Share
Recommend to your library

Purchase

First published in 2007
2 issues per volume
Current issue
Volume 5. Issue 2

Artifact: Journal of Design Practice (Journal)

ISSN 17493463 , ONLINE ISSN 17493471

Intellect is honoured to be publishing its first-ever open access journal, *Artifact: Journal of Design Practice*. The journal is funded by The Royal Danish Academy of Fine Arts, and Design School Kolding. It does not charge APCs or submission fees.

Since its first publication in 2007, *Artifact* has focused on practice-based design research and aims to explore conditions, issues and tasks pertaining to design development in a broad sense. As an international design research journal, *Artifact* targets the global design research community with the aim of strengthening knowledge sharing and theory building of relevance to design practice. All articles and research notes are subject to double-blind peer-review.

The journal is cross-disciplinary in scope and welcomes contributions from all fields of design research, including product design and visual communication, user experience, interface, and service design as well as design management and organization.

Category: Visual Arts

Submit

AIMS & SCOPE | CALL FOR PAPERS | EDITORIAL BOARD | ABSTRACTING & INDEXING | CONTENT

Artifact: Journal of Design Practice aims to publish high-quality academic papers focused on practice-based design research that explores conditions, issues, developments and tasks pertaining to design in a broad sense. As an international design research journal, *Artifact* targets the global design research community with the aim of strengthening knowledge sharing and theory building of relevance to design practice. All articles and research notes are subject to double-blind peer-review. The journal is cross-disciplinary in scope and welcomes contributions from all fields of design research including product design and visual communication, user experience, interface, and service design as well as design management and organization. The editors welcome both conceptual and empirical papers.

Artifact is a fully Open Access journal that does not charge APCs or submission fees. Articles are published under a Creative Commons license which allows users to read, download, copy, distribute, print, search, or link to the full texts of these articles.

Share
Recommend to your library

Purchase

First published in 2007
2 issues per volume
Current issue
Volume 5. Issue 2

Artifact: Journal of Design Practice (Journal)

ISSN 17493463 , ONLINE ISSN 17493471

Intellect is honoured to be publishing its first-ever open access journal, *Artifact: Journal of Design Practice*. The journal is funded by The Royal Danish Academy of Fine Arts, and Design School Kolding. It does not charge APCs or submission fees.

Since its first publication in 2007, *Artifact* has focused on practice-based design research and aims to explore conditions, issues and tasks pertaining to design development in a broad sense. As an international design research journal, *Artifact* targets the global design research community with the aim of strengthening knowledge sharing and theory building of relevance to design practice. All articles and research notes are subject to double-blind peer-review.

The journal is cross-disciplinary in scope and welcomes contributions from all fields of design research, including product design and visual communication, user experience, interface, and service design as well as design management and organization.

Category: Visual Arts

Submit

Contents

Volume (5): Issue (2)
Cover date: 2018

Artifact: Journal of Design Practice
Volume 5 Number 2
 doi: 10.1386/art_00001_1

SILVIA PIZZOCARO
Politecnico di Milano, School of Design

Theory as *habitus* for scholarly design research

ABSTRACT

Higher education in design, scholarly research and design research need to be continuously clarified in relation to evolving concepts such as knowledge, theory and practice. Being awarded a Ph.D. in design about 25 years ago, when scholarly research in design was in its infancy, and working with students in master and Ph.D. programmes in design for more than two decades, I share with the reader what I keep on learning in this educational milieu. It is my own perspective, based either on past experience or on the ongoing perception of local concerns. More broadly, a number of underlying general issues are reported to highlight the spread of design research practice encompassing aspects such as theory as a practice; the lack of fully consolidated design research frameworks where design paradigms may be embedded; and the need to nurture and strengthen the process of theory-making in design doctorates. What it is finally claimed is the advantage of theory as formae mentis*, intended as a* habitus *for design research learners. While education in design often collectively addresses the professions of design, architecture and engineering, the following reflections will mainly address the manifold domains of industrial design, intended as a comprehensive term for either tangible or intangible design domains, intersecting product, graphic, communication, visual and interaction design fields.*

KEYWORDS

design research
research practice
scholarly research
doctoral education
design knowledge
knowledge constructi

INTRODUCTION

Upon opening this conversation[1] about *practicing* theory, let me assume a working definition of theory itself: I am referring to theory in accordance with its etymology, from the Greek *theōreîn*,[2] that is the act of observing and considering. At the same time, theory also stands as a representation of a mental structure. From both meanings, I derive a provisional integrated sense of theory as *formae mentis* for research, this including the intuitive notion of theory as a way of thinking.

Referring to theory as *formae mentis* – a mental scaffold that can support design research – I will set aside the meaning of theory as a formulation and arrangement of the foundations and general principles of a discipline. Accordingly, I will not consider the definition of theory as a set of precepts that serve to guide practice or as systems of ideas intended to explain facts or general principles relating to a particular subject.

Moreover, while education in design often collectively addresses the professions of design, architecture and engineering, I will confine my reflections to the specific – although manifold – domains of industrial design, to be intended as a comprehensive expression for either tangible or intangible design domains, intersecting product, graphic, communication, visual and interaction design fields.

Indeed, this contribution is based on rather plain premises:

- I will consider the theory/practice relation by means of integrations and stratifications, rather than by disjunctions and antonyms (i.e. theory on one side, practice on the other). This will allow me to overcome the theory versus practice traditional dichotomy;
- I will rely on a notion of theory as *formae mentis* that can serve as a scaffold for research practitioners irrespective of any design specializations;
- theory as *formae mentis* may be intended as an etherodox *habitus*. *Habitus* is a Latinism used in many areas instead of habit, or outward attitude, to indicate not only the complex of external characteristics or behaviour of an individual or a species, but also, more generally, an attitude, a tendency. In sociology, the concept of *habitus* was used by Pierre Bourdieu (1979) to refer to the physical embodiment of cultural capital, namely the ingrained habits, attitudes or skills that people may possess, given their personal experiences. According to Bourdieu, the *habitus* is a system of thought and action patterns acquired in a lasting manner and generated by objective conditions. The *habitus* tends to persist even after these conditions have changed; it integrates past experiences and acts by influencing current perceptions, evaluations and behaviours. At the same time the *habitus* makes the implementation of a great variety of tasks possible thanks to the transfer of mental patterns that allow framing or solving problems sharing the same structure;
- rather unconventionally, I will also intend theoretical attitude as an attribute and an outfit that researchers could be equipped with.

Finally – as Margolin (1991) advocated in the early 1990s – I shall assume as a renewed claim that what is still central to the advancements in the mature practice of scholarly design research, and to forms of design education addressing the issues at hand, continues to be a way of 'conceptualizing design itself along with the development of an academic discipline of design studies that can infuse design education with a reflective dimension […]' (1991: 54).

1. This article is the expanded version of a public conversation held in Venice, at Palazzo Badoer of IUAV (University Institute of Architecture, Venice), during the open dialogues on the agenda of the Third National Forum of Design Doctorates – 'Frid 2017. Sul metodo/sui metodi. Esplorazioni sulle identità del design' ('Frid 2017. On method/on methods. Exploration on design identities'), held on 16 November 2017. Originally in Italian, the lecture contents were re-articulated and translated by the author and submitted here to *Artifact: Journal of Design Practice*. In addition to the original spoken contents, the article contains updates, supplementary notes and long integrations. Furthermore, a number of paragraphs were more extensively articulated. Apart from that, the written translation preserves the meaning and intention of the original oral contribution.

2. The etymology of theory as a mental pattern driving observation stems from the late Latin *theōria*, derived from Greek *θεωρος* (*theōría*), from the verb *theōreîn*, meaning contemplation, speculation, a looking at, viewing, a sight and from the related noun *θεωρος* (*theōrós*), spectator. A more familiar meaning of *theory* usually refers to a set of principles or methods of a science or art, rather than its practice. *Theory* may also be frequently intended as an intelligible explanation based on observation and reasoning, that is a set of reasoned ideas to explain facts or events.

More than ever the need for an increased reflective dimension may be coherent with the nature of those blurry contexts (i.e. design as a discipline and a field of research) where theoretical knowledge (i.e. the complex of formalized disciplinary aspects) and applied knowledge (i.e. the sum of the practical and informal know-how) no longer appear so distinguishable (Rullani 2004: 398).[3]

3. Indeed, the distinctio between knowledge and know-how does not necessarily evoke major or mino scientific contents. Rather, it implies the fact that the former has been legitimized by a formal or social recognized validatio process or mechanis which the latter doe not require.

1. The knowlogy turn

In fact, new integrations between theory and practice, rather than oppositions, may be attributed to the overturning of general order that has largely invested the contemporary dynamics of knowledge – precisely technological knowledge – with *action* overtaking upon *theorization*.

To better understand the revolutionary weight of such an event, I shall refer to Longo:

> In the second half of the twentieth century a phenomenon of enormous practical and conceptual importance took place […] For the Greeks knowing something was equivalent to possessing an explicit theory expressed in precise terms (today we would say the formula or the algorithm). The western world has inherited this propensity to explicit rationality and theoretical precision and has always considered speculative intelligence, which builds the theorems of mathematics or the buildings of theoretical philosophy, superior to practical intelligence that allows us to safely cross a road or drive a car in city traffic […] Today, however, things are changing. Technology, especially when related to information processing and transmission, develops so rapidly and tumultuously that theory can no longer keep up with it. The speed and complexity of technology often prevents science to trace a coherent and complete explanatory framework […] Technology, this is the point, no longer expects science and its licenses of legitimacy.
>
> (Longo 2001: 18, translation author's own)

We can further extend such an observation to recognize that many current forms of knowledge are spreading without any explicitly related theory. It is also true that certain traditional knowledges, especially if elementary, never required a theoretical justification. However, from the nineteenth century onwards, it is precisely the increase in complexity that made theoretical and scientific foundations necessary, so that legitimate, verifiable and generalizable applications for technology could be built.

At present, conversely, action may largely overcome the ability to formalize and predict: knowledge – better expressed with the *knowlogy* neologism – is currently important for making, not necessarily for understanding.

1.1. Hybrid knowledge and changes in cognitive abilities

It is certainly not the first time that major changes appear in the way knowledge is generated. However, the extension of the revolution taking place is overwhelming. It has led to a drastic reversal – with no apparent rearrangement – of the dichotomy implying that theory precedes or grounds practice. Moreover, all the parameters considered valid so far for the creation, development and dissemination of knowledge are involved (Simone 2000).

Let us analyse, for instance, the properties of the knowledge mass circulating *via* the web: it can be accessed by anyone in real time; the sources of knowledge production are reproducing indefinitely; furthermore, most available knowledge does not come from *loci* that can be identified with precision, but from the world, proving that knowledge is simply around us, easily grasped, even if its source is vague, indistinct, concealed or totally missing. We could deduce that never before has knowledge been so copious and accessible: the best of all possible worlds, one would say, at least from the point of view of access to knowledge (Simone 2000: 65).

Conversely, critical instances are emerging from many fronts alerting us that knowledge is undoubtedly abundant, but it is complex as well; sources of knowledge are accessible but entwined and hierarchized in an equally complex way; and knowledge may be everywhere but the ability and possibility to move neatly in this jumble can be inversely proportional to its expansion (Simone 2000: 66). Nor is it so true that all this wealth of knowledge can always be accessible: several elements of know-how are being generated in places that continue to be inaccessible, including sources or institutions apparently re-establishing the exclusivity of *guild* knowledge (Simone 2000: 67), as in the case of restricted or closed corporate know-hows.

Certainly, the milieu where knowledge-at-hand circulates the most is the outside world, *via* the web. However, this knowledge is reduced to simplified forms, synthesized contents and unreliable formats. It is not surprising that the most popular approach to these forms of knowing may take place with the primacy of vision, where 'the turning point is given by informing oneself by watching' (Sartori 1997: 13, translation author's own). Indeed, it is rather information that can be easily obtained through vision, not knowledge.

The exponentially enriched quantity of information that learners can obtain through vision and media – navigating the web, learning by visual representations – can therefore correspond to a reduction of understanding, determined by the fact that undoubtedly access to information has enormously increased but the progress of thinking by concepts, theoretical frameworks, mental models – that are *speakable* but not necessarily visible or representable – has simultaneously slowed or decreased.

On the specific front of certain peculiar abilities related to the disciplines of design, Poggenpohl stresses the extent to which 'The vast body of available images and information diminish the special technical skills that designers have mastered, to say nothing of their aesthetic sensibility' (2015: 45).

1.2. Steps towards an atrophy of theoretical abilities

Reduction of understanding plus diminished sensitivity seems to imply a sort of atrophy of theoretical cognitive abilities (Sartori 1997: 21–23), especially for young generations of digital natives. Many among the latter are simply skipping that *hard* side of learning – so suitable to elicit theoretical cognitive abilities – that is embodied by the *long form* of books (De Martin 2017: 154), as opposed to short, scattered and fragmented bits of knowledge provided by digital media. According to Sartori (1997: 19), this process is consistent with the progressive removal or loss of the ability of abstract language, either written or verbal, which is also the linguistic form for expressing one's mental ability for logical construction and reasoning. Presumably, this is a partially *lost or loose* ability. In a somewhat emphatic way, I express it as the lack of *labour* in thought.

Dealing with the related concepts of knowledge, theory and practice, Per Galle has recently focused on the expression *conceptual labour* (2018: 1.2). While his intention is widely aimed at 'a shared theory of science for the design professions – a theory that each profession may elaborate subsequently and adapt to purposes of its own' (Galle 2018: 1.2), the sense I attach here to *labour* is actually limited and intuitively referred to as *effort*. It stands for the hard work of thought, the difficulties and almost tangible weight of thinking elaboration and construction.

The partial or total neglecting of a shared attitude towards *hard* thought is emphasized as a critical aspect of the cognitive change potentially investing learners who are asked to practice cognitive skills within design research professionalism.

In general, rules are changing for research learners in any domain of knowledge; cognitive abilities are changing as well; and knowledge vocabularies are being invested by a semantic turn. Certainly, all the mentioned factors shall be exploited as an opportunity and advantage. But the extent to which the concepts of knowledge, information, know-how, competence and skill are often misused remains a crucial point, along with the undesired effects of confusion and misunderstanding.

1.3. Open knowledge and knowledge-at-work

Moving from the rough distinctions that may allow to assume that in the first instance:

- information can be understood as a set of structured data that remain passive until they are used by those knowing how to interpret and process them;
- know-how provides the ability to act and goes beyond any information;
- knowledge is know-how of a different order, as being certified and legitimized by formal institutional mechanisms, either scientific or social.

(Foray 2006: 9)

I often happen to testify an interchangeable use of the above terms among scholar researchers in design, in a process of progressive homogenization of differences.

Paradoxically, while the transmission of information continues to be facilitated by communication technologies, more difficulties are being experienced precisely when sharing knowledge vocabularies, or whenever formalizing and transmitting knowledge, both along the vertical axis of learning managing (e.g. between teachers and learners due to a generational gap unable to activate tuned reciprocity) and also horizontally among peers (e.g. among practitioners of the same sector due to missing links between non-communicating overspecialized domains).

Design is a privileged moment for the production of knowledge and research. Precisely the articulation between design and research implies the complex of questions investing the nature and form of emerging scientific-cognitive skills in the field of design. How is cognitive capacity adapting when facing the so-called open forms of knowledge, where principles of rapid dissemination of new knowledge prevail, with procedures that encourage the circulation or the exclusivity of practical know-how? This form of knowing (which for example revolves around the innovation of products and processes,

professional resources and human capital, and which is functional to economic growth) often appears indistinguishable from science or technology, traditionally recognized as certified and formalized knowledge (Foray 2006: 102).

The neologism *knowledge-at-work* (Rullani 2004: 353) – i.e. knowledge that is constantly explored and elaborated while in action – further tells us of a constant flow of knowledge that cannot be formalized as it pursues causes and effects that are inside, behind and above day-by-day contingency (Rullani 2004: 352–53).

On the other hand, the nature of knowledge has also changed in terms of the type of *knowledge as capital* that the person (citizen, worker, practitioner, entrepreneur) can own and exploit.

Enzo Rullani has vividly described the shift from the traditional form of intense personal knowledge achieved through conventional individual learning (2004: 21) to socially distributed and fragmented knowledge (2004: 23), or even to exclusive proprietary knowledge as an asset aimed at producing profits (2004: 33–35).

Additional questions are constantly emerging about when addressing not only knowledge construction and legitimacy but also its effective use, fragmentation, dissemination and transmission, and its exploitation variably depending on the change in nature that may invest personal knowledge versus social knowledge, or shared know-hows versus exclusive ones.

2. Scholarly research and design doctorates: The Italian case

Here I will proceed by relating the question of cognitive abilities to the process of knowledge construction that was generated along the institution of Ph.D. programmes in design in Italy.

The general introduction of research doctorates in the Italian university system dates back to the 1980s. The first doctorate in the discipline of industrial design started a decade later, in 1990, at Politecnico di Milano. With the institution of the third academic level the process of formalization of theory and practice of research in design was initiated. At the same time, it was recognized for the first time that design research was a matter of teaching and learning within the academic community. Doctoral training was ultimately intended to provide a qualifying license for the design research profession.

In the early 1990s the expression *design research* was in the making, although anchored to the conventional categories of basic and applied research to be potentially related to R&D (Pizzocaro 2010). Since then, Italian doctorates in design have been named in various ways: doctorate in industrial design; industrial design and multimedia communication; design *tout court*; design sciences; architecture and design; environment, design and architecture; and planning, design and technology of architecture, etc. Such doctorates may intersect research activity in the demanding specializations of product and engineering and in the more intangible areas of information, interaction, communication and visual design. It is also implied that a doctorate programme may, if necessary, integrate or coordinate the different – although complementary – trajectories of engineering design, architecture design and industrial design.

Current Italian Ph.D. programmes in design – activated in main state polytechnics or universities in Milan, Venice, Florence, Genoa, Turin, Rome, Naples, Palermo, etc. – concern original research and they are a combination of taught courses and hands-on work (although programmes may vary considerably

depending on locally based *curricula*). In general, doctoral students and supervisors are expected to work closely together and doctoral students may learn *by doing* through guidance. The practices of research activity at the doctoral level have grown in relevance and dissemination and they are abundant at present. Research outcomes are usually well grounded and robust. Conversely, the results may be uncertain whenever engagement between the student and faculty or supervisors is not dynamic and reciprocal. In worst cases, poor graduation – whenever occurring – is mainly motivated by lack of adequate training in scholarly research processes; poor or unrigorous experience of quantitative, qualitative and comparative research methods; and – above all – little or no advanced understanding of theoretical framework underpinnings for design research.

2.1. From searching to learning how to perform research in design

Since the beginnings, Italian design doctorates have been addressing a number of core questions about the purpose of doctoral design research, its use and application, its function in society at large and in some cases its links to the local territory. Approaching design research once raised (at the time of its inception) and still keeps on raising extraordinary challenges. These came about due to the unusual nature of design research as a field of inquiry. As Friedman summarized:

> The foundation of design theory rests on the fact that design is by nature an interdisciplinary, integrative discipline. The nature of design as an integrative discipline places it at the intersection of several large fields. In one dimension, design is a field of thinking and pure research. In another, it is a field of practice and applied research.
>
> (Friedman 2003: 508)

The practical applications of design may engage technology and engineering, the arts, social and behavioural sciences, and human professions. Each of these has dimensions of theory in addition to dimensions of application and practice:

> Design is the entire process across the full range of domains required for any given outcome. The field organized around design can be seen as a profession, a discipline, and a field. The profession of design involves the professional practice of design. The discipline of design involves inquiry into the plural domains of design. The field of design embraces the profession, the discipline, and a shifting and often ambiguous range of related cognate fields and areas of inquiry.
>
> (Friedman 2003: 508)

Around the early 2000s, Italian Ph.D. programmes founded in the 1990s progressively began to integrate revised *curricula*, advocating a progressive re-arrangement from still non-formalized searching in design to learning how to perform research in design. New frameworks have currently opened up on the conceptual shift from subjective individual reflection to shared and collaborative ways of research; from informal training (demanded to the supervisors) to formally taught learning (related to research approaches, methods and tools); from *identifying* areas of research to *building* research questions. Three

major factors prompted the revision of Ph.D. programmes at a national scale: infrastructural changes in the Italian national higher education system; inadequacy of the former doctorates to cope with the requirements of the demands of design research; and critical and theoretical developments arising from the international debate on the form and nature of Ph.D. programmes in design.

A substantial change had occurred: approaching and exploring design research had shed light on the nature of design practice and its relationship with the emergent nature of design research itself. Different research frameworks were being explored, justified and supported in tentative *designerly* ways. The approach to design research through the design project was becoming a prominent issue, thus entering the international debate where different terms – project-grounded research, project-driven research, research through design, Ph.D. by project, *ricerca progettuale*, *recherche-projet* – prompted to ground design research in practice, where practice was to be considered as a terrain and medium of study. The need for further understanding of the underpinning principles of this approach to design research was considered the renewed conceptual trajectory of the doctorates under revision. Research through the design project was progressively leading towards improved definitions of *designerly* ways of researching, presumably destined to consolidate a forthcoming locally distinct intellectual culture.

2.2. The lack of contextualized theories of academic research in design

During the following years the development of design doctorates in Italy widely implied evolving frameworks for the educational system of research and innovative third-level taught components (Pizzocaro 2003a, 2003b, 2004, 2010). Moreover, renewed practices of training for the research profession started to be adopted. Nevertheless, the relative vagueness of an effective and robust locally situated theoretical framework for research, and the inherent lack of contextualized theories of academic research in design, has persisted and it is still a matter of critical reflection. Such a weakness seems all the more critical when considering that – in terms of theory and practice of design as a discipline and profession – the Italian culture of design has largely spread as a distinguished point of reference over time. Notwithstanding the fact that the research doctorate in Italy is a consolidated experience, it has been observed that:

> […] more than a quarter of a century since its inception, there is still no network for the enhancement of the various doctoral curricula, nor adequate visibility of the outcomes obtained both in terms of knowledge construction for the discipline and in terms of design research practice.
>
> (Riccini 2016: 15, translation author's own)

The National Forum of Doctorates in Design is partially trying to fill this gap. Starting from 2013, the three consecutive editions of the forum have been organized by Raimonda Riccini for the Doctoral curriculum of Design Sciences in Venice and held within the Ph.D. School of the IUAV (University Institute of Architecture, Venice). The efforts from other doctorates attempting to lend visibility to their internal research are taking a similar direction, although with more localized effects. This is the case, for example, of the Ph.D. programme in Design at Politecnico di Milano, which presents new doctoral dissertation outcomes once a year, with an open initiative now on its eighth edition.

Similar ends are attained by doctoral research dissemination at a national scale (Marzo and Fabian 2015).

In the meantime, the international debate at large on doctoral research in design produced a conspicuous heritage of theoretical and practical knowledge, with interpretive and constructive foundations (Friedman 1997; Buchanan et al. 1999; Durling and Friedman 2000; Friedman 2000; Durling 2002; Durling and Sugiyama 2003; Poggenpohl and Sato 2003; Margolin 2010).

In the original contexts in which they were elaborated, a number of founding principles were not intended as granitic pillars. Rather, they inspired advances to shape and nurture design research in the early progress from a magmatic state to its formalized academic disciplinary status.

Italian doctorates in design have surely proved to be permeable and reactive to the main theoretical inputs and reflections materializing in the international debate, as the ones branching – for example – from the many editions of the biennial *Doctoral Education in Design* conference, started in 1998 (Buchanan et al. 1999). Local doctoral communities in Italy have certainly reworked and developed circulating ideas in advanced and original ways. However, they have partially taken the side of an inertial alignment to outer design research frameworks, borrowing useful and inspiring constructs and theoretical categories mainly elaborated in external academic contexts, based on their own design culture and background. Italian research communities still often refer to the pedagogical and research categories developed by Frayling (1993: 1–5), although originally introduced by Read (1943); to the progressive re-elaboration of the 'for, in and through design' categories (Findeli 1999: 2; Friedman 2008: 156–57); to the interpretation of the notions of epistemology, praxeology and phenomenology of design (Cross 1999, 2001, 2006).

To some extent, the Italian context of scholarly research in design has instilled an insufficiently proactive local contribution to research theory construction. This is the reason why early research concepts and theory perspectives – while evolving in the several contexts of origin (as in Cross 2006; Dorst 2008; Poggenpohl and Sato 2009; Koskinen et al. 2011; Vaughan and Tonkinwise 2013; Dorst 2015; Findeli 2015; Redström 2017) – seem to have somehow crystallized in the milieu of Italian doctorates.

2.3. Circumstances of rhetorical crystallization

Among the constructs most invested by this process of rhetorical crystallization I shall include the triad 'research for, on and through design' (Frayling 1993: 1–5; Archer 1995: 11–12; Findeli 1999: 2; Friedman 2008: 156–57). The expression 'research through or by design' – *ricerca progettuale, ricerca attraverso il progetto* or *ricerca-progetto* in Italian – is frequently used in Italian doctorates as a fixed, almost pro forma terminology. However, it remains not only critical in its theorization but also variable and limited in its specimens. Moreover, the extent to which and how the research activity may inform and model the design process is still arguable. In fact, it has been pointed out that:

> […] research through design is not a formal methodological approach with a particular epistemological basis. Instead, it is a foundational concept for approaching inquiry through the practice of design; further, it has been subjected to multiple articulations and interpretations both by individuals and by institutions.
>
> (Durrant et al. 2017: 3)

At the same time, the methods of design research are increasingly absorbing and flexibly integrating extra-disciplinary knowledge; new forms of design knowledge are resulting from the transfer of heterogeneous extra-disciplinary know-how; heterodox redundancies in research methods are being transferred from other disciplinary fields; unprecedented ways of freedom from the disciplinary specialties of design are allowed and solicited.

The general question of giving substance and validity to an interdisciplinary or multidisciplinary or transdisciplinary design knowledge derived from multiple research trajectories has become recurrent. To make this forthcoming knowledge operationally rigorous, systematically applicable, communicable and reproducible in research remains a critical front line in national doctorate programmes.

The still *provisional* use of the expression 'research through or by design' in Italian doctorates should therefore be stigmatized. When handled as a sort of brand to label doctoral dissertations or research plans, this use expresses the inertia of an *empty* theoretical framework, deprived of the problematic burden that it brings with itself. As Friedman observes:

> The phrase 'research by design' is widely used, but it has not yet been defined. […] Instead, they adopt a misunderstood term for its sound-bite quality, linking it to an ill-defined series of notions that equate tacit knowledge with design knowledge, proposing tacit knowledge and design practice as a new form of theorizing.
>
> (Friedman 2008: 157)

Of course the goal for a concerned research community is not simply to fruitfully adopt, adapt or cross-fertilize borrowed theoretical categories. The aim is to move forward in engaging multiple reverse voices aimed at enriching and progressing theoretical reflection as a whole. Not only accordance and adaptation to shared thinking, but also misalignments and distinctive views may properly and profitably help fuel research advancements.

2.4. Infusing design research training with a reflective dimension

The presumed lack or weakness of theoretical sets is partially mirrored by the critical aspects that seem to motivate the delayed Italian contributions to theories of design research method, methods and methodologies. Design doctorates in Italy have been stimulating a rich, thriving and very proactive research activity for about three decades, with rapid growth recorded especially in the past decade. An energetic and dynamic practice of scholarly research may happen to be carried out even in the absence of available coherent and satisfactory explanatory frameworks. Within doctoral *routine* activity the expected theoretical rigour concerning differences between method, instrument, approach and programme may appear to be negligible. It is therefore not surprising that not only doctoral freshmen but also advanced Ph.D. candidates may happen to perceive or understand a research *method* and a research *tool* as interchangeable, not only from the lexical point of view: the shift towards the exuberance of the stratified practice of heterogeneous research tools and protocols to be nestled in the design process (ranging – just to name a few – from case studies to action-research, ethnographies, questionnaires, interviews, focus groups and in general the whole *apparatus* derived from the social sciences, alongside the more traditional analysis and field observation,

experiments, data collection, bibliographic research, and historical, quantitative and statistical analysis) explicitly reproduces the current domain of 'multi-method research' (Muratovski 2016: 40). In turn, conventional methodological approaches to design research tend to fade into the complex of interdisciplinary dynamics, where even the apparently exclusive employment of qualitative, quantitative or comparative methodologies tends to be spurious.

This is why I deem it is worth emphasizing that a robust theory-based methodological mindset may be recommended for research novices to understand the implications of a research activity that must be declined in the plural. Such a recommendation implies the need for increased learning tools and *curricula* urging the reflective side jointly with *hands-on* training.

Design research continues to have numerous forms and directions that can cross, transcend and transfigure disciplinary boundaries. As recalled a decade ago by Sanders, it still applies at present that 'Design research is in a state of flux. […] It is currently a jumble of approaches that, while competing as well as complementary, nonetheless share a common goal: to drive, inspire, and inform the design development process' (2008: 1).

Design researchers are more and more versatile researchers asked to navigate interdisciplinary domains, arrange multidisciplinary perspectives and pursue transdisciplinarity (Jantsch 1972). Interdisciplinary collaboration, cross fertilization, analogies and metaphorical procedures, research interplay or knowledge transfer are among the recurrent expressions indicating possible tools to manage intersections among different fields of knowledge without renouncing an anchorage to peculiar design aims (Pizzocaro 2016: 389).

Not surprisingly, design researchers are facing the condition where – amidst globalization and digital proliferation – the alterity of a design alterdisciplinarity or undisciplinarity is experienced 'as the most effective approach for the future of design' (Bremner and Rodgers 2013: 9).

A robust theoretical *habitus* is thus intended as a design researcher's requisite to be able to 'understand other disciplinary approaches to research; their internal presumptions, accepted processes, assessments of validity, and limitations' (Poggenpohl 2015: 44), and to clearly face and manage the differences between multiple languages of research, emerging research domains and varying routes in the search navigation. Such an equipment can support design researchers when challenged by modes of practicing academic research that need to be effectively, clearly, explicitly shared among peers, possibly avoiding the misunderstandings and pitfalls of the turbid depths of research itself. Along with Poggenpohl's warnings, it could be presumed that due to a weak or a missing theoretical framework not only does design research risk to be misrepresented in definition and consequent action, but it might also be essentially misunderstood. Within the limits of a 'muddy understanding' scholarly design research risks to be seen '[…] as a threat to creativity, or as a formula to fill out yielding useless information but completing some requirement' (2015: 47).

OPEN CONCLUSION

Theory-supported mindsets for design researchers are also claimed to be functional to better shape the forms of collaboration between disciplines that are generating hybrid professionalisms in design research.

I recall the relevance of a critical glance at weaknesses and opportunities envisaged by the concept of undisciplinarity, with which the definitive breakaway

from the structure of a discipline of reference is foreseen. The practice of design research is already projected far beyond the conventional borders of design as a technical and creative discipline. It also widely exceeds the long-established interdisciplinary intersections between design and engineering, architecture, art, social sciences and economics. To a certain extent the design profession is now expected *by default* to be re-set depending on the individual design cases and issues that generate direct questions to heterogeneous fields of knowledge. The 'undisciplined researcher' (Rodgers and Bremner 2011: 31) is already expected to experience a freed professional practice, which shifts from being disciplinarily founded to being 'issue- or project-based' (Bremner and Rodgers 2013: 12).

This relevant shift in the researcher nature and role implies well-trained *reflective* abilities to intertwine with operating procedures, methods and modes extracted from heterogeneous and malleable research practices; to responsibly generate and make design knowledge and research knowledge circulate in the name of disciplinary anomie;[4] and to shape the stratified role of the creative talent/researcher as a strategist and integrator, or rather the prototype of a mobile designer in the translational territory that transfigures or melds disciplines. This is not a hypothetical professional figure: it fully embodies the performances and tasks of the current designer as cultural interpreter (Kimbell 2011: 287), design innovation catalyst (Martin 2011; Wrigley and Bucolo 2012; Wrigley 2016) and translational developer (Norman 2010: 9–12), expressing the hybrid idioms of professional research figures expected to connect research domains by *conceptually* priming design actions inside and outside disciplinary and practice borders.

4. The word *anomie* comes from the Greek word *ἀνομία*, without law, lawlessness, normlessness. The term is composed of the privative alpha prefix *a* ('without') and *nomos* ('law'). As an extended concept it may imply instability resulting from a breakdown of standards and values.

REFERENCES

Archer, Bruce (1995), 'The nature of research', *Co-Design*, January, pp. 6–13.

Bourdieu, Pierre (1979), *La Distinction*, Paris: Éditions de Minuit.

Bremner, Craig and Rodgers, Paul A. (2013), 'Design without discipline', *Design Issues*, 29:3, pp. 4–13.

Buchanan, Richard (1999), 'The study of design: Doctoral education and research in a new field of enquiry', in R. Buchanan, D. Doordan, L. Justice, and V. Margolin (eds), *Doctoral Education in Design 1998: Proceedings of the Ohio Conference*, The School of Design, 8–11 October 1998, Pittsburgh: Carnegie Mellon University, pp. 1–29.

—— (2001), 'Design research and the new learning', *Design Issues*, 17:4, pp. 3–23.

Buchanan, Richard, Doordan, Dennis, Justice, Lorraine and Margolin, Victor (eds) (1999), *Doctoral Education in Design 1998: Proceedings of the Ohio Conference*, The School of Design, 8–11 October 1998, Pittsburgh: Carnegie Mellon University.

Cross, Nigel (1999), 'Design research: A disciplined conversation', *Design Issues*, 15:2, pp. 5–10.

—— (2001), 'Designerly ways of knowing: Design discipline versus design science', *Design Issues*, 17:3, pp. 49–55.

—— (2006), *Designerly Ways of Knowing*, London: Springer.

Dorst, Kees (2008), 'Design research: A revolution waiting to happen', *Design Studies*, 29:1, pp. 4–11.

—— (2015), *Frame Innovation: Create New Thinking by Design*, Cambridge, MA and London: The MIT Press.

Durling, David (2002), 'Discourses on research and the Ph.D. in design', *Quality Assurance in Education*, 10:2, pp. 79–85.
Durling, David and Friedman, Ken (eds) (2000), *Doctoral Education in Design: Foundations for The Future*, Stoke-on-Trent: Staffordshire University Press.
Durling, David and Sugiyama, Kazuo (eds) (2003), *3rd DED Tsukuba: Proceedings of the Third Conference Doctoral Education in Design*, Tsukuba: Chiba University and University of Tsukuba.
Durrant, Abigail C., Vines, John, Wallace, Jayne and Yee, Joyce S. R. (2017), 'Research through design: Twenty-first century makers and materialities', *Design Issues*, 33:3, pp. 3–10.
Findeli, Alain (1999), 'Introduction', *Design Issues*, 15:2, pp. 1–3.
—— (2015), 'La recherche-projet en design et la question de la question de recherche: Essai de clarification conceptuelle', *Sciences du Design*, 1:1, pp. 45–57, https://www.cairn.info/revue-sciences-du-design-2015–1–page-45.htm. Accessed 3 December 2018.
Foray, Dominique (2006), *L'economia della conoscenza* (*Knowledge Economics*), Bologna: Il Mulino.
Frayling, Christopher (1993), 'Research in art and design', *Royal College of Art Research Papers*, 1:1, pp. 1–5.
Friedman, Ken (1997), 'Design science and design education', in P. McGrory (ed.), *The Challenge of Complexity*, Helsinki: University of Art and Design UIAH, pp. 54–72.
—— (2000), 'Form and structure of the doctorate in design: Prelude to a multilogue', in D. Durling and K. Friedman (eds), *Doctoral Education in Design: Foundations for the Future*, *Proceedings of La Clusaz Conference*, 8–12 July, Stoke-on-Trent: Staffordshire University Press, pp. 369–76.
—— (2003), 'Theory construction in design research: Criteria: approaches, and methods', *Design Studies*, 24:6, pp. 507–22.
—— (2008), 'Research into, by and for design', *Journal of Visual Arts Practice*, 7:2, pp. 153–60, https://www.academia.edu/11309609/Friedman._2008._Research_Into_By_and_For_Design. Accessed 3 December 2018.
Galle, Per (2018), 'Elements of a shared theory of science for design', *Artifact: Journal of Design Practice*, 5:1, pp. 1.1–1.32, https://www.ingentaconnect.com/content/intellect/AJDP/2018/00000005/00000001/art00003#. Accessed 3 December 2018.
Kimbell, Lucy (2011), 'Rethinking design thinking: Part 1', *Design and Culture*, 3:3, pp. 285–306.
Koskinen, Ilpo, Zimmerman, John, Binder, Thomas, Redström, Johan and Wensveen, Stephan (2011), *Design Research through Practice from the Lab, Field and Showroom*, Waltham, MA: Elsevier and Morgan Kaufmann.
Jantsch, Erich (1972), 'Towards interdisciplinarity and transdisciplinarity in education and innovation', in G. Berger, A. Briggs and G. Michaud (eds), *Interdisciplinarity: Problems of Teaching and Research: Proceedings of seminar on Interdisciplinarity in Universities*, Paris: Organization for Economic Cooperation and Development (OECD), pp. 97–121.
Longo, Giuseppe O. (2001), 'La vecchia scienza è al tramonto, ovunque si impone la tecnologia' ('The old science is at sunset, wherever technology is imposed'), *Telèma*, Anno VII:26, pp. 18–21.
Margolin, Victor (1991), 'Design studies and the education of designers', *Temes de Disseny*, 6, pp. 37–54, https://www.raco.cat/index.php/Temes/article/view/29202/40576. Accessed 11 April 2019.

—— (2010), 'Doctoral education in design: Problems and prospects', *Design Issues*, 13:2, pp. 70–78.
Martin, Juan Carlos De (2017), *Università futura Tra democrazia e bit* ('Future university between democracy and bits'), Torino: Codice.
Martin, Roger (2011), 'The innovation catalysts', *Harvard Business Review*, 89:6, pp. 82–87.
Marzo, Mauro and Fabian, Lorenzo (eds) (2015), *Atti del primo convegno nazionale dei dottorati italiani dell'architettura, della pianificazione e del design* (*Proceedings of the First National Conference of Italian Doctorates in Architecture, Planning and Design*), Università IUAV di Venezia, 19–20 November 2014, Siracusa: LetteraVentidue Edizioni.
Muratovski, Gjoko (2016), *Research for Designers: A Guide to Methods and Practice*, Los Angeles and London: Sage.
Norman, Donald A. (2010), 'The research-practice gap: The need for translational developers', *Interactions*, 17:4, July and August, pp. 9–12.
Pizzocaro, Silvia (2003a), 'Doctoral research as a learning hub - Perspectives from a Ph.D. programme in progress', in D. Durling and K. Friedman (eds), *3RD DED: Third Conference Doctoral Education in Design*, Tsukuba, 14–17 October, Tsukuba: University of Tsukuba-Chiba University, pp. 113–23.
—— (2003b), 'Re-orienting Ph.D. education in industrial design: Some issues arising from the experience of a Ph.D. programme revision', *Art, Design & Communication in Higher Education*, 1:3, pp. 173–82.
—— (2004), 'Learning design research: Outlining a context. Critical issues derived from the Politecnico di Milano Ph.D. research curricula in industrial design', *Journal of Design Research*, 4:1, pp. 48–74.
—— (2010), 'The in-progress status of doctoral research in design. Reflections from two decades of local doctoral research', in L. Guerrini (ed.), *Notes on Doctoral Research in Design*, Milano: FrancoAngeli, pp. 91–101.
—— (2016), 'Ri-fondamenti del design: interpretare saperi' ('Re-foundations of design: Interpreting knowledges'), in R. Riccini (ed.), *Fare ricerca in design* (*Research Making in Design*), Forum dei dottorati di ricerca in design, 2nd ed., Padova: Il Poligrafo, pp. 382–94.
Poggenpohl, Sharon H. (2004), 'Practicing collaboration in design', *Visible Language*, 38:2, pp. 139–57.
—— (2015), 'Communities of practice', *She ji The Journal of Design, Economics, and Innovation*, 1:1, pp. 44–57, https://www.sciencedirect.com/science/article/pii/S2405872615300204. Accessed 9 April 2019.
Poggenpohl, Sharon H. and Sato, Keiichi (2003), 'Models of dissertation research in design', in D. Durling and K. Sugiyama (eds), *3rd DED Tsukuba: Proceedings of the Third Conference Doctoral Education in Design*, Tsukuba: Chiba University and University of Tsukuba, https://www.id.iit.edu/wp-content/uploads/2015/03/Models-of-dissertation-research-in-design-tsukuba_2003.pdf. Accessed 30 November 2018.
—— (eds) (2009), *Design Integrations*, Chicago: Intellect and The University of Chicago Press.
Read, Herbert (1943), *Education through Art*, London: Faber.
Redström, Johan (2017), *Making Design Theory*, Cambridge, MA and London: The MIT Press.
Riccini, Raimonda (2013), 'Culture per l'insegnamento del design' ('Cultures for design education'), *AIS/Design, Storia e Ricerche*, 1, March, http://www.aisdesign.org/aisd/culture-per-linsegnamento-del-design-2. Accessed 9 April 2019.

—— (ed.) (2016), *Fare ricerca in design* (*Research Making in Design*), Forum dei dottorati di ricerca in design, 2nd ed., Padua: Il Poligrafo.
Rodgers, Paul A. and Bremner, Craig (2011), 'Alterplinarity: The undisciplined doctorate and the irresponsible candidate', *Pre-Conference Proceedings of the Doctoral Education in Design Conference – Practice, Knowledge, Vision*, 22–25 May, Hong Kong: The Hong Kong Polytechnic University, pp. 27–34, https://www.researchgate.net/profile/Paul_Rodgers3/publication/265856765_Alterplinarity_The_Undisciplined_Doctorate_and_the_Irresponsible_Candidate/links/541fdb740cf203f155c26da6/Alterplinarity-The-Undisciplined-Doctorate-and-the-Irresponsible-Candidate.pdf. Accessed 9 April 2019.
Rullani, Enzo (2004), *Economia della conoscenza. Creatività e valore nel capitalismo delle reti* ('Knowledge economics: Creativity and value in capitalism of networks'), Rome: Carocci.
Sanders, Elizabeth B.-N. (2008), 'An evolving map of design practice and design research', *Interactions*, XV:6, November and December, pp. 1–7.
Sartori, Giovanni (1997), *Homo videns*, Bari: Laterza.
Simone, Raffaele (2000), *La terza fase. Forme di sapere che stiamo perdendo* (*The Third Phase: Forms of Knowing We Are Losing*), Bari: Laterza.
Vaughan, Laurene and Tonkinwise, Cameron (eds) (2013), *Critiquing the North American Design Ph.D. A Symposium Exploring the Instititutional Frameworks for Practice-Transforming Design Research*, 5 October, Briefing papers, Pittsburgh: Carnegie Mellon University, School of Design, https://phddesigncrit.files.wordpress.com/2013/04/critiquing-the-north-american-design-phd.pdf. Accessed 3 December 2018.
Wrigley, Cara (2016), 'Design innovation catalysts: Education and impact', *She ji The Journal of Design, Economics, and Innovation*, 2:2, pp. 148–65, https://www.sciencedirect.com/science/article/pii/S2405872616300399. Accessed 3 December 2018.
Wrigley, Cara and Bucolo, Sam (2012), 'New organisational leadership capabilities: Transitional engineer the new designer?', in E. Bohemia, J. Liedtka and A. Rieple (eds), *Leading Innovation Through Design: Proceedings of the DMI 2012 International Research Conference*, Boston: Design Management Institute, pp. 913–22.

SUGGESTED CITATION

Pizzocaro, S. (2018), 'Theory as *habitus* for scholarly design research', *Artifact: Journal of Design Practice,* 5:2, pp. 1.1–1.16, doi: 10.1386/art_00001_1

CONTRIBUTOR DETAILS

Silvia Pizzocaro, born in Milano, holds a Master of Science in Architecture and a Ph.D. in Industrial design. She is full professor of Industrial Design at Scuola del Design of Politecnico di Milano, where she has been former chair of the Bachelor programme in Product design and of the Master of Science in Product design for innovation for the years 2012–15. A current member of the Board of Professors of the Ph.D. programme in Design, her research activity is embedded in the Department of Design, section *design and cultures.* Over the years she has worked at the intersection of product design theory, design research culture and doctoral education in design. For more than two decades she has worked with design theory and research methods for product design. Recent books which she has written or edited include *Introduzione agli studi*

sull'utente. Conoscere gli utenti tra ricerca e design dei prodotti (*Introduction to User Studies: Getting to Know Users between Research and Product Design*) (Milano: Unicopli, 2015) and *Artefatti concreti. Temi di fondamento per il design di prodotto* (*Tangible Artifacts: Basic Issues for Product Design*) (Milano: Unicopli, 2016).

Contact: Scuola del Design, Department of Design, Politecnico di Milano, via Durando 38/a, 20158 Milano, Italy.
E-mail: silvia.pizzocaro@polimi.it

https://orcid.org/0000-0002-0478-7950