P/REFERENCES OF DESIGN

PROJECTIVE PROVOTYPE DESIGN: A COLLABORATIVE DESIGN RESEARCH METHOD FOR CO-ANTICIPATING NEIGHBOURHOOD COMMUNITIES' PREFERRED FUTURE URBAN PLACES.

Terence Fenn*[a]

a Department of Multimedia, University of Johannesburg, South Africa
* tfenn@uj.ac.za

DOI: 10.63442/HRGD4857

KEYWORDS | DESIGN RESEARCH, SMART URBAN FUTURES, PROJECTIVE RESEARCH, HUMAN-CENTRED DESIGN

ABSTRACT | This study describes projective provotype design, a novel method for design research which helps address the shortfall between bottom-up, community-centred approaches and the top-down, technology-centred approaches typical of smart city design. As such, projective provotype design utilises the unique knowledge tradition of human-centred design to generate a neighbourhood community's preferences for their smart urban futures and, subsequently, communicates these preferences to a design audience in a manner that is informative, thought provoking and if necessary capable of challenging existing assumptions. Towards this outcome, the study utlises the method of design ethnography to outline key theoretical concerns that impacted the design of the method. This outline is followed by a reflective narrative attesting to the relevance of the method in the applied contexts of co-design project with community members of Westbury, an urban neighbourhood in Johannesburg, South Africa. While the unique method of projective provotype design suggests a robust strategy for the design of smart urban places, responding to the theme of 'ways of living together' the study further suggest how projective provotype design, and design research methods with similar intentions, provide an alternative role for human-centred design; one that bypasses the limitation of human-centred design current emphasis on users, and product development to instead focus on communities and futures research.

1. Introduction

Human-centred design (HCD) has over the last 50 years made significant contributions to the design and implementation of technology into the social world. Of late, HCD practices that leverage human experience to optimise consumption and commercial advantage have become the foci of timeous critique, with numerous voices calling for more nuanced, systemic views of design to emerge (van Velsen, et al., 2022) outside the dominant paradigm of neo-liberal agenda (Escobar, 2018). In this paper, these themes, and a revaluation of HCD are addressed in the context of smart urban futures.

In urban communities in the Global South, tensions emerge between macro-forces of change such as mass urbanisation, rapidly increasing populations, economic stagnation, and climate change (Khatoun & Zeadally, 2016, p. 46); that for many the city remains a colonial construct; and the emergence of technological concepts such as smart cities, and the Industrial Revolution 4.0, which have the potential to improve or worsen these communities' urban futures. Following Fry's recognition of the critical importance of design in constituting a viable future for humanity (2019, p. 159), this paper takes the position that emergent smart urban technologies have the potential to contribute positively to urban transformation in the cities of the Global South. However, for this transformation to occur, it is critical that the design and subsequent implementation of these technologies is considered from the social perspectives of the communities that will live with, and within them.

Smart urban technologies within the construct of Smart Cites are typically conceptualised from the perspective of 'top-down' implementation closely associated with technically inspired innovation and entrepreneurship (Kitchin, 2014, p. 131). There is a growing body of literature and practices that critiques the framing of smart cities as purely technological sites, while offering an alternative 'bottom-up' or citizen-led approach (Cardullo, et al., 2019, p. 55).[1] Problematically, as bottom-up smart city design (SCD) primarily addresses the needs of citizens, interventions can clash with city planning and organisation and ignore the brute reality of macro-forces such as national politics, global economics, and climate concerns (Walravens, 2016, p. 131). The result is that multiple bottom-up projects may occur across a city without any shared goals and potentially conflicting with city planning, each other.

The limitations of an overtly human-centric approach are not unique to bottom-up SCD. In design fields fundamentally concerned with objects and services, a societal agenda is associated with the paradigm of HCD an interrelated set of philosophical, epistemological, and methodological approaches geared towards a consideration of the people who perceive, interpret, use, and live with designed artefacts (Krippendorff, 2000, p. 4). In a similar manner to the relationship between bottom-up and top-down SCD, HCD evolved from, and in contrast to a predominant technological-centred (Giacomin, 2014, p. 607) mindset emphasising technical novelty and performance. However, as evident in its conceptual centrality in fields, such as user-experience, industrial, and service design, HCD has become a dominant design mindset both in terms of practice and education.

While, HCD has proven highly effective for enabling design-led transformation to occur, it is not immune to criticism. First, while HCD often claims to understand and respond to the lived experience of people, in practice HCD is often characterised by poor application and understanding of ethnographic methods (Baskerville & Myers, 2015, p. 28). Second, while advocating a people-first mantra, HCD practices are often deployed towards the manipulation of end-user's emotions and motivations for purely economic concerns. These neo-liberal practices often come at the cost of local knowledge, practices, and culture (Escobar, 2018). Third, HCD's emphasis on human experience as the primary criteria for evaluating the validity of design has become a growing concern as the harrowing effects of climate change become apparent (Russel & Lyndon, 2020, p. 3). Fourth, outside of objects and services deployed in limited user-contexts, HCD struggles to adequately address complex, large-scale systemic problems (Mani-Kandt, 2021). In the

[1] Contributing design fields include urban informatics (McCullough, 2015), community informatics (Day, 2011) and blended spaces design (Benyon, 2014).

remainder of this paper, 'bottom-up' is understood as a HCD approach to SCD, while top-down SCD while highly technological in outlook (Fernández-Añez, 2016, p. 163) also includes priorities such as planning (Dustdar, et al., 2017, p. 249), and delivering services at scale (Khatoun & Zeadally, 2016, pp. 46-47).

Within this broad framing of the relationship between bottom-up SCD, top-down SCD, HCD and technology-centred design, the aim of this paper is to contribute a rich description of an enacted, novel design research method referred to hence forth as projective provotype design (PPD). The intention of PPD is to reflect both a human-centric sensitisation of the aspirational needs of an urban Johannesburg community regarding smart urban technology deployment in their neighbourhood places, and a subsequent meaningful communication of these aspirations to a range of professional designers involved or likely to involved in the design of digitally infused urban environments. In this manner, this research following Walravens' suggestion that focusing on either bottom-up or top-down approaches seldom results in change (2016, p. 132) adopts instead a complementary strategy in which the understandings of HCD inquiry has the potential to inform top-down SCD.

2. Related Work

This strategy is informed by Fry's (2017, p. 175) conceptualisation of metrofitting, which can be understood as utilising "design fictions" grounded in "real imperatives" orientated towards "thinking and projecting with a longer view of the city". Importantly, Metrofitting's design fictions are not directed towards solutioning but rather for anticipating future states and conditions in a relatable and non-abstract manner (Fry, 2017, p. 181). As such, fictional activities of metrofitting are not predictive but rather aim to evoke, through creative design, "discussion, correction, and strategic evaluation", with the primary purpose to "identify the needs and opportunity for redirective urban action" (Fry, 2017, p. 176). From a theoretical position, metrofitting engages with the unsustainable structure of our human world and engages with concerns such as "climate change, population pressures, geopolitical instabilities, resource stress, and social and individual technology linked cultural transformations" (Fry, 2017, p. vii) to inform material, operational and socio-cultural relationships. Within this broader agenda, this study utilises the methodological concerns of metrofitting more narrowly to anticipate the preferable social technology-linked cultural transformations that the inclusion of smart urban technologies may bring into an urban community.

In the metrofitting literature (Fry, 2017), 'design fictions' is applied in a very generic sense to describe creative, material projections representing alternative conceptualisations of being in the world. Furthermore, Fry tends to focus on the theoretical rationale for metrofitting and does not directly detail particular methods for application. Consequently, to think and project with a longer view of the city, this study incorporates the speculative approach of projective research (Geldof & Janssens, 2014; De Figueiredo, 2017). Projective research refers to a set of related research practices that employ design fictions or 'provotypes' to inquire into "putative and contingent" future states to "reach for tomorrow's worlds today" (Morrison, 2018, p. 125). Central to projective research is the notion of anticipation (De Smet & Janssens, 2016, p. 2762) and is typically applied in the context of systemic changes (economic, environmental, social) in order not only to "learn from the future'" but to also to recognize "important points of attention" and reflect on "directions for change" (Geldof & Janssens, 2014, p. 8). Projective research differentiates itself from typical discursive approaches in two fundamental ways.[2] First, its speculations are informed by data and facts, as well as design's capacity to operate "in conditions of complexity, uncertainty, and dynamics of continuous transformations that involve people and their environment" (De Smet & Janssens, 2016, p. 2763). Second, projective research employs a transformative mindset that indicates both a hope that things can be different, as well as the nature of change that needs to occur to bring about the desired change (De Smet & Janssens, 2016, p. 2765). Synthesizing, the above referenced texts, and other notable descriptions (Lindley, et al., 2014; Morrison, 2018; Hunt, 2019) the principles of projective research are reflected in Table 1.

[2] Typical discursive approaches include speculative design and design fiction.

Table 1. The principles of projective research.

1.	Maintains an anticipatory focus placed on real imperatives, which are framed through knowledge pertaining to data and facts.
2.	Anticipatory outcomes are generated as fictional provotypes that allow people to make sense of and give significance to their environments.
3.	Involves timeframes with a longer view but within touching distance of the present.
4.	Explicates the value and nature of transformation.
5.	Final provotypes communicate future scenarios, research findings, and suggested occurrences that lead to the envisioned future.
6.	Applies the persuasive abilities of design fictions to communicate directly to routine design audiences.

3. Methodology

The method of the study is Baskerville and Myers's (2015) Design Ethnography (DE) that advocates an interventionist and engaged approach to participating with people in the field to study the process and contexts of design. Consequently, DE moves beyond observation to respond iteratively and creatively in settings "where people are designing artefacts, producing artefacts, or introducing artefacts into a social and cultural context" (Baskerville & Myers, 2015, p. 29). In this manner, DE extends traditional ethnography as it is concerned not only with a description of situations, but also acts of synthesis and intervention that are recognised as contributing not only to improved understanding of peoples' life-worlds but to also explore their potential reaction to new situations (Baskerville & Myers, 2015, p. 27). While DE is primarily utilised in the field of Information Systems, this study, informed by Kilbourn's (2013, p. 69) description of design ethnography in Design Anthropology, applied three primary 'action' phases. Phase 1: Rigour refers to the conceptual framing of the proposed PPD method. Phase 2: Relevance describes the practical application of PPD in co-design workshop involving community members from Westbury, an urban neighbourhood in Johannesburg. Phase 3: Reflection critically reviews the previous two phases to establish whether the proposed method of PPD had achieved its intended goals or if further amendments and 'relevancy' evaluations were required. During the study these three phases were iterated in cycles over the course of four full day co-design workshops involving 26 participants in total. The criterion for selecting participants was that they were residents of or work in Westbury.

4. Limitations of This Study

This study is primarily concerned with the methodological development of PPD as an approach to bridging bottom-up and top-down SCD, and ultimately provide an alternative consideration of the role of HCD. As such, it primarily reflects the authors experience of the design practice. While the community is introduced to provide context, the intention of this DE is not to provide an ethnographic study of the community. Rather, the DE suggest how the proposed PPD method is capable, within the context of a design agenda, to generate and communicate an appropriate ethnographic understanding of a community aspirational relationship to an emergent technology.

5. Co-projecting with the Westbury Community

Westbury a densely populated, economically deprived suburb in close proximity to the Johannesburg City Centre. The suburb is a result of Apartheid era racial segregation during which the neighbourhood was

allocated to 'Coloured' residents, who were forcible moved there from other areas.[3] The community remains predominantly Coloured. The urban landscape of Westbury is characterised by small standalone properties and multiple multi-storey flats, includes parks, sports fields, a library, a large community hall and a youth recreational centre. However, many of the buildings and open land are characterised by urban degradation. There are numerous social problems that characterise Westbury. Foremost is its long history of criminal and gang-related activities (Klug, 2016, p. 58), organised around control of the drug trade. Westbury, like many communities in South Africa, is affected by high youth, and a strong distrust of government initiatives (Klug, 2016, p. 58).

5.1 Projective Provotype Design

The primary objectives of PPD are twofold. The first relates to the eliciting of insights relevant to a community's preferences for the future smart neighbourhood places, through a range of co-design research activities. The second objective is to communicate the generated insights effectively to practitioners working in technological contexts related to smart urban design. As such PPD is not concerned with technical plausibility nor city-wide solutions. Rather, its focus is neighbourhood placemaking. Accordingly, the design of the PPD consisted of two key phases. The first phase consisted of four co-design workshops involving neighbourhood participants, while the second phase involved the design of a projective research provotype. The essential connection between the two phases is that the ethnographic insights and understanding gained in the first phase directly informed the design considerations of the second.

5.2 The Co-Design Workshops

The co-design workshop primarily employed the design research method of generative tools (Visser, et al., 2005, p. 4). In generative tools, participants apply art and design techniques to creatively reflect on their experience of a given context. These generative activities are constructed with the belief that experiences are often determined by latent needs or tacit knowledge, which are often difficult to directly express verbally and consequently difficult to obtain from conventional research techniques. From a theoretical perspective, the three activities of the co-design workshop were guided by Inayatullah's (2008, pp. 7-8) conceptualisations of futures as inherently connected to the present and past.

Technique 1: Inquiry into the Past
The first two activities of the workshops focused on past and present contexts and were applied to both generate contextual data descriptive of the community, their activities, and technological environments, and to sensitise participants and researchers to each other and the research project. Technique 1 was conceptualised as an introduction for the participants to the more detailed activities of the following two techniques.

The critical activities of Technique 1 are outlined below.

1. Secondary research on the history of the subject neighbourhood is conducted, which is then synthesised and presented to participants;
2. Participants provide feedback, clarifying or adding aspects to the historical analysis.

In the workshops, Technique 1 was a devised as a digital timeline showing key historical activities as annotated images and supported with an oral explanation. The timeline was also presented schematically on a large print, which participants could write on and, thereby, edit and add content.

[3] In South Africa 'Coloured' inoffensively refers to a distinct racial group with a mixed-race heritage.

Technique 2: Inquiry into the Present
For the second technique, the intention was to elicit participants' everyday experiences of their environments, both physical and digital.

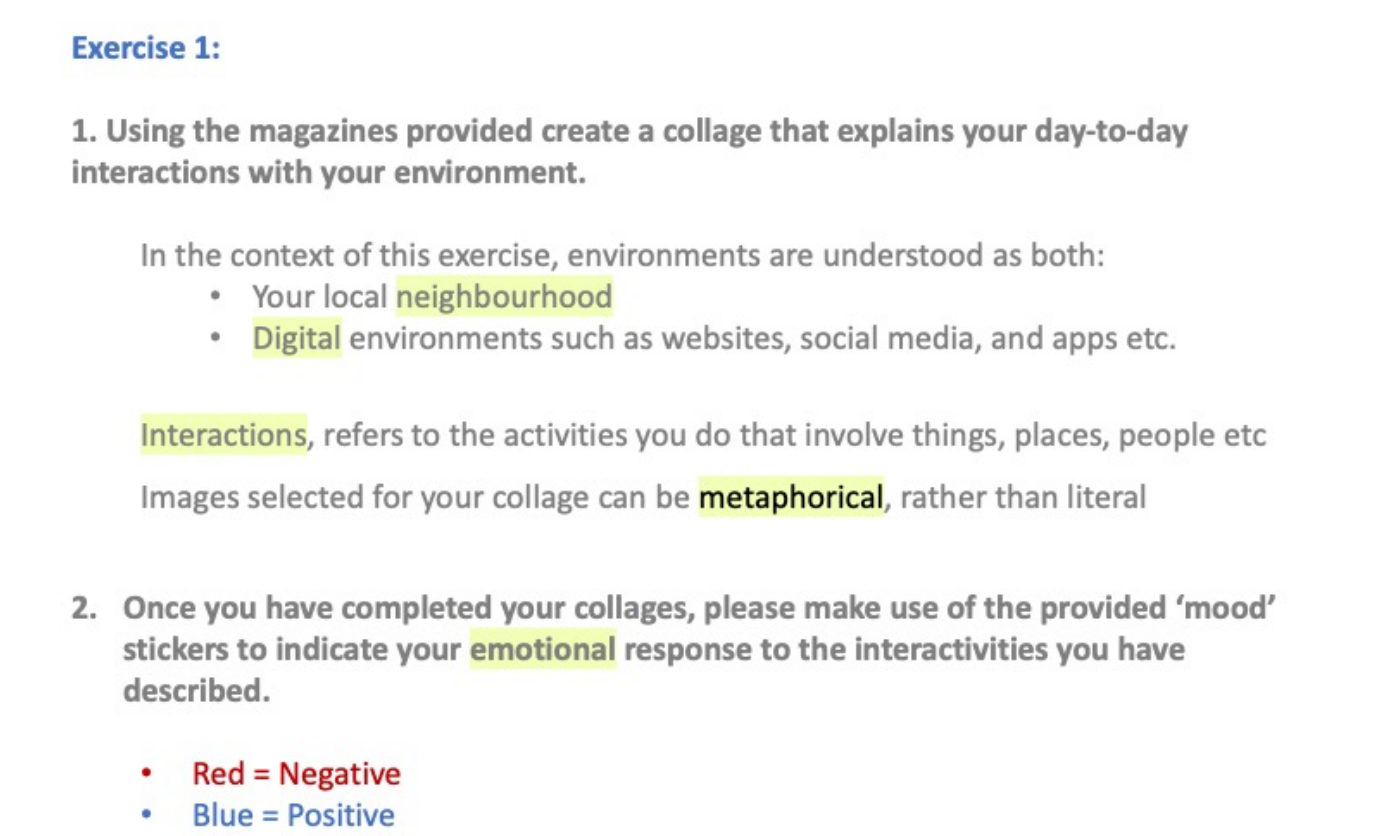


Figure 1. Participant brief for Technique 2. (all images T Fenn, 2023).

As described in Figure 1, and exemplified in Figure 2, the primary requirement for Technique 2 was for participants to create a collage reflecting their experience of their surrounding socio-technological environments. The purpose of the activity is three-fold. First, as earlier indicated, it sensitised participants to their urban and digital environments allowing them to become at ease with both creative activities and discussing their work. Second, to elicit a rich understanding of participants' everyday experiences of their 'on' and 'off-line' environments. Lastly, the exploration of present-day experience was an essential element for juxtaposing potential future experiences, the focus of the third technique (Kilbourn, 2013, p. 76).

Figure 2. Three examples of participant collages.

In Technique 2, the involved acts of making and reflections on the making, facilitated very natural and unguarded accounts by the participants of their everyday neighbourhood experiences. The oral narratives encouraged other participants to add further details.

Technique 3: Mapping the Future

Technique 3 involved participants using generative techniques to imagine, model, and articulate everyday activities within a prescribed context of a future neighbourhood place.

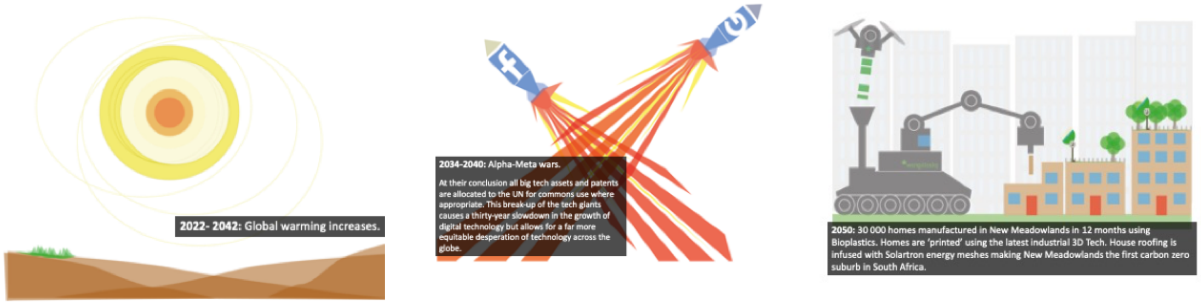
The design requirements of Technique 3 were the following:

1. Ensure communities participate in creatively articulating their preference for their neighbourhood places;
2. Informed by Dörrenbächer, et al.'s (2020) positive utopian approach, focus was placed on the positive impact smart urban technologies could have on neighbourhood places;
3. Recognition that smart urban neighbourhood places are fictional spaces and accordingly are represented as design fictions, set in long-term futures;
4. Articulations of futures are developed to highlight everyday activities in line with several conceptualisations of placemaking (Benyon, 2014, p. 33; McCullough, 2005, p. 57).

In support of these requirements, Candy and Dunagan's (2017, p. 149) Experiential Futures Ladder (EFL) approach to scenario development was implemented. The EFL consists of four phases described below.

First, the Setting defines the scope or context of an inquiry into futures taking the form of a generic image of the future. The Setting for Technique 3 is the participating community's neighbourhood in a future setting, which in the workshops was conceptualised as 'New Westbury 2072'. Ideally, the projected context should be set far enough away from the present to break with the community's normative expectations for their near future but not too far into the future as to break entirely with plausibility, particularly from the perspective of involving technological-orientated speculation.

Second, the Scenario describes the future of the Setting, highlighting specific "narrative proposition and sequence of events" (Candy & Dunagan, 2017, p. 148).



2022- 2042: Global warming increases.

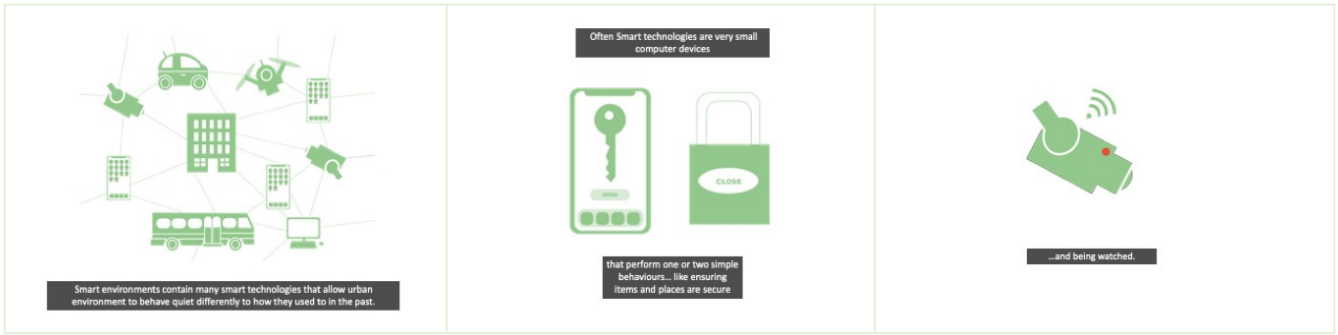
2034-2040: Alpha-Meta wars. At their conclusion all big tech assets and patents are allocated to the UN for commons use.

2056: 30 000 homes manufactured in New Meadowlands in 12 months using Bioplastics. Homes are 'printed' using the latest industrial 3D Tech.

Figure 3. Three of the 18 visuals form the Westbury Scenario.

Figure 3 illustrates a section of the scenario for the New Westbury 2072 project, which continues the motif of the timeline used in Technique 1 to imply a direct continuum with the 'real' past of the suburb. The following narrative concepts informed the Scenario. First, this future is impacted by the primary macro forces of climate change and intensified urbanisation. However, the Scenario suggests these issues are resolvable as inferred by the 'emergent' green technologies of printable buildings, highly effective solar power, and progressive governance. Second, the rationale as to why Westbury can be redeveloped is suggested through the financial windfall of platinum mining, responsible governance, and construction ability. Third, the narrative is primarily focused on technological and political change and purposefully does not address social impact. The intention is that the participants will provide these aspects. Fourth, elements, like the 'Alpha-Meta' wars and the tank-like house 3-D printer are purposely fantastical to reinforce the alternative reality and, remove any continuum with the reality of the present.

Third, the Situation ensures that the techno-spatial concerns of smart technologies are focused within the larger context of the Scenario. In terms of the New Westbury 2072 project, the Situation was articulated as follows. First, as presented in Figure 4, the Scenario was extended into a description of a fictional city-wide design initiative, which involves 'citizen design teams' leveraging emergent technologies in the co-creation of their neighbourhoods. These technologies include the highly speculative, for example, 3-D printing of buildings, in combination with other plausible smart technologies. The presentation and accompanying discussion highlighted in lay terms the resulting behaviours afforded by these technologies.



Smart environments contain many smart technologies that allow urban environment to behave quiet differently to how they used to in the past

Often Smart technologies are very small computer devices that perform one or two simple behaviours... like ensuring items and places are secure

...and being watched.

Figure 4. Three of the visual describing smart urban place.

The second aspect of the situation was the design brief (Figure 5) that outlined the fictional role of the participants, as citizen-designers in 2062.

Figure 5. Design instructions for the fictional project.

The Stuff phase involves the generative design activity undertaken by the participants in response to the brief presented in the Situation. In this manner, participants create design fictions suggestive of their preferences for their neighbourhood futures. In the Westbury workshops, participants worked in groups of six and were supplied with materials and tools. Overall, all groups coped well with the technical aspect of the task and created detailed artefacts (see Figure 6).

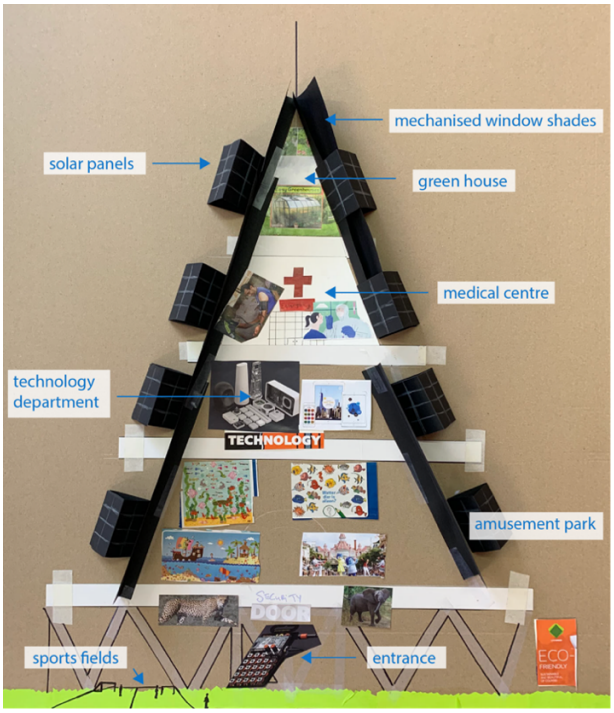


Figure 6. One group's cardboard model solution for the site.

On completion, groups were asked to explain the places they had designed, Overall, groups produced in-depth and detailed explanations of their models, enjoyed the task, and engaged with the design activity within the Scenario setting of the brief.

Synthesis of data sets into design frameworks

For both, Technique 2 and 3, the participants oral explanations were recorded, transcribed, and qualitatively analysed using ATLAS.ti software (2022). As depicted in Figure 7, during the analysis, data was first organised in primary categories of the Present and the Future, derived respectively from Technique 2 and Technique 3. Thereafter, secondary categories were coded in two seven data sets conceptualised in terms of Hassenzahl's Three-level Hierarchy of Needs (2010, pp. 12, 44), and Engeström's (2001) consideration of activity as embedded in social practices. Lastly, following Benyon (2014, pp. 4, 5), the seven data sets were considered as thematic structuring agents orientating a fluid highly complex system rather than as a 'rigid' analytical deconstruction.

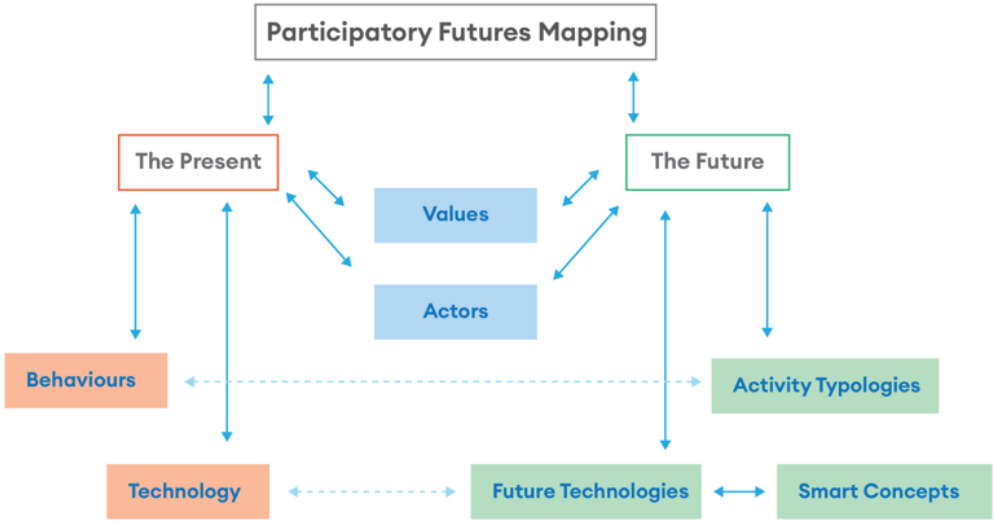


Figure 7. Model of the Westbury coding model indicating the seven subcategories. 'Participatory Futures Mapping' refers collectively to three techniques of the co-design workshop.

In the Westbury project, the seven data sets were creatively synthesised into a series of six design schemas (Figures 8-13), which reflected the key insights generated from the co-design workshops and consequently formed the conceptual foundation for the second phase of the PPD. The notion of design schemas is comparable to Alexander et al.'s (1977) design patterns, articulating the fundamentals of a type of design solution rather than a specific implementation of a solution. These design schemas while directly emerging from the data are projective and ultimately fallible considerations of how best to act.

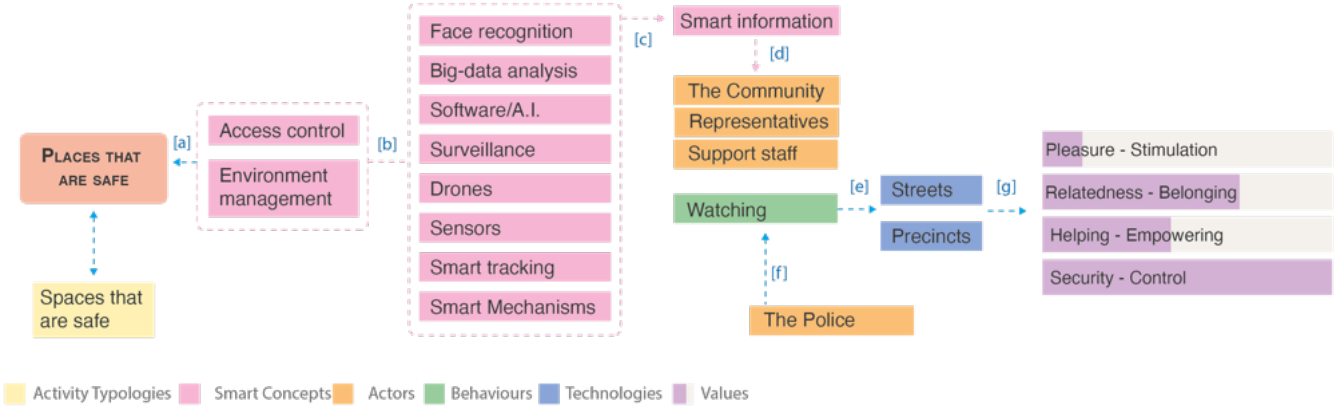


Figure 8. Design schema 1: *Places that are safe* are created through [a] controlling access and environmental management. Towards these outcomes, [b] smart surveillance networks [c] support community [d] representatives to monitor public neighbourhood spaces such as [e] streets, parks, and precincts, and if necessary, enact a response [f].

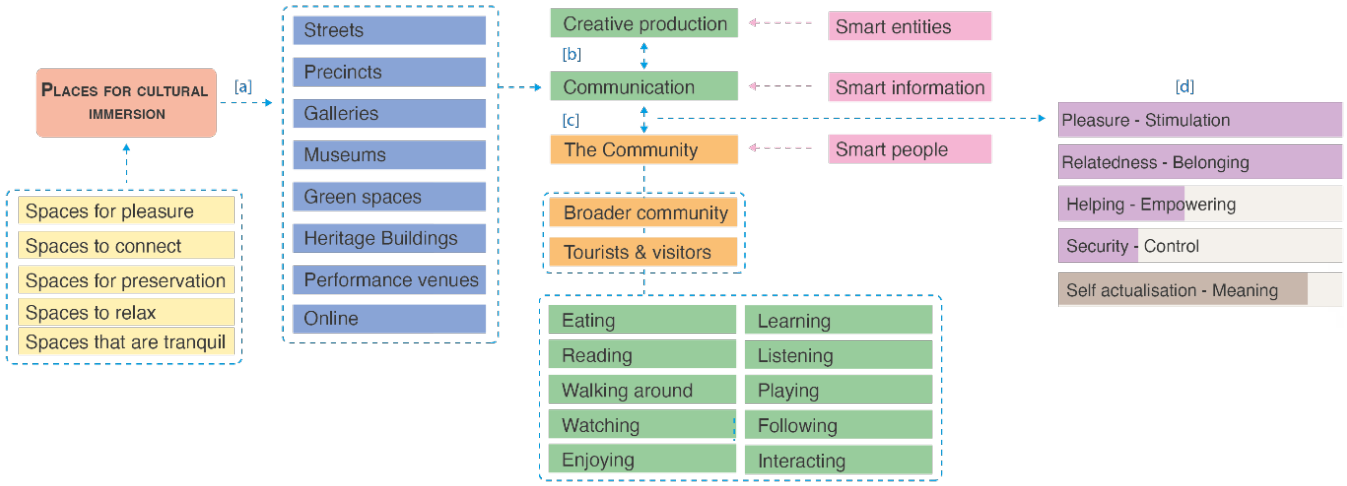


Figure 9. Design schema 2: *Places for cultural immersion* include typologies such as [a] streets, heritage sites, museums, art galleries, parks, and performance venues, as well as online environments. Locally generated creative productions [b] strengthens the community's shared identity as well as [c] attracting visitors and tourists. Cultural immersion allows for the community to experience [d] a more meaningful, pleasurable, and engaging environment.

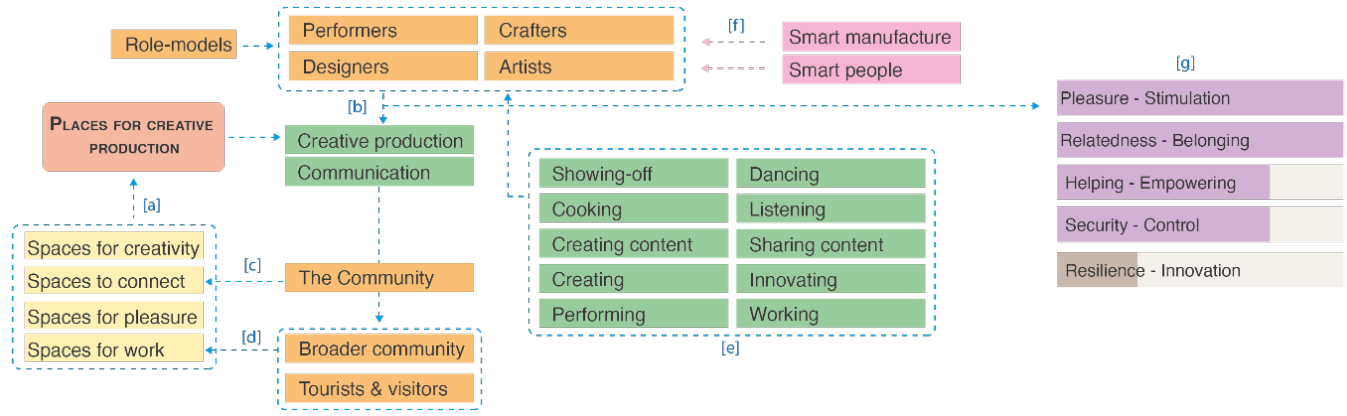


Figure 10. Design schema 3: Spaces for creating stimulating, pleasure, and connection [a] converge in *places for creative production*. In these places, performers, designers, crafters, and artists [b] produce content that engages both [c] the local community and [d] visitors. Cultural production is enhanced by [f] smart manufacturing abilities. However, cultural production is a [f] smart capacity that beyond the individual's pleasure in the act of creativity builds resilient and innovative communities [e].

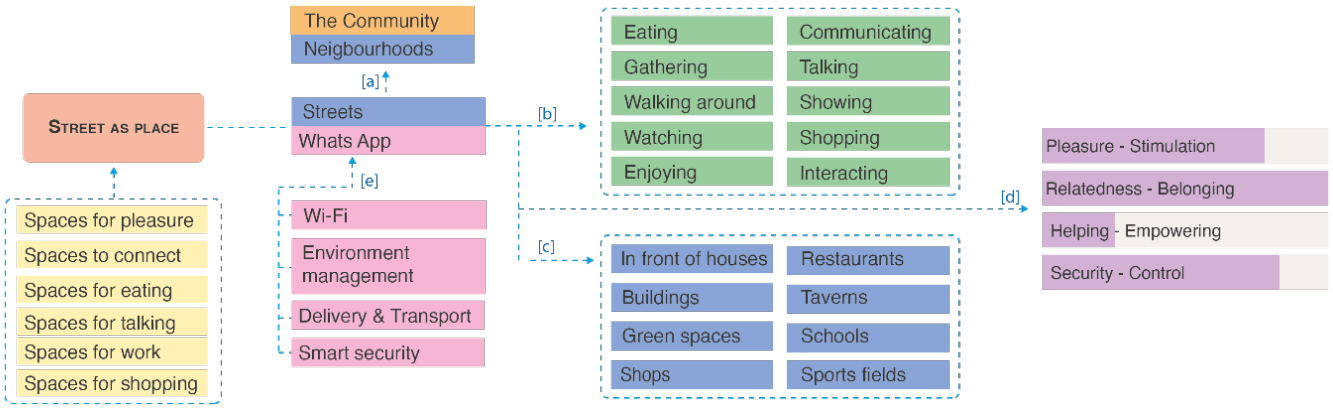


Figure 11. Design schema 4: *Street as space* recognises that the [a] primary neighbourhood place is the street, which has physical and digital layers. Accordingly, the street is the site of a wide range of social exchanges [b] linking to other parochial-public spaces [c]. In the community, the street is a place to enjoy and connect with others [d] (but can also be dangerous). Smart technologies [e] provide the opportunity to lessen the threatening aspects while ambiently enhancing the positives.

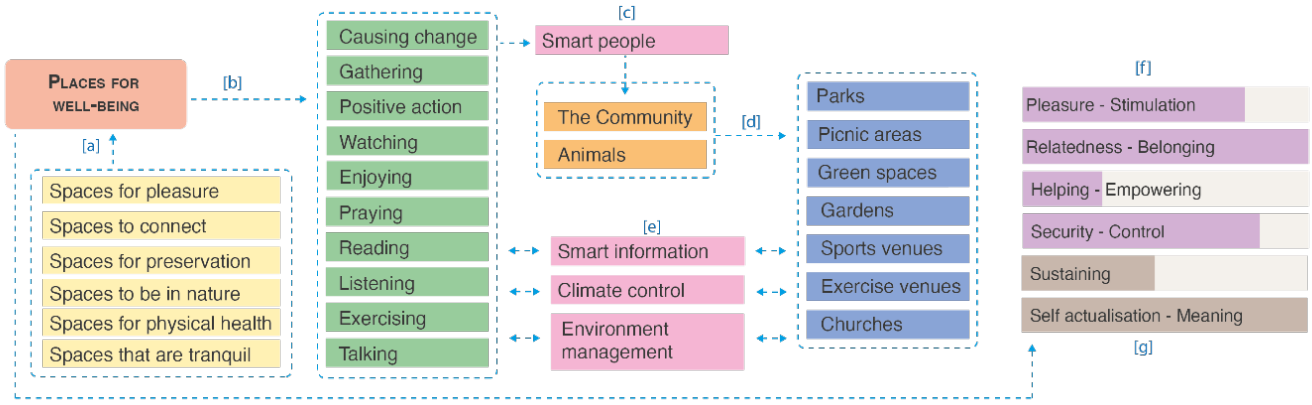


Figure 12. Design schema 5: *Places for well-being* are [a] tranquil spaces, often in nature, that focus on physical and mental health. In these spaces, a wide range of activities occurs, including [b] exercising, talking, praying, reading and interacting with nature [d]. In these spaces, individuals seek to connect more meaningfully with their experiences of the world [g], seeking to sustain both mind and body [f]. Places for well-being are supported by ambient smart technologies that ensure a tranquil and well-managed environment [e].

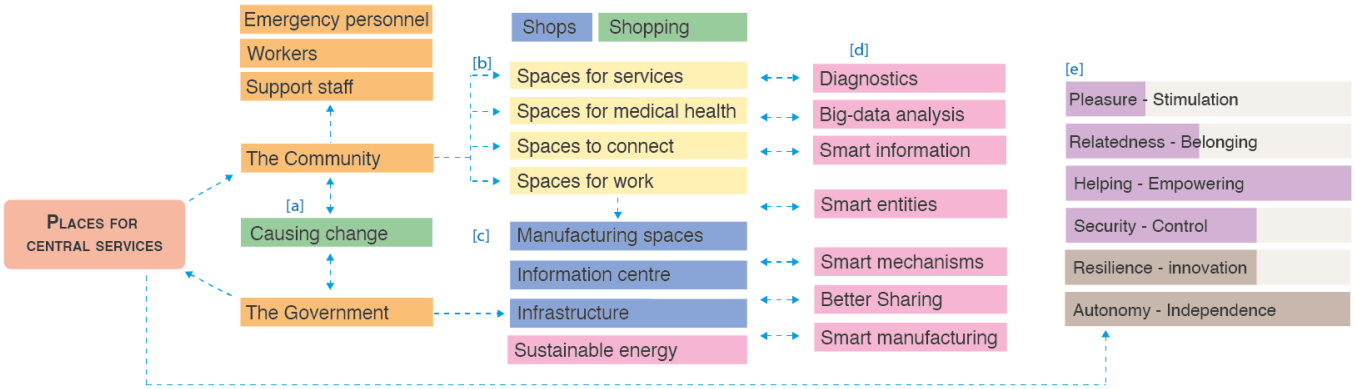


Figure 13. Design schema 6: *Places for central services* are partnerships between [a] Government and communities with the aim to deliver smart, accessible, and accountable services. Key aspects of these services are [b] health and [c] energy, which have the potential to be supported by [d] smart diagnostics and energy grids. Collectively, these services would directly improve the quality of life for residents as well as lessen their reliance on municipal infrastructure [e].

5.3 The Projective Research Phase

Responding to the fundamental principles of projective research, set out in Table 1, the second phase of PPD involved the design of a provotype. This phase focused on two key communicative aspects fundamental to discursive design, namely, the message-form and message-content (Tharp & Tharp, 2018, p. 166). Respectively, the message-content embodied in the provotype responded to the six design schemas, while the message-form focused on the mode of product rhetoric – the communicating, packaging, and presenting of the message-content.

For the message-content, the initial rounds of ideation indexed the design schemas as well as referencing fundamental placemaking design principles (Kent, 2012, p. 117). Once I was satisfied with the range of ideas, I began to consider how I could integrate the various ideas into the provotype. Here, I aimed to emphasise interconnected neighbourhood places within an encapsulating urban context, and ultimately communicate a systemic sense of Westbury. This intention, coupled with the insight that street space was the essential neighbourhood place for the Westbury community, led me to focus on producing a streetscape as the central illustrative image. The future-time of the provotype was set at 2052, 30-years from the year of the workshops. In terms of message-form, I intended for final provotype to be easily distributable, both in terms of product and cost. I also required it to have a strong visual impact and to have a tangible quality, to be something architects or designers would hopefully stick up on the walls of their

offices. Consequently, due to the horizontal nature of the streetscape, I opted for the format of a leporello concertina book displaying on one-side an extended streetscape of Westbury in 2052, and, on the other, a fictitious research report with written narrative, citations, reference list and technical diagrams (see Figures 14-16). In this text, I presented a set of 'community values' and six 'design frames'. These link directly to the six design schemas and the Values that emerged during the analysis of the workshops. The written narrative explained how each design frame played out systemically in the context of the suburb, city, and regional legislation of a future 2052.

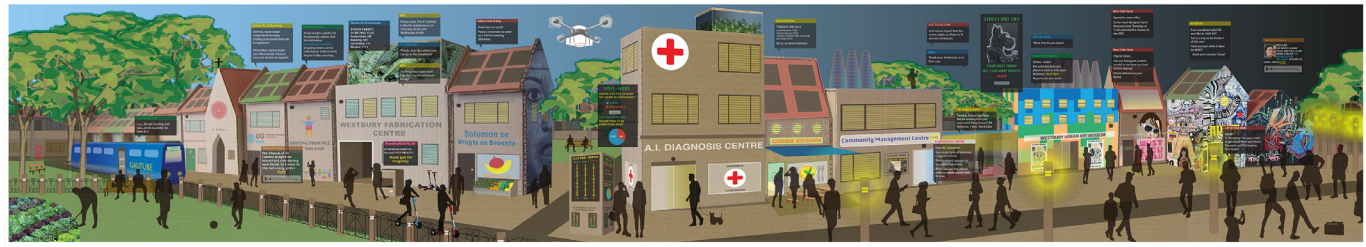


Figure 15. The provotype's streetscape (1200mm x 220mm). See Appendix A, Figure A for enlarged diagram. Image: T Fenn, 2023.

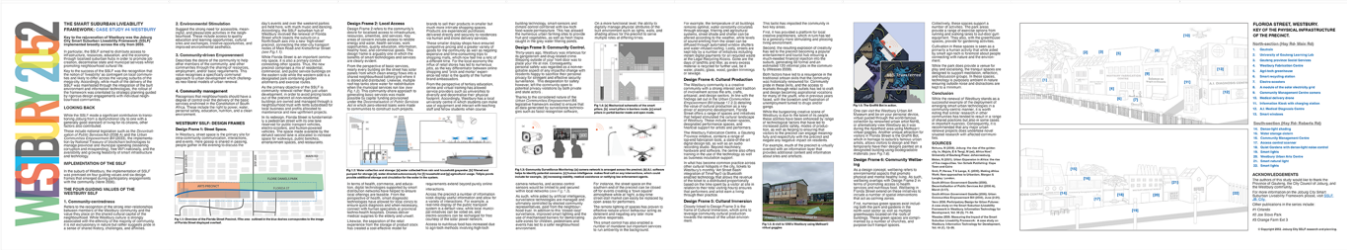


Figure 16. The provotype's 'research' report. See Appendix A, Figure B for enlarged sections. Image: T Fenn, 2023.

Figure 17. Outer (L) and inner (R) cover sleeves of the provotype. The text on the cover describes the research project and acknowledges the input of each participant. Image: T Fenn, 2023.

On completion, the provotype, was presented for feedback in two sessions. The first involved a sample of participants from the workshops, who were guided through the analyses and design activities. The consensus was the provotype accurately reflected the aspirations of the community for their future neighbourhood places. However, one key insight from the sessions was that any given technology should not be completely autonomous, but should be ultimately controlled by a human, preferably a member of the community.

The second feedback session involved five design 'experts' with professional and academic knowledge of smart urban design, urban design or digital ecosystems design. Each expert was interviewed separately and was provided with the provotype to examine before the interviews took place. From the analysis of the interviews, seven key themes emerged.

Theme 1: Plausible Futures
All five experts identified the provotype as a fictional, futures representation of an existing neighbourhood. They identified the presented fiction as plausible and, as such, potentially achievable.

Theme 2: Correspondence
It was evident to the experts that the provotype corresponded to a preferred future of a neighbourhood community. This was indicated both in terms of a sense of historical and existing community identity, as well as a shared vision for the future.

Theme 3: Emphasises on the role of smart urban places
The notion that the provotype was particularly concerned with articulating the potential roles that smart urban technologies could play in the everyday experiences of neighbourhood places was clear.

Theme 4: A primary aim of generating discourse
Experts recognised that the provotype was not attempting to communicate literal and implementable design product concepts, but rather was discursive, raising issues, stimulating, and guiding thinking and challenging assumptions as well as provoking critical reflection and creative imagining.

> "It's a very focused, very stimulating fresh view on, which makes people rethink their assumptions about what they do, as designers in relation to a city". (D.E 'C')

Theme 5: Conceptual openness
The conceptual openness of the provotype was noted. This theme reflects that, while the provotype was highly detailed in terms of its storytelling, the illustrative and written details were primarily foregrounding a set of abstract concepts in the 'logic' of an imagined 'reality'. Crucially, however, the abstract concepts could be applied in numerous, different ways.

> "It's your experience of the fiction that makes it so compelling. It's getting lost in it. That bottom level of detail is so important… Because getting lost in it is when is when I can start to take ownership of what I see in it". (D.E 'B').

Theme 6: Direct contribution of principles and values specific to Westbury
Experts recognised that, while the visual and written content of the provotype provided a range of potentially useful design concepts, the primary message-content communicated was the six design strategies and four key Values.

Theme 7: Contributed an example of traceable synthesis
The provotype was described as contributing a 'traceable synthesis', referring to the value of making the connection between generated concepts and the research that informed their conceptualisation explicit, so that they, and the larger design proposition could be critiqued.

6. Discussion

In the context of urban futures, neighbourhoods are likely to be extensively mediated by digital technologies. As Dourish and Bell (2007, p. 15) remind us, space is organized both physically and culturally, and "cultural understandings provide a frame for encountering space as meaningful and coherent". Consequently, while the dawning age of the smart urbanity suggests significant approaches for managing the predicted hyper-growth of urban cities, there is also a strong chance that purely technologically orientated or 'one-solution for all cities' implementation of these technologies may lead to an exacerbation of poor urban conditions, particularly for the citizens of cities in the Global South, which have historically been excluded from having a representative voice in the development of the spaces they inhabit.

Responding to these concerns, PPD provides a relevant example of how design research practices can be applied to co-anticipate with urban communities their preferences for their smart urban futures and

potentially other metrofitting concerns. The three techniques employed in the co-design workshop enabled a rich and meaningful sharing of experiences by the participants. Including community members was valuable as their involvement directly guided the subsequent design of the Westbury 2052 provotype, and ultimately its communication to the design experts. For the participants, their involvement in the project was often transformative on a personal level. In this regard, two strong themes emerged from participant's feedback on of the workshops. First, as exemplified in the following quote, they highlighted the framing of 'futures' as undetermined and open to multiple outcomes which they potential could influence, as a significant realisation. Second, participants often felt a strong appreciation for been included in a discussion on the futures of Westbury. This appreciation ranged from those who felt that the community should be key stakeholder in all municipal planning to others who were just relieved to be part of a stimulating exercise and not have to spend another day in the lull of unemployment.

> "I think we need to know where we come from in order to know where we are going, so we know what we want- to better in our communities, to know what we have had before, and what we haven't had. This is now an opportunity for us to decide and choose what we actually want for our future (community participant)."

From the design perspective of gaining a better understanding of the suburb, the six design schemas articulate a range of nuanced considerations capable of positively impacting the urban design of Westbury. While a full discussion of each schema is not within the scope of this paper, it is evident that a key desire of the community is to overcome the failings of the state and municipality in terms of basic service delivery. This is seen clearly in the need for better security, employment, infrastructure, and health services. While the community viewed emerging digital technologies as important for transcending their current conditions, it was insightful to recognise that they identified these technologies as deployed preferentially by and for the community, rather than at the unit of the discrete individual user.

Beyond the usefulness of the three techniques for generating ethnographic understandings in line with Inayatullah's (2008, pp. 7-8) conceptualisations of futures as inherently connected to the present and past, combing the explicit flow of research findings from the workshop phase into the projective research phase, ensuring that 'data and facts' fundamental for anticipating futures has a strong ethnographic quality. As such, this approach contributes a novel practice in an emerging field of projective research, which is at present characterised by methodological uncertainty (Lindley, et al., 2014, p. 243; Morrison, 2018, p. 130). Lastly, and addressing the limitations that bottom-up approaches can present, the projective research provotype suggest the value that HCD can bring value to design practices that operate at the scale of emerging, highly complex technological systems, such as, for example, SCs, Smart Regions, IR 4.0, and artificial intelligence. As noted in the introduction, contemporary HCD struggles to resolve complex, large-scale systemic problems (Mani-Kandt, 2021). The consequence of this disconnection is that in national, regional, and metropolitan infrastructural projects, people are often treated as a "weak force and minor elements of the systems supposedly designed for their benefit" (Herriot, 2019, p. 704). In SC literature, this clash is evident in the tension between bottom-up and top-down design.

In response, PPD presents an approach that while recognising the value of the people who live, work, and actively engage with their neighbourhoods as drivers of change, is conceived primarily for informing, provoking, or challenging the thinking of professionals involved in top-down design and planning. Consequently, the alternative strategy of PPD is not to predict the design of the neighbourhood places of tomorrow but rather to sensitise designers and planners, likely to be working on large-scale smart urban developments, to a range of different considerations that might inform, alter, or confirm their design approaches.

Thus, as outlined in Section 5.3, and evident in the seven themes that emerged from the design experts' engagement with the Westbury 2052 provotype, practices such as PPD that contribute future scenarios premised in considered ethnographic inquiry can result in several valuable outcomes. First, these methods are capable of sensitising city planners and urban practitioners to the broad opportunities that smart technologies can offer in terms of delivering services and generally enhancing residents' experience of their

urban environments. Second, they can expose technologists and planners to the broad concerns of urban neighbourhoods as complex entanglements of activities, desires, experiences, places, cultures, and interactions. In this manner, this type of research locates smart urban development firmly with in the construct of the 'ordinary' city (Robinson, 2002, p.532) as opposed to visions of techno-futurist utopias often associated with the smart city. Third, they can share with top-down SC planners a sense of a community's preferences for their smart urban environments. Fourth, they can sensitise urban planners, practitioners, and technologists to the value of engaging with communities to heighten the likelihood that future technological interventions are designed in an ethical and empathetic manner. Lastly, they can assist human-centred designers to engage with highly complex technological systems in an impactful manner and, in this way, complement other design practices more accustomed to working within primarily technological and legislative systems.

7. Conclusion

This design ethnography introduces the novel PPD method which helps address the shortfall between bottom-up, community-centred approaches and the top-down approaches typical of SCD. As such, PPD utilises the unique knowledge tradition of HCD to generate a neighbourhood community's preferences for their smart urban futures and, subsequently, communicates these preferences to a design audience in a manner that is informative, thought provoking and if necessary capable of challenging existing assumptions. In this manner, and the central argument of this study, approaches such as PPD provide compelling rationale and directions for application of HCD that extend beyond its typical user/product focus.

References

Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). A Pattern Language: Towns, Buildings, Construction. In *Oxford University Press eBooks* (Vol. 1, Issue 5). https://ci.nii.ac.jp/ncid/BA00163982

ATLAS.ti Scientific Software Development GmbH. (2022). ATLAS.ti. Retrieved August 8, 2022, from https://atlasti.com

Baskerville, R. L., & Myers, M. D. (2014). Design ethnography in information systems. *Information Systems Journal*, *25*(1), 23–46. https://doi.org/10.1111/isj.12055

Benyon, D. (2014). Spaces of Interaction, Places for Experience. In *Synthesis lectures on human-centered informatics*. https://doi.org/10.1007/978-3-031-02206-7

Candy, S., & Dunagan, J. (2017). Designing an experiential scenario: The People Who Vanished. *Futures*, *86*, 136–153. https://doi.org/10.1016/j.futures.2016.05.006

De Smet, A., & Janssens, N. (2016). Probing the future by anticipative design acts. 2016 Design Research Society 50th Anniversary Conference., Brighton, UK. https://doi.org/10.21606/drs.2016.79

Dörrenbächer, J., Ringfort, R., Laschke, M. G., Löffler, D., & Hassenzahl, M. (2020). Experiencing Utopia. A Positive Approach to Design Fiction. In *Extended Abstracts*, Honolulu, HI: CHI 2020.

Dourish, P., & Bell, G. (2007). The Infrastructure of Experience and the Experience of Infrastructure: Meaning and Structure in Everyday Encounters with Space. *Environment and Planning B Planning and Design*, *34*(3), 414–430. https://doi.org/10.1068/b32035t

Dustdar, S., Nastic, S., & Šcekic, O. (2017). Smart cities: The internet of things, people and systems. Cham, Switzerland: Springer International Publishing. https://doi.org/10.1007/978-3-319-60030-7

Engeström, Y. (2001). Expansive Learning at Work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, *14*(1), 133–156. https://doi.org/10.1080/13639080020028747

Escobar, A. (2018). Designs for the Pluriverse Radical Interdependence, Autonomy, and the Making of Worlds. Durham and London: Duke University Press. https://doi.org/10.1215/9780822371816

Fernandez-Anez, V. (2016). Stakeholders Approach to Smart Cities: A Survey on Smart City Definitions. In *Lecture notes in computer science* (pp. 157–167). https://doi.org/10.1007/978-3-319-39595-1_16
De Figueiredo, A. D. (2017). Qualitative Research and the Challenges of Complexity. In *Advances in intelligent systems and computing* (pp. 14–27). https://doi.org/10.1007/978-3-319-61121-1_2

Fenn, T. (2023). Communityfitting: A novel design research method for Co-projecting Smart Urban Places. PhD Thesis, Department of Informatics, University of Pretoria.

Fry, T. (2017). Remaking Cities: An introduction to urban metrofitting. London: Bloomsbury. https://doi.org/10.5040/9781474224192

Fry, T. (2019). Starting at the End: A Journey in Time. *Journal of Futures Studies*, 23(4), 159–164.

Geldof, G., & Janssens, N. (2014). The Future Commons 2070: the ethical problem of the territorialization of the North Sea. Proceedings of the *50th ISOCARP Congress - Gdynia, Poland*. 328 - 336

Giacomin, J. (2014). What Is Human Centred Design? *The Design Journal*, 17(4), 606-623. https://doi.org/10.2752/175630614X14056185480186

Hassenzahl, M. (2010). Experience Design Technology for All the Right Reasons. San Rafael, CA: Morgan & Claypool. https://doi.org/10.1007/978-3-031-02191-6

Herriot, R. (2019). Project scale and the wicked problem in Fourth Order Design. *The Design Journal*, 22(1), 695-705. https://doi.org/10.1080/14606925.2019.1595448

Hunt, J. (2019, March). Anticipating Future System States. *Journal of Futures Studies*, 23(3), 119–128.

Inayatullah, S. (2008). Six pillars: futures thinking for transforming. *Foresight*, 10(1), 4-21. https://doi.org/10.1108/14636680810855991

Kent, F. (2012). Genius Loci. *Frame,* pp. 116-119.

Khatoun, R., & Zeadally, S. (2016). Smart Cities: Concepts, Architectures, Research Opportunities. *Communications of the ASM,* 59(8). https://doi.org/10.1145/2858789

Kilbourn, K. (2013). Tools of movement and engagement: design anthropology's style of knowing. In: Gunn W, Otto T, Smith RC (eds) *Design Anthropology: Theory and Practice*, London: Bloomsbury, pp. 68–82.

Kitchin, R. (2014). Making sense of smart cities: addressing present shortcomings. *Cambridge Journal of Regions, Economy and Society*, 8, 131–136. https://doi.org/10.1093/cjres/rsu027

Kitchin, R., Cardullo, P., & Di Feliciantonio, C. (2019). Citizenship, Justice, and the Right to the Smart City. In *Emerald Publishing Limited eBooks* (pp. 1–24). https://doi.org/10.1108/978-1-78769-139-120191001

Klug, N. (2016). The more things change, the more they stay the same: a case study of Westbury, Coronationville and Slovo Park informal settlement. *Report 5. Spatial Transformation through Transit-Oriented Development in Johannesburg Research Report Series*. Johannesburg: South African Research

Chair in Spatial Analysis and City Planning. University of the Witwatersrand.

Krippendorff, K. (2000). Propositions of Human-centeredness: A Philosophy for Design. In D. Durling, & K. Friedman (Eds.), *Doctoral Education in Design: Foundations for the Future. Staffordshire* (UK): Staffordshire University Press.

Lindley, J., Sharma, D., & Potts, R. (2014). Anticipatory Ethnography: Design Fiction as an Input to Design Ethnography. *Ethnographic Praxis in Industry Conference Proceedings*, *2014*(1), 237–253. https://doi.org/10.1111/1559-8918.01030

Mani-Kandt, R. (2021). Why human-centered design (HCD) doesn't always work for international development. Retrieved June 28, 2021, from https://www.itad.com/article/human-centered-design-international-development/

McCullough, M. (2005). *Digital Ground: Architecture, Pervasive Computing, and Environmental Knowing*. Cambridge, MA: The MIT Press.

Morrison, A. (2018). Future North, nurture forth. In J. Larsen, & P. Hemmersam (Eds.), *Future North: The Changing Arctic Landscapes* (pp. 119-141). London: Routledge. https://doi.org/10.4324/9781315583716-8

Robinson, J. (2002). Global and World Cities: A View form of the Map. *International Journal of Urban and Regional Research*. 26(3), 531-534. https://doi.org/10.1111/1468-2427.00397

Russel, P., & Lyndon, B. (2020, September 10-11). Humanity-Centred Design – defining the emerging paradigm in design education and practice. *International Conference on Engineering and Product Design Education*. Herning Denmark. https://doi.org/10.35199/EPDE.2020.32

Tharp, B., & Tharp, S. (2018). *Discursive Design: Critical, Speculative and Alternative Things*. Cambridge, MA: The MIT Press. https://doi.org/10.7551/mitpress/11192.001.0001

Van Velsen, L., Ludden, G., & Grünloh, C. J. (2022). The Limitations of User-and Human-Centered Design in an eHealth Context and How to Move Beyond Them. *Med Internet Res*, 24(10), 1-14. https://doi.org/10.2196/37341

Visser, F., Stappers, P., & van der Lugt, R. (2005). Contextmapping: experiences from practice. *CoDesign,* 1(2), 119–149. https://doi.org/10.1080/15710880500135987

Walravens, N. (2016). Operationalising the Concept of the Smart City as a Local Innovation Platform: The City of Things Lab in Antwerp, Belgium. In *Lecture notes in computer science* (pp. 128–136). https://doi.org/10.1007/978-3-319-39595-1_13

About the Author:

Terence Fenn is a Senior Lecturer the Department of Multimedia at the University of Johannesburg, South Africa. His key areas of research include design education, humanity-centred interaction design, design futures and design research. His PhD focused on collaboratively anticipating with neighbourhood communities their preferable future smart places.

Acknowledgements: The author would like to acknowledge the participants from the Westbury community who participated in the study and Professor Rennie Naidoo for his input.

Appendix A: The Westbury 2052 Provotype

Figure A. Enlarged Figure 13 showing the streetscape illustration. The Floating textboxes are users' digital messages. (image: T Fenn, 2023).

WESTBURY 2052

THE SMART SUBURBAN LIVEABILITY FRAMEWORK: CASE STUDY #4 WESTBURY

Key to the rejuvenation of Westbury was the Joburg City Smart Suburban Liveability Framework (SSLF) implemented broadly across the city from 2035.

In particular, the SSLF aimed to distribute access to infrastructure, resources, education, and the economy through localized suburban hubs in order to promote job creation, decentralise state and municipal services whilst promoting neighbourhood cultural life.

Key to the success of the SSLF was the recognition that the notion of 'liveability' as contingent on local communities and likely to differ across the varying suburbs of the mega-city. Accordingly, while much of the delivery of the SSLF was manifested through the integration of the built environment and information technologies, the rollout of the framework was orientated by strategic planning guided by rigorous design engagements with individual neighbourhood communities.

LOOKING BACK

While the SSLF made a significant contribution to transitioning Joburg from a dysfunctional city to one with a generally good standard of living for its citizens, other factors also contributed.

These include national legislation such as the *Decentralisation of Public Services* Act (2036 A) and the *Urban Communities Empowerment Bill* (2033), the implementation by National Treasury of blockchain technologies to manage provincial and municipal spending (lessening corruption and misspending), free WiFi nationally, and the availability and growing feasibility of smart infrastructure and technology.

IMPLEMENTATION OF THE SSLF

In the suburb of Westbury, the implementation of SSLF was premised on four guiding values and six design frames that emerged during participatory engagements with the community (Venn 2036).

THE FOUR GUIDING VALUES OF THE WESTBURY SSLF

1. Community-centredness

Refers to the recognition of the strong inter-relationships between members of the Westbury community and the value they place on the shared cultural capital of the neighbourhood. While Westbury culture is strongly associated with the ethnicity of the majority of community, it is not exclusionary in nature but rather suggests pride in a sense of shared history, challenges, and affinities.

2. Environmental Stimulation

Suggest the strong need for accessible, meaningful, and pleasurable activities in the neighbourhood. These include access to quality education and learning opportunities, cultural sites and exchanges, creative opportunities, and improved environmental aesthetics.

3. Community-driven Empowerment

Describes the desire of the community to help other members of the community, and other communities through the sharing of resources, employment, and/or basic requirements. This value recognises a specifically communal approach to urban development which challenges neo-liberal models of urban renewal.

4. Community management

Recognises that neighbourhoods should have a degree of control over the delivery of the basic services enshrined in the Constitution of South Africa. These include the right to power, water, personal safety, education, nutrition, and a clean environment.

WESTBURY SSLF: DESIGN FRAMES

Design Frame 1: Street Space.

In Westbury, street space is the primary site for intra-community communication, interactions, and events. Here gossip is shared in passing, people gather in the evening to discuss the day's events and over the weekend parties are held here, with much music and dancing. Accordingly, the SSLF suburban hub of Westbury involved the renewal of Florida Street which bisects the suburb on a North/South axis into a new 'high-street' precinct, connecting the inter-city transport nodes of Main Road and Kretschmar Street *(see Fig.1.1).*

While Florida Street is an important community space, it is also a primary conduit connecting other spaces. Thus, the new precinct comprises a mix of residential, commercial, and public service buildings on the eastern side while the western side is a designated park containing garden allotments and exercise routes.

As the primary objective of the SSLF is community renewal rather than just urban development, in order to avoid pricing locals out of the precinct all non-residential buildings are owned and managed through a neighbourhood trust with rents subsidised for local business and profits allocated to maintenance and new upliftment projects.

In its redesign, Florida Street is fundamentally a pedestrian street with its one lane reserved for public transport vehicles, electro-scooters, and human-powered vehicles. The space made available by the defunct second lane is allocated to increase space for walkways, public benches, entertainment spaces, and restaurants.

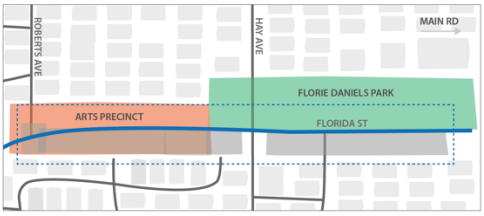


Fig 1.1: Overview of the Florida Street Precinct. The blue, dashed box area corresponds with the image of Florida Street.

Design Frame 2: Local Access

Design Frame 2 refers to the community's desire for localised access to infrastructure, resources, amenities, and services. Key areas of concern include access to reliable energy and water, health services, work opportunities, quality education, information, healthy food, and commercial goods. This design frame is arguably one in which the benefits of smart technologies and services are clearly evident.

From the perspective of basic services, nearly every building on the street has solar panels from which clean energy flows into a shared neighbourhood battery grid where it is stored and distributed. Likewise, multiple roof-top tanks store water for redistribution when the municipal services run low *(see Fig.1.2).* This community-share approach to generating basic services was made possible by capital funding provisioned under the *Decentralisation of Public Services Act* in which zero-interest loans were made to communities to construct such projects.

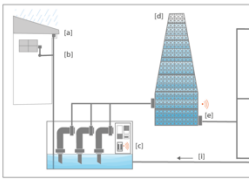


Fig 1.2: Water collection and storage: [a] water collected fr pumped for storage [d], water directed autonomously for [f provide additional storage and circulation for the water in t

In terms of health, commerce, and education, digital technologies supported by smart distribution networks have helped to ensure local offerings are feasible. From the perspective of health, smart diagnostic technologies have allowed for local clinics to ensure quick diagnosis and when necessary, connect with human specialists at provincial techno-health hospitals. Drones deliver medical supplies to the elderly and unwell.

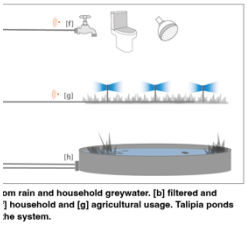
Likewise, the separation of the retail experience from the storage of product stock has created a cost-effective model for brands to sell their products in smaller but much more intimate shopping spaces. Products are experienced purchases delivered directly and securely to residences via human and drone delivery services.

These smaller display shops have ensured competitive pricing and a greater variety of goods for the community as well as negating expensive and time-consuming trips to shopping malls, which now feel like a relic of a different time. For the local economy the influx of retail stores has led to numerous jobs, as the key differentiator between online shopping and 'brick and mortar' experience-led retail is the quality of the human brand ambassadors.

From the perspective of tertiary education, online and virtual training has allowed service providers such as universities to diversify and decentralise their physical footprint. Accordingly, Westbury has a local university centre in which students can make use of equipment and interact with teaching staff and fellow students when course requirements extend beyond purely online interactions.

Across the precinct a number of information kiosk display useful information and allow for a variety of interactions. For example, a real-time display of the public transport system is a default view, while local municipal initiatives can be voted on, and electro-scooters can be recharged for free courtesy of the solar power network.

Access to nutritious food has increased due to agri-tech methods involving high-tech building technology, smart-sensors and climate control combined with low-tech food-waste permaculture. This has allowed the numerous urban farming sites to provide fruit and vegetables, as well as fresh tilapia caught in the grey water filtering ponds.



om rain and household greywater. [b] filtered and] household and [g] agricultural usage. Talipia ponds he system.

Design Frame 3: Community Control.

Thirty-years ago, Westbury was infamous for its gangsterism and drug-related crime. Stepping outside of your front door was to place your life at risk. Consequently, personal safety was regarded as a non-negotiable aspect of any impactful change with residents happy to sacrifice their personal privacy for stringent and effective security surveillance. This desperation for safety however, left the community open to potential privacy violations by both private and state actors .

Thanks to the considered nature of the *Urban Communities Empowerment Bill*, legislative framework existed to ensure that all data generated by surveillance technologies such as facial recognition software, camera networks, and access control sensors would be limited to and secured within local networks (*see Fig.1.3*).

As such, while aided by artificial intelligence, surveillance technologies are managed and ultimately controlled by elected community representatives, paid from the neighbourhood trust. In addition to this 'closed-loop' surveillance, improved smart lighting and the use of mechanised barriers for demarcating safe-zones for children, pedestrians and events has led to a safer neighbourhood environment.

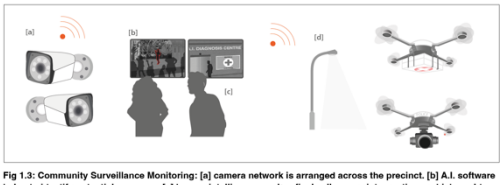


Fig 1.3: Community Surveillance Monitoring: [a] camera network is arranged across the precinct. [b] A.I. software helps to identify potential concerns. [c] human intelligence makes final call on any interventions, which could include for example, [d] increasing viability, medical assistance or notifying law enforcement agents.

On a more functional level, the ability to digitally manage physical attributes of the built environment such as lights, walls, and shading allows for the precinct to serve multiple roles at differing times.

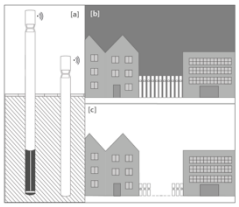


Fig 1.4: [a] Mechanical schematic of the smart pillars. [b] smart pillars in barriers mode. [c] smart pillars in partial barrier mode and open mode.

For instance, the street space on the southern end of the precinct can be closed off for events creating a 'town square' atmosphere while at night, a day-time street-stall market can easily be replaced by open areas for performers.

The remote lighting of spaces has proven to effective reduce uncivil behaviour acting as deterrent and negating any later more punitive responses.

This smart control has also enabled a number of mundane but important services to run ambiently in the background.

For example, the temperature of all buildings remains optimal, water constantly circulates through storage, filtering and agricultural systems, street shade and shelter can be altered according to the weather, while levels of sound emitting from the street can be diffused through automated window shutters and water-infused roofing. Lastly, streets are kept tidy by a number of initiatives including instant digital payments for all recycled waste at the Legal Recycling Kiosks. Gone are the days of landfills and litter, as every excess material is recycled for further use, be it water, plastic, glass, wood, garden trimmings or sewage.

Design Frame 4: Cultural Production

The Westbury community is a creative community with a strong interest and tradition of involvement across the arts, crafts, artisanal, and design sectors. In line with the findings set out in the *Urban Communities Empowerment Bill* (clause 17.2.3) detailing the value of cultural production as a key driver of economic development, Florida Street offers a range of spaces and initiatives that helped stimulated the cultural landscape of Westbury. These include maker-spaces, designated performance spaces, and financial support for artists and performers.

The Westbury Fabrication Centre, a Gauteng Province initiative, contains a range of top-end fabrication tools, a state-of-the-art digital design lab, as well as an audio recording studio. Beyond machinery, hardware and software, the centre also offers training in the use of the technology as well as business incubation support.

In what has become common practice across other cultural hotspots in the city, tickets to Westbury's monthly 'Art Street Bash' integration of TimePay© (a Bluetooth enabled technology that allows the revenue of the ticket to a distributed proportionally based on the time spent by a visitor at site in relation to their total visiting hours) ensures that performers and artist earn a living through their practice.

Design Frame 5: Cultural Immersion

Closely linked to Design Frame 3 is the frame of Cultural Immersion, which aims to leverage community cultural production towards the renewal of the urban environment.

This tactic has impacted the community in two key areas.

First, it has provided a platform for local creative practitioners, which in turn has led to a generally more stimulating and pleasing living environment.

Second, the resulting explosion of creativity has led to the precinct becoming a popular entertainment and tourist hub ensuring a much-needed financial injection into the suburb, generating 60 formal and an estimated 120 informal jobs in the community (Wessies 2039).

Both factors have led to a resurgence in the traditional artisan skills that the community was historically renowned for. Community pride in these skills, and the access to markets through retail outlets has led to craft and design becoming aspirational vocations for many of the youth, who in previous years faced, with the boredom and frustration of unemployment turned to drugs and/or gangs.

While the burgeoning creative scene of Westbury is due to the talent of its people, these abilities have been enhanced by range of technological factors that have led to increased public safety, modes of production, as well as helping to ensure that visitors to the precinct can engage meaningfully and respectfully with the precinct and negate any negative impact on residents.

For example, much of the precinct is virtually overlaid with an information layer that provides additional content and information about sites and artefacts.

Fig 1.5: A visit to 1990's Westbury using Methaar© virtual goggles

Figure B. Enlarged section of 14 displaying the research report with technical diagrams. The 'Guiding Values' and first 5 Design Frames are shown. (image: T Fenn, 2023).

P/REFERENCES OF DESIGN

This contribution was presented at Cumulus Budapest 2024: P/References of Design conference, hosted by the Moholy-Nagy University of Art and Design Budapest, Hungary between May 15-17, 2024.

Conference Website
cumulusbudapest2024.mome.hu

Conference Tracks
Centres and Peripheries
Converging Bodies of Knowledge
Redefining Data Boundaries
Bridging Design and Economics
Speculative Perspectives
The Power of Immersion
The Future of Well-being
Taming Entropy: Systems Design for Climate and Change
Ways of Living Together
Cumulus PhD Network

Full Conference Proceedings
https://cumulusbudapest2024.mome.hu/proceedings

ISBN Volume 1: 978-952-7549-02-5 (PDF)
ISBN Volume 2: 978-952-7549-03-2 (PDF)

DOI Volume 1: https://doi.org/10.63442/IZUP8898
DOI Volume 2: https://doi.org/10.63442/TADX4016

Conference Organisers
Moholy-Nagy University of Art and Design Budapest (MOME)
mome.hu
Cumulus Association
cumulusassociation.org