

User Design: Constructions of the “user” in the history of design research

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Abstract: Over the past 50 years of design research, the “user” has been consistently invoked as a measure of good design and as driver of design decisions. As scholars have variously recognized, the focus of design has in turn been displaced from physical objects to *relationships* between things/environments and their future users/occupants. In this paper I identify, compare, and critically analyze different techniques for anticipating or understanding such relationships drawing from original material produced in the context of the design methods movement, the Design Research Society (DRS), and the Environmental Design Research Association (EDRA). I combine this material with histories of ergonomics that preceded these organizations’ founding and a brief commentary on contemporary user-centered design (UCD) methods. This paper contributes a comprehensive comparative review of user-oriented design methods, alongside a critical outlook on continuities and ruptures between quantitative and qualitative figurations of the user in the history of design research.

Keywords: user-centered design, history of design research, ergonomics, environment-behavior-design research

Introduction

Over the past 50 years of design research, the “user” has been consistently invoked as a measure of good design and as a driver of design decisions. The focus of design, in turn, has been displaced from physical objects to relationships between things/environments and their future users/occupants (Thackara, 1988; Mitchell, 1993; Redström, 2006; Gunn and Donovan, 2012). Methods and techniques for acquiring knowledge on user characteristics and for deploying this knowledge in the context of design occupy a large part of the thematically and geographically diverse universe of design research. Grouped under the general theme of “user-centered design”, such methods implicitly carry different



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assumptions on what characteristics of the “user” matter, by which techniques these can be captured by a designer, and how knowledge about these characteristics can then be utilized in the context of design. Essentially, under the broad umbrella of “user-centered” design lies a plurality of what I here refer to as constructions of the “user”. Each construction brings together an assumption about what kind of entity a “user” is predominantly (physiological, behavioral, psycho-emotional, cognitive, etcetera), a set of techniques for quantifying or qualifying the salient aspects of that entity, and methods for using these aspects to inform design.

In this paper I identify, compare, and critically analyze different constructions of the “user” in the history of design research, drawing from original material produced in the context of the design methods movement, the Design Research Society (DRS), and the Environmental Design Research Association (EDRA). I combine this material with histories of ergonomics that preceded the founding of these organizations, and a brief commentary on contemporary user-centered design (UCD) methods. This paper is to be read as a partial account of a broader history of ideas on the “user” that unfolded within globally expanding and diversifying design research communities over the past 50 years. I do not claim here that these communities’ activity is derivative of, or reducible to, the organizations that I choose to discuss here. Nevertheless, early design methodology networks, the DRS, and EDRA were foundational and influential for the discipline of design research at large. Therefore closer scrutiny of the way that they treated the issue at hand here – the “user” in design – is both historically significant and fertile with possibilities for critiquing contemporary trends. The goal in looking at debates on the “user” in these networks and organizations is to historically contextualize ideas that have directly or indirectly reached contemporary design research practice, and unearth ethical and philosophical debates that revolved around them.

I begin with a consideration of the early years of design methodology in the UK, commonly acknowledged as the precursor of design research. In Sections 2 and 3 I examine the historical, conceptual, and technical links between ergonomics and early design methods (1962-1967). I argue that although the direct implementation of ergonomic methods by design methodologists was sporadic and short-lived, their conceptual impact was key: ergonomics displaced the focus of design from things to their relationships with humans, and rendered this relationship knowable by statistical analysis. I discuss the early works of John Christopher Jones and Christopher Alexander as testaments to this conceptual impact. Especially in Alexander’s early work, the relationship of the “user” with an artifact or physical space is understood as abiding to certain statistical norms, which in turn are seen as having a normative (see also Uptis, 2008) function for design – as prescribing and sanctioning specific design decisions.

In Section 4, I consider constructions of the “user” in the so-called “second generation” (Rittel, 1972) of design methods, which allegedly broke from the quantifying and normalizing impulses of the earlier years to promote qualifying and humanizing ideals. I argue that although the techniques of statistical analysis were soon after dismissed as epistemologically, philosophically, and ethically problematic, the core belief that design is

about the relationship between humans and things, persisted. However, the “second generation” – also coinciding with the beginnings of design research – put forward a different construction of the “user”. This new construction emphasized psycho-emotional or behavioral attributes, now viewed holistically as emerging from the interplay of human and environment. In Section 5, I draw from the first Volume of the *Advances in Environment, Behavior, and Design* series (Zube and Moore, 1987), a compendium of methods for considering the relationship of humans and their environments published in cooperation with the 1969 founded Environmental Design Research Association. I use this volume in order to discuss in some detail qualitative constructions of the “user” and their technical apparatuses. I conclude by considering the legacy of these historical trajectories in contemporary narratives of user-centricity. Ultimately, with this paper I contribute a comprehensive comparative review of user-oriented methods, alongside a critical outlook on continuities and ruptures between quantitative and qualitative figurations of the user in the history of design research.

Quantifying the “user”: Ergonomics and prehistories of design research

Historians and design researchers alike acknowledge intellectual and institutional links between the rise of systematic design methodologies in the UK in the early 1960s and the emerging discipline of ergonomics (Broadbent, 1988 [1973], p. 97; Bayazit, 2004, p. 23; Upton, 2008, p. 85), the science of human-machine relationships (Meister, 1999, p. xi). A self-proclaimed offspring of design methods, design research therefore also shares lines of ancestry with ergonomics. However, the relationship of design research with the theories and techniques of this old relative is an ambivalent one. In the thirty-five year trajectory of *Design Studies*, the journal of the Design Research Society, articles explicitly referring to ergonomics are sparse. The same can be said of most WWII disciplines that furnished the early years of design methods, to be rejected in the late 1960s amidst boisterous critiques for their scientist, positivist, and reductionist attitudes to human subjects. In this section I draw from historical accounts of ergonomics and design research to identify conceptual and methodological continuities and bifurcations between ergonomics and design research, especially in relation to their approaches to the “user”.

In recounting the *History of Human Factors and Ergonomics* (henceforth HFE), David Meister –an ergonomist himself– describes the discipline as the science interested in the relationship between human behavior and the physical characteristics of technology (1999, p. xi). The goal of ergonomics, he maintains, is the “analysis of the human-technology relationship, translation of the human (behavioral) variables into technological (physical) variables and vice versa, and prediction of the direction that such relationships will take” (emphasis mine) (Meister, 1999, p. 19). I argue that although the techniques of ergonomics (experimental testing, statistical analysis) have been criticized and displaced from the mainstream of design research, the fundamental idea that there is a relation between a human and a machine (or artifact or environment) that constitutes the locus of design, remains a key

conceptual underpinning of design research as a whole. User-centered debates that have pervaded the history of design research over the past fifty years and are still in good currency, have been about whether this relation can be known, quantified, predicted, and by whom, but have seldom questioned that this relation exists. The design research preoccupation with neither the human, nor the physical object, but with the hyphen between the two, as architectural historian John Harwood puts it (2012), is a fundamentally ergonomic concept.

David Meister locates the formation of the disciplines of “human engineering” and “human factors” (the US equivalents of “ergonomics”) in the Second World War, when humans and machines started being conceived as an ensemble, a system that cannot be understood or studied only by just looking at its parts. In the United States the new discipline was the result of an “enforced intimacy” (Meister, 1999, p. 152) between engineers and experimental psychologists in the context of WWII equipment development and testing, culminating in Chapanis, Garner, and Morgan’s instaurational text *Applied Experimental Psychology: Human Factors in Engineering Design* (1949). In the UK the field of ergonomics emerged with the 1949 foundation of the Ergonomics Research Society (ERS), with the support the UK Department of Scientific and Industrial Research (DSIR).

Meister posits that the hyphen, the relation, between humans and machines was conceivable before these initiatives, but had not yet become an object of knowledge, prediction, and design. Human testing for the selection of individuals adequate to operate specific kinds of equipment, Meister notes, was already being implemented even before WWI (1999, p. 147). At the same time, data collection and statistical analyses in relation to human activity had already been employed in Taylorist scientific studies of the worker or in subsequent work and motion studies. The fundamental conceptual shift associated with ergonomics was the turn from testing the characteristics of human operators for a given machine or equipment, to the idea that the machine or equipment could be designed in relation to its human operator, or as Meister puts it “to take advantage of human capabilities and avoid the negative effects of human limitations” (1999, p. 192).

These capabilities and limitations were not any more of the humans, but of the relationship between the human and the machine: they were manifest only in the human machine ensemble and only in action. Furthermore, these capabilities and limitations were not of a specific human, but of most humans. After all, the totality of WWII necessitated design that could be used by most people, instead of selected individuals. This gave rise to the basic techniques of ergonomics: the setting up of a human-machine system in an experimental setting, the change of machine parameters by the ergonomist-experimentalist, the collection of data for human responses, and the statistical extrapolation of the collected data to provide a spectrum of acceptable machine specifications; it was about producing design norms for the statistical normal.

In the postwar period, the findings of ergonomics were disseminated in the civilian industry and communications or electronics, ultimately shifting ergonomics from a primarily research-oriented discipline to an applied science. Ergonomists gradually acquired the role

of design consultants in various engineering tasks. Exchanges between designers and ergonomists were particularly strong in the UK, the founding site of the design methods movement. Influential ergonomics departments had already been established in the University of Technology in Loughborough and the University of Birmingham. However, members of the ERS, such as Ergonomics journal’s first physiology editor W. F. Floyd and ERS founding father K.F.H. Murrell, set out to expand ergonomics further and wider in the academic world (Upitis, 2008, pp. 94-95). An important organization for the dissemination of ergonomics to industry and the design disciplines was the Council of Industrial Design (CoID), established in 1944 under the sponsorship of the UK Board of Trade. A key figure in the CoID was W.H. Mayall, appointed officer for capital goods in industrial division of the CoID in 1959 (Upitis, 2008, p. 97). Mayall promoted ergonomics as an important tool for achieving what he construed as the fundamental objective of design: the achievement of functional purpose and the satisfaction of user needs (Booker, 1964, p. 267).

Mayall’s tenet of bridging function and use as the main objective of design may now sound commonplace, even obvious. However, closer consideration reveals its salient theoretical and epistemological implications. Mayall transposed the agency of the designer from the production of physical artifacts, to the orchestration of relationships between artifacts and users. Mayall prompted, in other words, designers to colonize contexts of use, to anticipate user-artifact relationships and develop ways of designing them in a “well-fitting” manner. User-orientation construed in ergonomic terms is fundamental for understanding subsequent user-related debates in design research. Different than the “user” of high Modernist theory, frequently discussed as an ideal entity and invoked as a symbol of design and architecture’s humanist values (see for example Le Corbusier, 1950; 1955), the ergonomic “user” was construed as a knowable, predictable, and designable component of a system that consisted of human and nonhuman elements.

Early design methods and the quantitative legacy in user-centered design

Notably, the fundamental questions and assumptions of the 1962 Conference on Systematic and Intuitive Methods in Engineering, Industrial Design, Architecture and Communications (Jones and Thornley, 1963) – the inaugural event of the design methods movement--emerged from the context of ergonomic research. The main conceptual premises of ergonomics were first, that the relationship between humans and physical artifacts or environments could be understood in information processing terms, as a matter of good fit between the equipment’s attributes and the user’s physical and psychological characteristics, and second that this relationship could be treated systematically through testing and statistical analysis.

Design methods founding figure and 1962 conference co-organizer J.C. Jones, trained as electrical engineer in Cambridge University, was well versed in these principles through his affiliation with CoID and his personal articles on the Automation and Design series of the

CoID periodical Design. Jones noticed a discrepancy between his ergonomic “fitting trial” method, where one was taught to predict user functions, build a simulator, and calculate tolerance limits through systematic testing, and his empirical observations of the engineers’ persistence to base their work on intuition (Upitis, 2008, p. 105). Concerns of this nature gave rise to Jones’ conference address in the 1962 Conference on Design Methods, titled “A Method of Systematic Designing”. In his conference address, Jones presented a method for deriving performance specifications (p-specs) for a design by analyzing issues of use, function, economy, and others, then devising a “solution” by systematically combining “partial solutions” for each specification, and finally “evaluating” this solution in order to identify and correct problems “before final manufacturing drawings have been started, before production begins, before the product has been sold, before it has been put to use” (Jones, 1963, p. 69).

The aspiration to anticipate and correct relations between a design and its contexts of use was also embraced by architects who participated in the conference. D.G. Thornley of Manchester University, for example, presented an educational method that followed a similar analysis, synthesis, evaluation procedure, with the analysis also including the accumulation of data about the context of the design (users, environment etc.) (Thornley, 1963, p. 42). Thornley’s method presented striking similarities with the 1955 RIBA plan of work, developed by the UK War Office and the Ministry of Public Works as a way to streamline collaboration among designers (Broadbent, 1988 [1973], p. 266). Indeed, in the years following the Conference on Design Methods, the Offices Development Group (ODG) and the Ministry of Public Building and Works (MPBW) in the UK would come to play a key role in the promotion of systematic inquiry into users and their activities. Two of the most characteristic methods for meeting user requirements developed under its auspices were the Activity Data Method (ADM) by Ian Moore and the so-called “Relational Method” by Christopher Alexander and Barry Poyner. Moore proposed to replace “function” with “activity,” what the users do in a given environment. Alexander and Poyner critiqued the idea of user “needs” or “activities” and proposed their replacement with the operational concept of “tendency,” what people tried to do whenever they were given the chance (Alexander and Poyner, 1966, p. 8). The imagination of acting bodies in physical spaces, and the conceptualization of design as a process of fitting a form with a use context shares salient conceptual links with ergonomics.

“User tendencies” were external, observable, and quantifiable behaviors that formed the basic unit for structuring people’s environments. Like ergonomics research, however, they produced normative statements about design on the basis of statistical normals -- most frequent, and therefore likely, behaviors calculated on the basis of empirical observations of users in existing environments. It was precisely the quantifying aspirations and normalizing impulses of the concept of “tendency” that caused animated critiques in the 1967 Symposium on Design Methods in Architecture in Portsmouth (Broadbent and Ward, 1969), an event later characterized by Geoffrey Broadbent as the clash between rationalist/behaviorist and phenomenological/existentialist constituents of the design

methods movement (Broadbent, 1981, p. 309). The shift to the so-called “second generation” (Rittel, 1972) of design methods abolished quantitative studies of users in favor of qualitative investigations. Design researchers maintained the Mayallian doctrine that the objective of design is to fit physical form with user needs, but reconsidered the technics by which this goal is to be pursued.

The qualitative turn in design methods and the rise of environmental design research

Skepticism of technocracy, the questioning of positive science, the rise of environmental consciousness, movements for democracy and social rights, marked the late 1960s landscape in Europe and the US, instigating theoretical and methodological turbulence in the still nascent field of design research. The application of WWII predictive methods such as ergonomics, operational research, and systems engineering for the design of the built environment, as well as the preoccupation with epistemic values of objectivity, and rationality, would come to encounter boisterous internal critique. The 1967 Design Methods in Architecture Symposium in Portsmouth was the first major event within the field of design methodology, to signal skepticism of the early years’ scientific orientation and call for philosophical recalibration on the basis of humanistic ideals.

Portsmouth symposium co-organizer Tony Ward captured the philosophical divide that he saw emerging among the event participants in a series of oppositional dipoles “Subjective-Objective,” “Abstract-Real,” “Value-Fact,” “Process-Product,” and “Determinist-Existential” (Ward, 1969, p. 13). These oppositions would later be synopsisized by the other organizing member of the Symposium, Geoffrey Broadbent, as a confrontation between a behaviorist and an “existentialist / phenomenologist” stance (Broadbent, 1981, 309). In Portsmouth, Ward further contended that “the logical act of designing an environment for another human being is qualitatively different from the logical act of designing a machine part, because it involves an element of ‘reciprocating choice’ between the designer and the Other” (Ward, 1969, pp. 12-13) and called for a “language” describing this understudied relationship.

It was not long after Ward’s lament that an association was inaugurated in the US with the goal to address some of the discontents framed in Portsmouth. The Environmental Design Research Association, or EDRA, was founded by some of the members of the Design Methods Group (the US equivalent of UK design methods), after its dissolution in 1968. The first official EDRA convention took place in Chapel Hill, North Carolina in June 1969. According Henry Sanoff, chair of this inaugural event and seminal figure in participatory design debates, EDRA integrated the interests of the Design Methods Group with SIGCAPUS (Special Interest Group on Civil Engineering, Architecture, [City, Regional, and Transportation] Planning, and Urban [Data] Systems), the Association for Computing Machinery, and the Architectural Psychology Newsletter published by EDRA founding member John Archea. According to Sanoff, EDRA aspired to “expanding the horizon of

environmental design to include concerns about people as a vital ingredient of change” and therefore made extensive efforts to include social and behavioral scientists to the “already formed nucleus of designers” (Sanoff, n.d.).

This interdisciplinary outreach culminated in the formation of a new research domain, which came to be known, among many other names, as “environment, behavior, and design” (Zube and Moore, 1987), henceforth EBD. Opposite to the 1960s design methodology initiatives in the UK and the US, which aimed for the establishment of cross-disciplinary knowledge among fields already engaging in design activity (e.g. engineering, architecture, product design, urban planning etcetera), the field of environmental design research was an expansive interdisciplinary enterprise, claiming under its auspices not only all design domains but also almost all of the social sciences. As co-editor of the first Environmental Design Research Association/National Endowment for the Arts (EDRA/NEA) Annual Review Gary Moore would later enumerate, the field included “psychology, sociology, geography, gerontology, anthropology, human factors, interior design, architecture, landscape architecture, urban and regional planning, resource management and other areas” (Zube and Moore, 1987, p. vii). The aspiration of the field was to ask questions pertaining to the relationship between the “sociophysical environment and human behavior” and “use the answers to that question to create environments better adapted to human beings and to improve the quality of life for all” (Zube and Moore, 1987, p. vii).

The production of scientific knowledge applicable in the creation of better fit between humans and their environments brings to mind the programmatic declarations of human engineering. EDRA’s aim was also to collect knowledge about what I have previously referred to as the hyphen, the relationship between humans and physical environments, and apply it to design this relationship in “better fitting” ways. However, EDRA’s approach frequently departed from human engineering traditions, both from a theoretical and a methodological perspective. The subsuming of human engineering within the broader field of environment, behavior, and design becomes evident in the seminal 1973 paper “Theory of Man-Environment Relations,” by Irwin Altman, Professor and Chairman in the University of Utah Department of Psychology. Altman’s paper articulated four philosophical models of the human that he saw underpinning contemporary research in the field: the “mechanistic” model, the “perceptual-cognitive-motivational” model, “behaviorism,” and “social systems/ecological” model. This taxonomy essentially brought different conceptions of the “user” in fields that would otherwise be seen as disparate on the unifying table of EBD research, thus opening these conceptions to comparison and critique.

According to Altman, the mechanistic model viewed the human as a task-oriented organism, understood and described only in relation to the task at hand. Emotion and intentionality were dismissed as irrelevant unless they directly influenced the task. The human was assumed a passive agent merely enacting the designer’s plan of use, and having no agency in modifying the designed artifact or environment. Altman associated the mechanistic model with human engineering research in the 1950s-1960s, initially performed in laboratory settings but then having migrated in environmental design research domains of “layout

analyses, traffic flow systems, lighting, color, heating analyses of environments" (1973, p. 106). In these cases, he argued, "man is merely another system component with limited degrees of operating freedom" (1973, p. 107). Opposite to the mechanistic model, which Altman saw as outdated, the perceptual-cognitive-motivational model viewed the human as an "internal processing organism" (1973, p. 107) with subjective traits, separable from the "objective" characteristics of the environment. This model, pervasive in Altman's time, aimed to unveil these subjective responses to the environment, "the inside of head," (1973, p. 107) primarily through qualitative techniques.

The primary difference between the perceptual-cognitive-motivational model and Altman's third category, the so-called behaviorist model, is that the latter focused on external human actions in the environment instead of internal thoughts, feelings, and intentions. It is worthwhile noting here that the model of behaviorism that Altman saw powerfully resurging in the research agendas of his time, is not to be confounded with Skinnerian operant psychology, whose passive and mechanistic stimulus-response figuration of the human was denounced in the Portsmouth Symposium. Under "behaviorism" Altman seems to classify all action-centric and interactionalist descriptions of human engagements with the environment, without necessarily excluding intentions and motivational states. Finally, the "ecological model" of the human, that Altman himself was actively promoting, declared human behavior and environment a mutually constituting, dynamic ensemble. Behavior itself, in other words, resided in what I have so far been referring to as the hyphen, the relation between the human and social and material contexts. Opposite, however, than mechanistic models that construed the human as a passive agent enacting this relationship according to what the statistical norm would deem probable, the ecological model promoted an agentic understanding of the human. "Here," Altman remarked, "man becomes an environmental change agent, not merely a recipient of environmental influences. And, according to this approach, the environment becomes an extension of man's being and personality" (1973, p. 109).

In arguing for the advantages of the ecological model, Altman also emphasized its utility for establishing a common ground among social scientists and designers thus cultivating the conditions of interdisciplinary collaboration. With its holistic, systemic understanding of human-environment relations, the ecological model bridged the concerns of environment, behavior, and design "scientists," preoccupied with process- and phenomena-focused analysis and generalization, and the field's "practitioners" (Altman, 1973, p. 99) (the designers) interested in units, criteria, synthesis, and locality. The systemic philosophy of the ecological model offered, for Altman, a reconciliatory mechanism between the unit and the whole, the small and the large scale, analysis and synthesis, thus urging scientists and practitioners to "surpass the provincialism of their parent professions" (Altman, 1973, p. 110). In the integrated field of environmental design research, knowledge provided by basic research (the social sciences) would grow alongside research enabling its application (the design disciplines). At stake here was not each model's efficiency or practical value, but its implications for the designer as a professional entity and as an ethical being. This was true, I

will argue, of many of the debates and controversies around “user” modelling methods among environmental design researchers.

Qualifying the “user”: Phenomenological and Ecological methods in Environment-Behavior-Design research

Altman’s taxonomy captured (if not actively established) debates about the philosophical, theoretical, and methodological orientation of research in environment, behavior, and design, as well as the relationship between theory and application, that persisted in subsequent years. An indicative example of these matters of concern was the first Volume of the *Advances in Environment, Behavior, and Design* series (Zube and Moore, 1987), published in cooperation with EDRA. Compiled in the spirit of the Annual Reviews of the social sciences, the collection of essays featured in the book aimed to identify and critique advances in the field since its last critical review (Zube and Moore, 1987, p. viii). Aspiring to transform the “chaotic flavor” (Zube and Moore, 1987, p. viii) of the field into a more integrated image and designating ways to move forward, the collection of essays engaged in discussion of overarching theoretical and methodological debates. The book was structured on the basis of oppositions between positivist and phenomenological approaches to EBD research, as well as comparisons between quantitative and qualitative methods, in both cases contemplating their potential synthesis. I do not suggest here that the book holds a special status within EDRA’s prolific publication activity. I delve into this particular publication because I see it as exemplifying opposing opinions about the aspects of the “user” that mattered in design, the methods by which these aspects were to be captured, as well as the implications of both for the professional and ethical status of the designer.

In his chapter contribution, Richard Winett of the Virginia Polytechnic Institute and State University and Department of Psychology, reviewed basic tendencies in positivist theories of the environment focusing on Skinner’s operant psychology and the so-called ecological or environmental psychology developed in the late 1960s by Roger G. Barker. Both theories were based on empirical observation of humans, the former in the lab and the latter in the field, and illustrated according to Winett “extreme environmental determinism” (1987, p. 34). Skinner viewed human behavior as engineerable through external prompts and feedback procedures, while Barker, more descriptive in his approach, construed behavior as a consequence of its organizational setting. Implicitly invoking Altman’s taxonomy, Winett characterized both theories as mechanistic for lacking space for the cognitive, emotional, and motivational aspects of humans or, as he put it, the absence of room for “person variables in the equation $B(\text{ehavior})=f(E(\text{environment}))$ ” (1987, p. 34). The way forward, he suggested, was to loosen the positivist stance and open behavioral research to different techniques. These, he notably wrote, included “alternatives to large scale surveys where quantitative data is amassed about a large number of people who become generalized, often stereotyped, ‘users’ for architects and architecture students, helping them to design generalized and often stereotyped buildings – replacing generalizability with specificity and fine grained detail” (Winett, 1987, p. 66). A theoretical and methodological break from

environmental determinism, he further suggested, was not only philosophically necessary, but also called for in order to establish channels of communication between the cultures of “basic” and “applied” research in environment, behavior, and design research (i.e. the social sciences and the design disciplines).

Indeed, the disciplinary tradition of architecture and urban design valued aspects of meaning, place, and human experience that were often absent from behavioral research vocabulary. The “applied” domains of environment, behavior, and design research, therefore, were by tradition inclined toward a different approach to human-environment relations and a philosophical alternative to positivism: phenomenology. An influential figure promoting phenomenological approaches within environment, behavior, and design research was Australian architect Amos Rapoport. Already since the 1967 Design Methods Symposium in Portsmouth, Rapoport has argued for the importance of incorporating meaning, how people make sense of the environment, in the design process. Anticipating the foundation of EDRA Rapoport had called for a new wave of interdisciplinary openings toward ethology, cultural geography, cross cultural studies, anthropology, sociology, and psychology (1969, p. 141) that would supplement the logicopositivist methods of the “first generation” of design methods, rather than give them up.

Repeating the Portsmouth trope, the editors and contributors of the *Advances in Environment, Behavior, and Design* collection, positioned phenomenology in the opposing pole of positivist research. In his pertinent chapter, David Seamon of the Kansas State University Department of Architecture defined phenomenology as a field concerned with the exploration and description of the lifeworld, eventually aiming to identify its invariant structures, networks of relationships underpinning human awareness, experience, and action (1987, p. 6). “From logic, research design, and statistical methods to assure clarity, objectivity and verifiability,” he remarked, “the phenomenologist has only the dedicated wish to see thoughtfully and fully” (Seamon, 1987, p. 7). Of particular interest is Seamon’s invocation of social psychologist Joseph De Rivera’s 1984 taxonomy of phenomenological methods. Illustrating the existence of concrete working implementations of phenomenological philosophy, rather than sanctioning De Rivera’s particular taxonomy, Seamon enumerated five methods: “reflective empirical phenomenology” (interview transcript analysis to unveil common themes among people who have experienced a phenomenon), “naturalistic phenomenology” (sensitizing others to a phenomenon experienced by the researcher), “conceptual encounter” (examination of structural fit between one’s experience of a phenomenon and the researcher’s intellectualization of the experience), “construction of text,” and “observation of parallel processes” (unveiling of dynamics and differences between parallel operations of individuals).

In all cases, the aspiration was to capture the essential pattern (ontological structure) underpinning human environmental experience in its emotional, cognitive, and bodily extents. However, opposite to most positivist research that furnished designers with explicit causal links between human behavior and aspects of the environment expressed in quantitative form, phenomenological findings could not be directly translated in normative

statements about how one should do design. Phenomenological research provided, as Seamon put it, merely an attunement (1987, p. 20).

It is of little surprise then, that designers optimistically embraced the few operational design methods espousing phenomenological principles. One of the most salient examples of such methods was the Pattern Language developed by influential design theorist and methodologist Christopher Alexander (1977) and collaborators in continuation of Alexander's research into environmental structures. However, radically shifting the rhetoric that accompanied the *Atoms of Environmental Structure* (Alexander and Poyner, 1966), Alexander replaced the positivist and objectivist concept of human tendency (a statistical measure of human activity in an environment) with the idea of a timeless pattern (an essential structural relation between human contexts and physical settings). These patterns, formed the units for the Pattern Language, a layperson-oriented compendium of 253 recipes for "well-fitting" form-context relations, spanning all scales of the built environment and connected in a tree-like hierarchy. For any design task, the book identified a sequence of subtasks that could be addressed independently and then recomposed to produce the full design.

"For a phenomenology of the environment," Seamon wrote, "the significant part about Pattern Language is its provision of reasoned descriptive structures (emphasis mine) which help to draw a link between human dwelling and the built environment" (1987, p. 15). Repurposing the computational logic of his earlier work on *Atoms* under a phenomenological heading, Alexander reconciled the 1970s rhetoric of humanism and wholeness with a working system built on the tenets of hierarchy, order, and logic. The enthusiastic reception of Pattern Language among environmental design researchers is indicative of a broader ambivalence toward the "mere attunement" provided by qualitative methods, and an impulse to reconcile the positivist impulses of certainty, objectivity, and prediction with the cultural imperatives of phenomenology and humanism.

The Pattern Language is the only application of environmental research in design discussed in the *Advances in Environment, Behavior, and Design* volume. The volume's methodological debates mainly revolved around quantitative and qualitative means of collecting and analyzing data rather than their implications and applications in design. The chapter on quantitative methods, written by Robert Marans of the University of Michigan Institute for Social Research and Sherry Ahrentzen of the University of Wisconsin Department of Architecture, primarily focused on statistical techniques for analyzing data collected through control group observation, surveys, or sampling in order to establish causal links among different human and environmental variables.

On the opposite side of the spectrum lay qualitative methods, that chapter contributor Setha Low of the Department of Architecture and Regional Planning and the Department of Anthropology in the University of Pennsylvania, deemed humanistic and holistic (1987, p. 280). Opposite to quantitative methods that based their claims to validity on mathematics and scientific logic, Low noted, qualitative methods drew their strength from the "fit between the actual situation and the researcher's description" (1987, p. 281). Qualitative

approaches that were based on understanding and interpretation could be, according to Low, parsed in a six-fold typology including “cognitive,” “observational,” “phenomenological,” “comparative historical, ethnographic,” and “discourse analysis” methods. Cognitive methods included linguistic, ethnoscientific, and mental map approaches that aspired to understand the idea of dwelling and place making through analyses of place-related language and concepts. Observational methods focused on mapping and diagramming human behaviors (actions) and nonverbal communication in the built environment in order to infer underlying patterns, structures, and typologies. Phenomenological practices similarly aspired to reveal essential ontologies of human-environment relations, adopting, however, more enactive techniques such as the ones previously described by Seamon. Comparative historical approaches examined typological evolution in relation to sociocultural contexts and norms. Ethnographic methods included participant observation through immersion of the researcher in a community. Opposite to phenomenology, their goal was not “attunement” but “replicable understanding of another culture” (Low, 1987, p. 293). The systematic cultural understanding gained from this arguably time-consuming process allegedly enabled the researcher “to accurately predict local response to design and planning proposals, and judge more complex alternatives” (Low, 1987, p. 293). Finally, discourse analysis, recast by Turkish architecture scholar Necdet Teymur as “environmental discourse analysis” (Low, 1987, p. 295) declared environmental discourse structured on the basis of subject-object relationships and its relations with other environmental discourses.

In subsequent years qualitative research methodologies would proliferate both in fields concerned with the design of the built environment, like the ones initially included in EDRA, as well as domains of product and information technology design. A quick browse of *Design Studies*, the journal of the Design Research Society, suffices to provide a sense of the paucity of positivist and quantitative approaches and the abundance of meaning and experience related themes, most frequently coupled with qualitative methods. The same human-centric rhetoric prevails the so-called User-Centered Design (UCD) and User-Experience Design (UXD) fields. The participant observation methods developed and employed by IDEO; the emergence of the co-design movement; and the product evaluation methods used by the Consumers’ Association, are a few of many examples in contemporary practice.

Arguably, it is more the ethical and philosophical concerns associated with histories of disciplinary self-fashioning (such as the one recounted in this response) that sanction the qualitative/ experience-oriented stance, and less the pragmatic implications of applying qualitative methods in design. After all, the EDRA vision to operationalize environment-behavior knowledge in order to provide normative theories of design appeared, from its onset, an almost insurmountable challenge.

Conclusion: Echoes and transformations

In its many flavors, user-centric design shares both theoretical and methodological lines of ancestry with debates that took place within human-environment research. As the climate

of “social awareness and social unrest” (Sanoff, n.d.) receded, the highly politicized debate on qualitative user-methods gave way to the more moderate and market-friendly notion of user-centricity. This turn coincided with a shift of design research activity from the issues concerning the built environment to the designer of consumer goods, as well as the newly emerging field of information systems and Human Computer Interaction (HCI) design. After the mid-1980s, methods and techniques for designing interactivity and improving the usability of information systems proliferated.

In a 2010 article that appeared in *Design Studies*, interaction designers Phil and Susan Turner provide a history of user-centric design approaches in the case of information systems that bears interesting parallels with the transformations of user representations in the disciplines concerned with the built environment, especially in the transition of fragmentary, task-related construal of the “user” in the “first wave HCI” (Cooper and Bowers, 1995) to more holistic approaches. Such approaches involved the construction of types of users – bundles of capacities and dispositions in relation to the tasks at hand. These types were constructed either by a system through matching user behavior with particular “stereotypes” (Rich, 1979) or through extensive workplace ethnographies. User-centered designers enacted user types through various vignettes and scenarios (Turner and Turner, 2010, p. 33). Soon after, “stereotypes” were replaced by “personas” (Cooper, 1998). In its original Cooperian version, personas were constructed through extensive ethnographic study of the potential users of a product or system. The intuitive analytical findings were then parsed into preliminary user characters (personas) to be later refined to a smaller number, capturing the salient diversities of the user body in characters with history and personality. Some variations of personas are constructed through intuitive, qualitative methods, while others are predominantly data driven and statistically based. At times personas are used to sensitize designers to user personality traits; at other times they are used as factual descriptions of potential users traits. In marginal cases, personas may even be fully fictional entities that are only meant to keep the designer aware of the existence of the user as an elusive, yet ever-present Other.

Concluding the trajectory into constructions of the “user” in their historical unfolding, one is faced both with continuities and ruptures. A break is evident between the quantifying and normalizing impulses of early ergonomically inspired and statistically supported techniques, and the qualifying and humanizing ideals of subsequent phenomenological and ecological methods. However, breaks are seldom so neat. I argued that the fundamentally ergonomic assumption that there is a knowable and designable relation between humans and physical things persisted through this break and forms the conceptual backdrop of most design research to the present moment. This assumption comes alongside the ergonomic idealization of the relation (ensemble) between humans and things or environments as a normal (well fitting). The shifts and debates in user-centered design research have mainly revolved around the knowledge and ethics associated with this relation: How is the relation to be conceptualized? What is meaningful for its description? Who is to design it? Who is to

control it? How does the agency and intentionality of the human factor in the human-nonhuman ensemble?

In this paper I have traced different approaches to these questions in their historical unfolding. By activating a network of competing conceptual and methodological possibilities in approaching the “user”, I aspire to enable a critical reading of methods that have been naturalized in UCD design and are currently attached interchangeably to, often competing, theoretical agendas. Through a historical overview of “user” constructions in the history of design research, I have unveiled forgotten methods potentially worthwhile revisiting, while contextualizing them as products of historically specific debates about design legitimacy, ethics, and professional identity. Ultimately, my main argument here has been that user-centered design methods are not generally available techniques, unproblematically married to various design intentions, but are positioned from their inception in the nexus of ethical, philosophical, and epistemological drives.

Almost fifty years have transpired since Portsmouth Symposium organizer Tony Ward called for a “language” capturing the “‘reciprocating choice’ between the designer and the Other” (Ward, 1969, pp. 12-13). The figure of the “user,” the elusive Other, has been perpetually shifting and changing alongside the methods enlisted to portray it. As this history has attempted to show, it is the designer’s status as a professional entity, an ethical being, and a legitimate decision-maker that is most often at stake.

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