazard that the tactile paving may pose to older people with mobility problems [26] or the risks associated to the "shared spaces" [27, 28] or to some building solutions such as the integrated stairs/ramps, potentially dangerous for low vision impaired person. Lifts, that can be considered *ante litteram* as universal device, cannot also be used by everybody: the use is prohibited to unaccompanied children and they may generate problems to people who suffer from claustrophobia and the elderly [29]. Even within the same user profile, we can find different sub-groups with special needs that not always coincide. For example, if we consider the orientation and mobility of the blind, we must point out a significant difference between congenitally and adventitiously blinds, among those

who travel with a human guide and who uses a guide dog or a long cane, among those who use the cane according to different techniques, among those who attended an orientation and mobility course and self-taught people, etc. [30].

It must therefore be aware that accessibility is a 'relative' concept. Indeed, each person, basing on its own skill level, background of knowledge and experience gives its own subjective assessment about the accessibility of a place, a good or a service. Theoretically, it should always need to refer the accessibility assessment with respect to a specific person and in a given spatial and temporal context. This evidently is not possible when designing a public space or buildings for public use.

Due to the phenomenon of the *divergence of the effects*, the universal solutions will be, inevitably, the result of a 'mediation' between different requirements, and sometimes opposed. Therefore they always require a certain adaptation capability by individuals in their relationship with the environment, that is the understanding and awareness in the use of spaces, goods and services. Since this adaptability varies from person to person, universal solutions fatally exclude, partially or totally, a *gray area* of population consisting of those persons whose needs are not recognized or considered by the designer and that, in the meantime, to whom the provided universal solution don't fit any more.

The more the project will be inclusive, the more the size of this *gray area* will be reduced. Thus the need to integrate the universal/generalist approach with *ad hoc* interventions able to meet the needs and expectations of these people. On the other hand, even the UN Convention on the Rights of Persons with Disabilities clearly states that "Universal Design shall not exclude assistive devices for particular groups of persons with disabilities where this is needed" [10].

In the architect's work, hence, accessibility should be achieved through two design strategies in synergy with each other: the first and principal one is aimed at ensuring as many people as possible the understanding and safe and comfortable enjoyment of places, goods and services in accordance with the principles of Universal Design; the second concerns the need to provide specific supports to people with specific problems also tapping into the opportunities offered by current technology.

The design of public places should, in practice, be inspired by an universal 'vocation', but the inhabited space (the space realized and experienced), will always need, over the time, further adjustments attempting to correct mistakes and to include gradually the greatest number of people as possible.

From this evidence two important consequences follow:

1. accessibility of a place, a good or a service is not a fix and final product, a result achieved once and for all, but is a dynamic notion subject to constant checks and audits on the basis of the evolution of knowledge, sensitivity, social transformations and technological innovations.
2. *Stricto sensu*, the assessment of the accessibility of a place, a good or a service can not be expressed with a 'yes' or 'no', but rather as a level of satisfaction on a scale of values, which we can define "accessibility degree". This assessment - to be referred to different users' groups and the given contextual factors - is temporary and 'uncertain' and its margin of error is very wide, depending on many factors and, first of all, on the accuracy with which these groups are defined.

5. Conclusions

Design methodologies such as Design for All, Life Span Design, Inclusive Design or Universal Design have inspired research in many sectors and ultimately represent the epiphenomena of the evolution of the concept of disability seen as the result of a complex interaction between "persons with impairments and attitudinal and environmental barriers that hinders their full and effective participation in society on an equal basis with others" [10]. A suitable approach to design of living spaces should consider those changes that are experienced by everyone as they grow from infancy to old age. Problems related to temporary changes or permanent disabilities are incorporated into the concept as well. Because all users are placed within the context of normal expectations of the human condition, it becomes unnecessary to justify the importance of each vulnerable population group. Hence, the role of a design centred on human requirements should overcome the apodictic slogans underlining an inconsistent "universality", rather growing awareness of limits about what it is possible to do to implement environment accessible to the wider range of people over a life time.

As a final remark, the idea that designing for accessibility (and inclusion) represents a constraint that entails poor quality of architectural solutions needs to be overcome. Massimo Cacciari has argued that "[...] beauty in its root means something that stays well together, holds on, works, in the sense that allows to inhabit and, in the case of architecture, it allows an εὐδαιμονία[4], as Greeks said, that means feeling good, living, feeling home, feeling home with the others [...] The beauty is synonym of ethical architecture because only in a space which makes free, allowing dialogue, allowing coming and going, which has no barriers, barriers for anyone, it is possible to feel good, to live, to be inhabitant [...] Contemporary architecture has perhaps forgotten these original meanings, has forgotten that architecture is 'construction for living', that architecture is 'ecology'. Architecture is the definition of a barrier-free environment, an environment of freedom, communication, community, and this applies to the specific issue of accessibility" [31].

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[4] The Greek word εὐδαιμονία means: "happiness to be understood as the natural aim of life".

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