REDEFINING INDUSTRIAL DESIGN: RESPONDING TO EMERGING MODES OF PRACTICE

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ABSTRACT

The practice of Industrial Design is typically defined as *the design of products for mass manufacture.* Whilst this is a traditional endeavour for the Industrial Designer, such a narrow definition does not accurately represent the new innovation landscapes in which contemporary practice is centred. Increasingly Industrial Designers are designing experiences and services that are mediated by tangible, but often non-physical, products. Sitting behind this are agendas for design that lie outside of the manufacturing concern such as, designing for emotion, for social impact, for improved health and well-being, or for pathways towards less unsustainable futures. In this work Industrial Designers draw on a range of methods and discourses that further distance them from manufacturing concerns including inclusive design, design for sustainability, and interaction and data-driven design. Traditional technical and pragmatic orientations are often set aside so that designer can innovate or deal with complexity through speculative and propositional design thinking. Of importance in this shift is the near universal mindset that design decisions ought not impart a negative impact on the environment or society, through an approach to practice that strives to make positive contributions to societal wellbeing.

This paper examines the contestable meanings of Industrial Design defined by professional associations and challenged by designers and design theorists. It explores transitions of practice and the implications of such messaging and counter-messaging on the ways Industrial Design education can be understood; where continuously *re-defining* Industrial Design is itself critical to any pedagogy for future practice.

Keywords: Industrial design, design and innovation, design as an agent of change, design education

1 INTRODUCTION

When Industrial Design practice is considered beyond the particular product typologies (outputs), the industry sectors (clients), and modes of developing transmitting design decisions (methods and techniques) it can be described in a few key ways:

- An inclination towards advocating for people involved across the spectrum of production and usage in order to bring balance to capital and commercial drivers for design
- A capacity to suspend disciplinary expertise in order to draw out the particular needs of end users
- An attentiveness to the implications of design on socio-environmental-institutional stakeholders
- Awareness that they are in-fact designing multiple forms of human and non-human labour in their specification for the production, distribution, use and end of life of products and services
- An approach that is comfortable with ambiguity: where the final design form, and modes of design inquiry, are contextually contingent and respondent to needs uncovered in a process of design.

These core attributes are rarely articulated by professional associations or educational providers that too often tend to conflate motivations *for* practice *with* the outcomes of macro-industry sectors that Industrial Designers are, but one, of many contributing fields of expertise.

The Design Institute of Australia, for instance defines Industrial Design as the practice of developing and preparing products for manufacture, with particular concern for aspects of a product that relates to human usage and product appeal [1]. The Industrial Designers Society of America supports this theme stating that "Industrial Design is the professional practice of designing products…focusing on the appearance of a product…how it functions, is manufactured and ultimately the value and experience it provides for users" [2]. Morris [3] similarly notes that Industrial Design is concerned with bringing artistic form and usability, usually associated with craft design and ergonomics, together to mass-produced goods. These rather arcane definitions position the practice of Industrial Design as singularly

concerned with, and central to, a mass manufacturing system. Critiques of such an orientation are similarly blinkered to the realities of Industrial Design, and with *vonkwo gist,* frequent claims it of being complicit in enabling conspicuous consumption are made - where the designer somehow activates in others' a latent desire for material things despite their better judgement. Here the agency of the designer is elevated from the side of design theory for the purposes of criticism and is positioned as "a contingent practice rather than one based on necessity" [4], that enables "a dangerous breed" [5].

From inside the diversity of Industrial Design practice it is difficult to say whether such orientations have ever really existed – where somehow the designer inside a mass manufacturing context has such distinct authority and influence - or if such declarations are in the service of aims other than speaking to, or of practice. From the outside such rhetorical definitions do however matter, and care and acuity in giving adequate representation to the inherent diversity of the profession is of utmost importance.

Design education and practice walks a difficult line between such definitions and counter definitions, perhaps finding and providing value in and through the labour of practice to the side of such rhetoric. The image of Industrial Design in practice is wholly insufficient given the scope and breath of contemporary practice. Any universalised claim of the inflection of Industrial Design practice, constructed either around product typologies, markets or generic notions of industries is fraught with over simplification – lacking both an appreciation for the character and motivations for practice, and the spread of application across multiple sectors in which Industrial Designers work to help realise value.

Industrial Designers work in realms outside of the material and manufactured and are design-augmenting experiences and developing services that may or may not be mediated by material and technological things. This work sits with perhaps more traditional modes of designing products for serial production, but new modalities bring to the older, new values and new capabilities.

This shift is not recent, although the definitions of Industrial Design that still frame notions of practice may suggest that it is, or that it somehow isn't Industrial Design. Indeed, a conceptual move away from older models of practice where the designer is oriented at the subjective centre of design decision making on behalf of a client manufacturer, could be seen as Industrial Designers demonstrating their actual agency in practice. We now see a modality where the designer positions themselves in various roles: of an activist, technologist, artist, and sociologist contributing critical know-how to the design of both products and services that seek to improve our socio-technical systems. This material and immaterial approach to practice is at once disciplinary (in its modes of delivery), inter-disciplinary (in its modes of engagement and research) and extra-disciplinary (in the concerns it is preoccupied with, and the impacts it strives to make). It has a tendency towards higher degrees of socio-cultural complexity, is very often parametrically determined and data informed, and while it requires high degrees of creativity from the designer, it relies less on internalised notions from the designer. In this context, processes of creativity for the Industrial Designer are no-longer framed so heavily by internalised aesthetic precepts such as form or feel, and design activity is significantly research led and deeply stakeholder engaged.

2   A VERY SHORT HISTORY OF INDUSTRIAL DESIGN

In the English-speaking world Industrial Design's origins lie in the establishment of post compulsory technical education that sought to combine artisanal skills with the technical knowledge to improve the quality of machine made and serially produced goods. A project of progressives in the British parliament, new schools of design were initially established in London in the late 1830's (based on well-established Irish and Scottish industry-run schools) in response to political pressures. These pressures included recommendations that had come out of the factory reform acts, the parlous state of manufacturing cities, a growing middle class and significant trade pressure by similarly industrialising economies in continental Europe and North America. Schools of Design were rapidly established across Britain and its colonies from the 1840s to 1870's teaching a wide range of design for manufacture capabilities pertinent to their locality. Central to this model of education was a fully government funded peak studies stream called the National Scholars. This study stream taught two types of new professionals: Industrial Designers who would contribute high level design capability in industry and Design Masters who would take up senior teaching posts in the growing network of schools of design. Now known as the South Kensington Model, this way of structuring education was incredibly successful and as a strategy for building national design for manufacturing capability was either adopted and modified by educational institutions up until the mid-20th Century including the Deutscher Werkbund and later the Bauhaus School in Germany. These schools envisaged the Industrial Designer as an embedded employee inside manufacturing enterprises with specialisation in specific products, materials,

processes and markets. Used alongside other definitions such as "consumer engineer" "industrial artist" the professional term of 'Industrial Design' shifted in and out of use from the mid 1830's to finally become commonplace in North America from the 1920's [6, 7]. With a new generation of consumer product designers led by Walter Dorwin Teague, Norman Bel Geddes and Raymond Loewy and with E. E. Caulkin's treatise on consumer engineering [8] inspiring a particular manifestation of North American Industrial Design, new values of styling and designed obsolescence entered into practice [9] and dedicated Industrial Design programmes began emerging in the USA from the mid-1930s. The interwar period saw the emergence of the *consultant* Industrial Designer in the English-speaking world and in Europe with Wilhem Wagenfeld, Alvar Aalto and Gio Ponti and others developing innovative products for a growing international consumer market. Schools focusing on this new consultant type Industrial Designer proliferated in the post-war WW2 period, which induced notions of practice echoed today.

3   DEFINITIONS OF INDUSTRIAL DESIGN PRACTICE

By 1959, the newly founded International Council of Societies of Industrial Design (ICSID) noted "an Industrial Designer is one who is qualified by training, technical knowledge, experience and visual sensibility to determine the materials, mechanisms, shape, colour, surface finishes and decoration of objects which are reproduced in quantity by industrial processes…the designer is deemed to be an Industrial Designer when the works which are produced to his drawings or models are of a commercial nature, are made in batches or otherwise in quantity, and not personal works of the artist craftsman" [10] The establishment of the Ulm School in the same year in many ways upended such a sentiment, and after an initial period of attempting to resurrect the values and definitions of design of the oft lionised but problematic Bauhaus school, came the realisation that art-like design could not attend to the complexities of the modern world. In this phase design education challenged stylistic practice orientations by demanding design declare and use methods befitting the technological, social and economic complexity of the industries that they serviced: a resurgence of the systems type thinking inherent in Industrial Design practice from the British National Scholars programme over a century earlier.

A decade later, ICSID was collaborating on developmental projects with UNESCO, using design for the betterment of the human condition, leading Tomas Maldonado (a head of the Ulm School and key proponent in the design methods movement) to propose a new definition, "Industrial Design is a creative activity whose aims is to determine the formal qualities of objects produced by industry…not only the external features but principally those structural and functional relationships which convert a system to a coherent unity both from the point of view of the producer and the user…embracing all aspects of human environment, which are conditioned by industrial production" [10]. Although this definition attempted to state the need for notions of user-centrism and an emerging social design practice. At this juncture the Industrial Design narrative was quite reasonably based on the premise of industrial production given this was the globally dominant economic strategy to lift populations out of poverty and into largely Anglo-American notions of peace and prosperity through materialism. Despite this particular western inflection - where design creativity and technique were positioned as a means to socio-commercial ends - other narratives chipped away to add new definitions and demands on Industrial Design practice. A growing *design for environment* movement drew on the call for Industrial Design to be evidenced based and systematic, while other designers embraced the futility of the consumption production cycle and amplified design into a new kind of art practice (e.g. Italian anti-design, Memphis etc). Peak organisations like the British Council and ICSID advocated for greater appreciation for the strategic capacity of Industrial Design, and new schools of Industrial Design (often based on ULM principles) were established through the then developing world including Latin America, Asia and India. Contested ideas of how Industrial Design might be best defined have remained a preoccupation ever since, and sub-discourses have inundated the practice for the past half century.

In 2015 the newly named World Design Organisation (emerging from ICSID) provided a renewed definition of Industrial Design as "a strategic problem-solving process that drives innovation, builds business success, and leads to a better quality of life through innovative products, systems, services, and experiences" [10]. Offering a less singular definition, the WDO notes that Industrial Design "is a trans-disciplinary profession that harnesses creativity to resolve problems and co-create solutions…" and that designers are "strategic stakeholders in the innovation process." This acknowledgement of the enlarged field of practice is critical as Industrial Design functions in the maintenance of, and transition from

technical pragmatist roles, to undertake value adding across complex societal and environmental spheres in sectors often outside of mass manufacturing.

4 AGITATION: CONTESTING THE ROLE OF INDUSTRIAL DESIGN

"There are professions more harmful than Industrial Design, but only a few of them" [5]. This confrontational statement by Victor Papenek in *Design for the Real World* responds to the perception of Industrial Design having a fundamental role in the emergence of consumerism, as an industry intent on stimulating demand, regardless of the need of the consumer [11], positioned (by Papenek and others) as an important social and economic force for the perpetuation of consumerism as a way of life.

In most developed or developing economies in the second half of the 20th Century government strategy centred on driving their economies forward through the growth of their manufacturing bases, the local consumption of manufactured goods, and the export of goods made to other places. Designers participated in these strategies through the creation of products that indicated particular lifestyle choices and that ultimately "demand the acquisition of goods as a measure of progress and status" [12] leading economist Victor Lebow to state "Our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfaction and our ego satisfaction in consumption. We need things consumed, burned up, worn out, replaced and discarded at an ever-increasing rate" [13]. Despite Lebow's warning (in 1955) it is only recently that we have started to understand and react to the severe consequences of unconstrained consumerism and the impact of consumerism driven globalisation on the environment, living standards, communities, and societies. Commercial Industrial Design has been complicit in a design-led consumer culture where "the role of design in contemporary society is essential in reproducing a socio-economic system that assumes limitless growth and a continual state of desire" [14] and buyer behaviour was manipulated through planned, technical, functional, or stylistic obsolescence, disruptive technology and by 'consumer engineering'-adding value to increase desirability [15].

Papanek's advocacy for new design agendas that could fuel improved societal balance, echoed many of William Morris's concerns a century earlier, but in the decades since, definitions of Industrial Design have tended to convey the role as subordinate to business strategies and a market-driven approaches [16]. A proclivity to be self-absorbed in its own culture, besotted in the power bestowed upon it by commercial interests, and assured of its ubiquitous presence in consumers' lives [17]. Morelli notes "the traditional disabling (*and product-centred*) approach offers very few opportunities to improve the living conditions of underserved populations" [16], yet this was always the intent of Industrial Design.

Calls, such as Margolin's, for designers to "envision and give form on material and immaterial products that can address human problems on broad scale and contribute to social well-being" [4], have similarly impacted on the practice of Industrial Design. Paradigm shifts have occurred, leading Industrial Design away from product design for conspicuous consumption, towards discourses of practice that are societal and environmentally focused, resulting in new opportunities for a broader contribution, new currencies of value adding, and importantly a professional culture of contesting definitions of the practice.

As a discipline formed through education, it is perhaps no surprise that criticism of Industrial Design, and calls for change, have existed since its inception. However, there is also evidence of natural evolution; technological and social change demands a reciprocal degree of change for all professions. Whilst Hummels declares that "the field of Industrial Design is changing…moving towards an intellectual new renaissance based on human values" [18], in fact Industrial Design was framed around the need for human values to intercede to improve the quality of work and life of the urban populations that worked in and amongst manufacturing. Similarly the WDO definition that Industrial Design is *now* "a strategic problem-solving process that…leads to a better quality of life through innovative products, systems, services, and experiences" [10], is precisely the original intent of Industrial Design.

5 NEW PARADIGMS OF PRACTICE

Increasingly Industrial Design is broadening into new and different realms of practice and is attuned to the ephemerality of consumption-led practice and the concern for longer term contributions to society and implications to the environment. In adding new models to the historical model of consumer-led product design for mass manufacture, the profession is perhaps now as diverse as it has ever been. Contemporary concerns have changed the emphases in Industrial Design education, focussing on the capability to make a positive contribution, through user and environmentally focussed themes including:

- design for social impact (design for need – social innovation / socially responsible design)

- design for health and well-being
- design for sustainability (environmental, societal and economic),
- experience design (design for emotion)
- service and systems design
- design interactions (making the otherwise intangible tangible)

Whilst all of these realms may require the design of manufactured products, artefact creation is not *a priori* to strategic or creative problem solving. Industrial Designers may work across these discourses or locate their professional practice in just one, however two critical ontological frames underpin action in all of them: the role of the designer as an advocate or activist and the ways designers now privilege stakeholders in the design process. These two 'ways' of Industrial Design practice are at once ideological and methodological and perhaps offer the most significant step change in meanings for practice since the methods movement and the shift from the designer as 'expressive" to the designer as "systematic".

Alistair Fuad-Luke theorised a particular slice of 'design activism' to make claim of it as an emerging practice in which designers are using "the power of design for the greater good." Advocating for reform from inside design practice and the pursuit of social change through design is widely practiced in the health, sustainability and development contexts and demands quite particular orientations from the Industrial Designer [19]. Fuad-Luke asks "could the creation of well-being and not goods and services, be a new purpose for design?" [17]. Drawing on sentiments from environmental movements Manzini [20] similarly talks about the role of designers as facilitators, as triggers for new social conversations, as members of a co-design team, and also as design activists proactively launching socially meaning design initiatives. If Industrial Design has a role to play as an agent for change, an inclination to working in participatory ways with a co-design mindset seems sensible [21].

Working in this way often involves ethnographic and participatory design processes where the person for whom the design process is intended, assumes the position of '*expert of his/her experience'*, and the designer has learnt to suspend their *expertise* during stakeholder engagement in order to reduce the likelihood of imposed and subjective bias. Whilst the designer still plays a critical role in accomplishing design solutions, codesign/cofuturing displaces the sole expertise and authority of the designer, relying instead on a more cohesive stakeholder relationship. The call for new 'futures' has preoccupied social and sustainability design discourses, perhaps more for the sake of proposition rather than the realisation of tangible change. Morelli suggests that "designers will no longer be proponents of a set of product and services, but rather the facilitators of a system of value co-production" [16], and yet design-led facilitation of systems visioning has become a mainstay of both conventional service and product design.

6   CONCLUSIONS: EDUCATIONAL IMPLICATIONS

Industrial Design as the name for a sphere of professional practice focussed on the design of products to be manufactured using industrial processes, is no longer sufficient to accurately represent the diversity of contemporary practice. Unfortunately, the name, whilst no longer an accurate descriptor of contemporary practice, has historical legacy and embedded associations with the manufacturing and business sectors and thus is problematic to change, even at an educational level.

Some have attempted with educational programmes entitled 'product design' often with and technology or innovation subtexts. Unfortunately, the product design title is restrictive, limiting practice solely to physical products, delineating practice from non-physical outcomes (e.g. service/experience design) and narrowing the field of practice. Adding to the confusion, the term product design has been co-opted by mechanical engineers and others. However, Industrial Design is suggestive of a greater scope of activity. Indeed, it has been suggested that Industrial Designers can in fact be designers of industry [22].

We may have to accept Industrial Design as a title which, although not relevant to all practice, it is useful as an 'umbrella' definition that encompasses a range of differing activities and outcomes, underpinned by the same values and processes, as does Mechanical Engineering (with its speciality subsets of machine dynamics, fluid mechanics, thermodynamics, materials science, structural analysis etc).

There is however a different prospect. If definitions of Industrial Design focus instead on the *meanings* that lie behind Industrial Design practice, then the professional nomenclature need not change; designers that are both grounded in industry and industrious in quite specific way, and with quite noble agendas, bring improvements through the things they design for others. At its heart, Industrial Design provides a more optimistic way of looking at the future by reframing problems as opportunities [10].

Making and technical foundation in Industrial Design education is still important. Whilst we have discussed changing and emerging practice for Industrial Design and have rejected traditional definitions

of practice (where they relate solely to product design for mass manufacture), this does not mean that Industrial Design is now less technical. Industrial Design is still a creative process that is underpinned by a sound foundation in both making and technical understanding imparted through education. For Industrial Design pedagogies, finding new ground in the contestable space that defines the discipline is an important aspect, and whilst student projects may now respond to scenarios and user contexts (rather than product briefs), successful practice is still dependent on a strong understanding of materiality, manufacturing and technical implementation. Whilst increasingly, graduates are selecting career pathways that may not involve artefact design and production, it is familiarity with these processes that enables a greater capability for imagining solutions to 'wicked problems' and global challenges.

Are narrow 'technical' definitions of Industrial Design limiting its appeal as a career choice? It is apparent that an incomplete knowledge of the full breadth of ID practice amongst secondary school educators can constrain career guidance towards Industrial Design and possibly discourage some demographics from considering it. With the range of manifestations of Industrial Design practice, could a reframing of Industrial Design by professional and regulatory bodies have educational recruitment implications? Could a reframing be astute enough to enhance gender, ethic and class diversity amongst the student cohorts; a required outcome if Industrial Design practice is to respond to the needs of diverse global communities?

REFERENCES

[1]   Design Institute of Australia. *Design Industry: Industrial Design*. 2019 [cited 2019; Available from: https://www.design.org.au/designindustry/design-disciplines-2/industrial-design.
[2]   Industrial Designers Society of America. *What Is Industrial Design?* 2019 [cited 2019; Available from: http://www.idsa.org/events/what-id.
[3]   Morris R. *The Fundamentals of Product Design*. 2009: AVA Publishing.
[4]   Margolin V. *Design for a Sustainable World.* Design Issues, 1998. 14(2): p. 83–92.
[5]   Papanek V.J. *Design for the Real World: Human Ecology and Social Change*. 1971, London: Thames & Hudson.
[6]   Slack L. *What is Product Design?* Essential Design Handbooks. 2006, Switzerland: RotoVision.
[7]   Heskett J. *Industrial Design*. 1980: Thames & Hudson.
[8]   Calkins E.E. *The New Consumption Engineer and the Artist*, in *A Philsosophy of Production*, G.J. Frederick, Editor. 1930, The Business Bourse: New York. p. 107-129.
[9]   Andrews T. *Design and consume to Utopia: Where industrial design went wrong.* Design Philosophy Papers, 2009. 7(2): p. 71-86.
[10] World Design Organisation. *Industrial Design Definition History*. 2019 [cited 2019 15 February 2019]; Available from: https://wdo.org/about/definition/industrial-design-definition-history/.
[11] Miles S. *Consumerism as a way of life*. 1998, London: SAGE Publications.
[12] Howard A. *Design Beyond Commodification.* Eye Magazine, 2000. 38(10).
[13] Lebow V. *Price Competition in 1955.* Journal of Retailing 1955.
[14] Whiteley N. *Design for Society* 1993, London: Reaktion Books.
[15] de Vere I., Kapoor A. and Melles G. An Ethical Stance: Engineering Curricula Designed for Social Responsibility, in *International Conference on Engineering Design*, *ICED2011*, Copenhagen, 2011, Design Society
[16] Morelli N. *Social Innovation and New Industrial Contexts: Can Designers 'Industrialise" Socially Responsible Solutions?* Design Issues, 2007. 23(4).
[17] Fuad-Luke A. *Design activism: Beautiful strangeness for a sustainable world*. 2009: Earthscan.
[18] Hummels C. and Frens J. *Designing Disruptive Innovative Systems, Products and Services: RTD Process*, in *Industrial design–New frontiers*, D. Coelho, Editor. 2011, Intech: Croatia. p. 147-172.
[19] Varadarajan S. and Fennessy L. *'Educating for design activism'*, in *Live Projects: designing with people*. 2012, RMIT University Press: Melbourne, Australia. p. 200-213.
[20] Manzini E. *Making Things Happen: Social Innovation and Design.* Design Issues, 2014. 30(1).
[21] Sanders E.B.N. and Stappers P. *Co-creation and the new landscapes of design.* CoDesign, 2008. 4(1): p. 5–18.
[22] DiTullo M. *Thoughts on the Term Industrial Design*. 2014 [cited 2019; Available from: https://www.core77.com/posts/26199/Thoughts-on-the-Term-Industrial-Design.