Wayfinding for Health Seeking

Exegesis

Wayfinding for health seeking:

A design-led exploration of how wayfinding employing empathetic communication design can improve the hospital outpatient experience.

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Attestation of Authorship

I hereby declare that this submission is my own work and that to the best of my knowledge it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma by a university or other institution of higher learning, except where due recognition is given in the acknowledgments.

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Abstract

This project explores how a design-led approach could be used to improve health seekers' wayfinding experiences within Auckland City Hospital. It questions how empathetic communication design may be practiced to support and empower wayfinding health seekers, using the Starship Outpatient Department as an environment for prototyping solutions. Whilst addressing physical wellness, hospitals often overlook the high levels of stress, anxiety and uncertainty that come with this particular environment. Currently within healthcare, there is an institutional shift toward providing patient-centred care, so that the patient's voice can also be heard in the process of designing services and solutions. Within this research, a bottom-up approach to wayfinding was employed, using individual experiences of users to define the problem, therefore embracing complexity. Through this approach, the design solution is empathetic to the health seeking journey as it reflects the needs identified. Rather than investigating the environment in isolation, there was a consideration of multiple mediums of communication. These mediums prepare and support wayfinding at different stages within the journey, aiming to empower the health seeker through communicating information and as such, enabling choice and informed decision making. The vulnerabilities found within healthcare means there is a greater need for meaningful communication. This research explores how design may support the wayfinding health seeker, taking the considerably higher demands of healthcare into consideration when designing outcomes.

The design outcome demonstrates the importance of cohesive and staggered information that is empathetic to the health-seeking journey, and does

so via an outpatient clinic referral document, appointment letter and an environmental wayfinding prototype.

Particular emphasis was placed upon the supporter role in health seeking, due to prototyping for a children's outpatient clinic and the complexity of wayfinding tasks. To ensure that the knowledge gained from prototyping continues to be of value beyond this project, a condensed, accessible wayfinding guide for healthcare was created for both clinical and design audiences.

Through building relationships and eventually collaborating with hospital stakeholders, the potential and feasibility for design-led solutions was explored. The possibilities and restrictions of prototyping wayfinding as part of a research project were evaluated, with a particular focus on the restraints of established wayfinding and ad hoc signage. Through probes, prototyping and project collaboration, the designs produced were able to respond to real problems, to test assumptions and validate the need for change in on-going wayfinding projects within Auckland City Hospital.

Positioning the Researcher

Summer Studentship

During the summer of 2014–2015, I was given the opportunity to complete the Rosella Summer Studentship at Auckland City Hospital, the aim of which is to expose students to the healthcare profession, an area they may previously not have considered. The three-month period was spent with a range of students from a variety of design, technology and health backgrounds in order to propose a wayfinding solution for Auckland City Hospital. We determined the solution would be a human-centred, and as such, conducted observation, expert interviews and facilitated a user-testing session for gaining insight into the current user experience. The focus of the proposed solution was to stagger the flow of information and to create consistency, that would in turn inspire confidence in the wayfinding cues.[1]

Further research into wayfinding revealed, however, that we had defined the proposal as being human-centred when in fact; we had designed a top-down[2] system that functioned within the restraints of the organisation, rather than from the perspective of the individual user. This process was documented, thereby creating a foundation of knowledge[3] and reference

1. See Summer Studentship in Appendix 1 (p. 412), for the proposed solution.
2. When a solution is driven by organisational restraints, starting from a general idea and adding details as development continues ("top-down", 2015).
3. See Appendix 1 (p. 414) for Rosella wayfinding guide.

to the Auckland City Hospital context. This knowledge was used as the basis for this research, which proposes using a bottom-up[4] approach to the health seeker journey and examining how the individual experience may present design opportunities for improvement in wayfinding.

Wayfinding committee

Throughout the year, I worked part time at the DHW Lab as a designer while completing this research.[5] Regular updates pertaining to informal presentations occurred with members of the ADHB (Auckland District Board of Health),[6] where wayfinding work to date was reviewed in order to facilitate knowledge about ongoing projects. A wayfinding committee was established in the ADHB mid-2015, with various parties involved in the upkeep of wayfinding within the organisation. This involved scoping the project and beginning to create wayfinding guidelines to ensure consistency across the variety of campuses that the DHB oversees.[7]

4. This is a non-hierarchal approach, rooted in individual experience and progressing upwards ("bottom-up", 2015).

5. The DHW Lab is a collaboration between Auckland DHB and the AUT University Art and Design School, which acts as a design consultancy, student portal, and research platform based within Auckland Hospital. The aim of the DHW Lab is to "[design] better healthcare experiences with patients, their families and staff" (DHW Lab, 2016).

6. The ADHB covers a range of healthcare campuses within the Auckland region, including Buchanan Rehabilitation Centre in Pt. Chevalier, Greenlane Clinical Centre, Auckland City Hospital in Grafton, the latter being where this research was conducted (ADHB, 2015).

7. See DHW Lab Appendix 2 (p. 520) for a draft of the wayfinding guide.

While I was unable to effect full participation in the committee due to time constraints, regular consults linked the research findings to ongoing work.

Personal interest

Being diagnosed in adulthood with a chronic disease,[8] I have since been a regular outpatient of the Auckland City Hospital and will continue to receive ongoing care (either in Auckland or another city) for the rest of my adult life. The beginning of my health seeking journey was a time marked by being vulnerable, stressed, unwell and under prepared. In terms of undertaking this research, there has therefore been a personal investment on my part in this opportunity, the aim of which is to assist others in their journey. In hindsight, perhaps the research also informed my ability to see that wayfinding in healthcare cannot be separated from navigation and experience.

Terms

Jones (2013) defines a 'health seeker' as someone who wishes to better their current state of health for their own sake and/or for the sake of their family, friends and community: "Human health is not the result of a service transaction; rather, it flourishes in the context of care, drawing on personal, familial, professional, and community resources" (p. 14). As such, throughout this exegesis, the term 'health seeker' will be used as a replacement for 'user', as the former is a better fit to the overarching context discussed, i.e., wellbeing.

8. Chronic diseases are noncommunicable (they cannot be contracted person-to-person), and often have a slow progression over a long period of time (WHO, 2016).

Graphic design focuses on communicating information often through the placement of text and images, and in some instances, as a tactile experience ("Graphic design", 2015). However, in the digital era, communication has moved beyond text and image to encompass strategy, copywriting, animations, etc. (Cezzar, 2016). Thus, the term 'graphic' fails to encompass the potential of graphic design as a whole, and does not accurately describe the value of a graphic designer (Saldanha, 2003). The contemporary term, 'communication design' embraces a more strategic approach to elements of graphic design, where the importance of the message is delivered alongside explaining its value to business (Saldanha, 2003).

Within this exegesis, communication design is employed to describe the nature of the practical output. However, at times, when reviewing the literature, 'graphic design' may be used, due to the relatively recent nature of the term 'communication design'.

Introduction

Designing for care brings a holistic and systemic design perspective to the complex problems of healthcare." (Jones, 2013, p. 8).

Major events such as births, deaths, and diagnoses occur daily within the hospital environment. While various forms of wayfinding and health-related information are present within the hospital environment, it does little to demonstrate empathy and does not address the needs of the health seeker in this particular context. The public hospital space serves the efficiency of its staff, focusing on their ability to provide care for patients' physical wellbeing, whereas the emotional toll on the health seeker that accompanies these major events is often overlooked (Carr, 2011; Khan, 2009).[9] Physical illness and emotional wellbeing are often viewed as unrelated entities in terms of healing, with little consideration for the mentally taxing journey through the health system. Therefore the system generally lacks a holistic, whole-person approach to healthcare and wellbeing (Jones, 2013, p. 3).

An opportunity arose at Auckland City Hospital to explore how a design-led approach can improve the health seeker experience in terms of wayfinding, which had previously been identified by the institution as a potential problem. The Starship Children's Hospital Outpatient Department in particular had renovations due in 2015-16, which the current project aimed to inform.

9. However, Khan (2009) does note that there is a growing movement within health services to focus on the patient's experience.

Built during the 1980s, Starship was the first children's hospital in New Zealand. At the time, the children's wards within Auckland Hospital (the Princess Margaret wing) were in a dismal condition (Teague, 2014). This resulted in a push to create a hospital that would serve the children (patients) rather than the staff (Teague, 2014). "The grand plan was to create a children's environment that would accomplish the impossible: make a hospital building a fun place to be" (Teague, 2014, p. 27). Incurring many funding and political struggles throughout the years, today, Starship remains the only children's hospital in New Zealand. The basic functions of the hospital are funded publically under the Auckland DHB, while other necessities are financed via generous donations on the part of the Starship Foundation. With an international reputation, Starship cares for approximately 120,00 outpatients and 20,000 inpatients each year (Teague, 2014).

This research is situated as a local project under the overarching direction of the DHW Lab, to further new knowledge in the field of health and design. Following a research partnership with the DHW Lab and Starship being initiated at the end of 2014, an opportunity was identified to explore how postgraduate design research might benefit both parties. This was done by providing students with the necessary support to complete a project and achieve their qualifications, a process that would in turn see them sharing their knowledge and findings with the hospital, thereby contributing to real world ongoing and future projects. The research aligns with a series of other local postgraduate projects, as well as a larger study conducted within Starship,

the SRIF (Strategic Research Investment Fund) (Figure 1).[10] However, while the postgraduate projects focus on making artefacts, the SRIF is driven by creative data collection and health seeker engagement (Reay et al., 2015).

Using a design-led approach, this research aims to explore how wayfinding using an empathetic approach to communication design could improve the hospital outpatient experience. The Starship Outpatient Department is employed as an area of investigation in order to prototype and test solutions. This research involves two areas of complex collaborations; other postgraduate design students who are also working in partnership with Starship outpatients, alongside collaboration with staff inside the hospital, who frequently have little familiarity working with designers, the human-centred design process, design-led solutions, and in turn, its potential. By analysing the outpatient environment and working alongside staff, the feasibility of prototyping and testing in a live context[11] was explored.

This exegesis contextualises the processes, as well as the empathetic and collaborative approaches that contributed to the creation of the proposed design outcomes. It is divided into the following chapters: contextual review, methodology, documentation, discussion and appendices.

10. SRIF is where research projects are funded that have been deemed to have the potential for national and international significance (Reay et al., 2015).
11. A live context refers to a real, pre-established environment, with people using and working within the space.
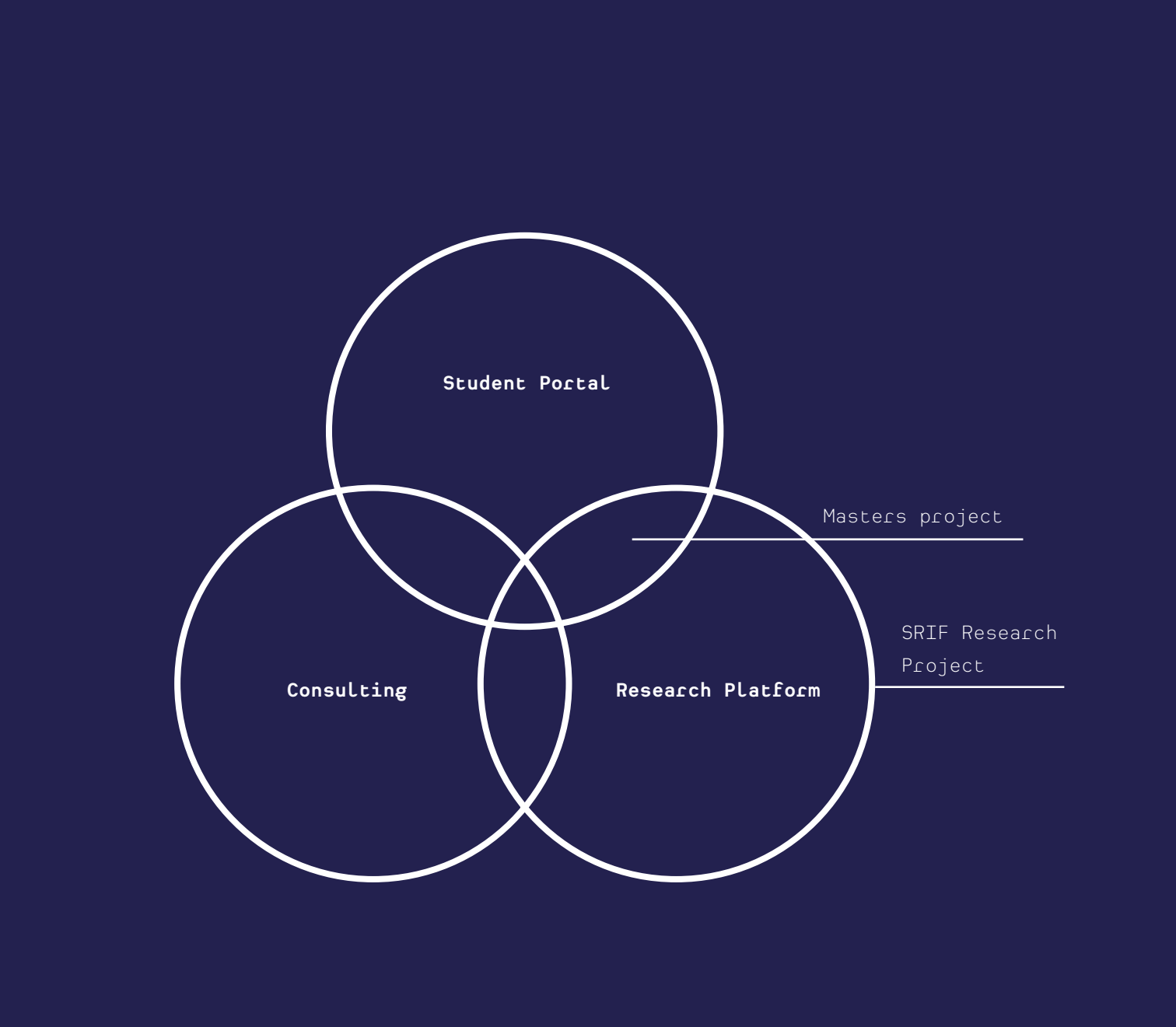
Figure 1. Reay et al. (2015). *The DHW Lab & this research.*

Divided into consulting, a student portal and a research platform, the DHW Lab supports interests from both partners (Auckland DHB and AUT University). This project, alongside other postgraduate research, bridges the student and research portal, due to being a research project in which new knowledge is documented.

The contextual review draws research from multiple disciplines and presents
a rounded perspective of wayfinding, information, healthcare and design.
Examples of design in health are reviewed and gaps in the field are identified.

Concerning the research approach, the methodology chapter discusses
action research within a human-centred and participatory design
framework. Diverse methods are presented and analysed in relation
to the management and creative production of the project.

The research chapter presents and discusses the ongoing practice of
the project and evaluates its practices, findings and its limitations.

The exegesis concludes with a discussion and summary of the study's
findings into wayfinding within the field of healthcare. An evaluation
of the research questions is presented that analyses limitations and
areas that arose for future exploration. The appendices contain
information that contributes to a further understanding of the topic
and the data involved, as well as other supporting material.

Contextual Review

Throughout healthcare, quantitative, rational thought often dominates, as success is essentially defined through the decrease of preventable deaths and disease (Jones, 2013). In mechanical terms, this successfully addresses the overarching reason why we use healthcare, i.e., to improve our wellbeing. However, while addressing physical wellness, hospitals generally overlook the vulnerabilities and stresses that arise within this particular context.

Descartes (1991, p. 200) discusses this separation of the physical and emotional as mind-body dualism. In this context, the human body is considered a machine and the soul is conscious thought. Developed from this initial framework, Foucault's *The Birth of the Clinic* (1973) explores the role of the body (within dualism) in relation to healthcare, through what is referred to as 'the medical gaze'. This is when a physician views a patient by seeing only the cause and effect of symptoms that need to be fixed (Foucault, 1973, p. 14). As the physician magnifies their focus on the anatomy that needs correcting, the rest of the cognitive, emotive system is disregarded (Foucault, 1973, p. 15).

The traditional relationship between health seeker and healthcare is being challenged, as patients and families have become increasingly empowered, shifting from passive to active participants within their own care (Jones, 2103; Wurman, 2001). The emerging generation of health seekers require a higher standard of care and experience that "challenges the hegemony of institutional practice" (Jones, 2013, p. xv), and demanding "Nothing about me without me" (Delbanco, Berwick, and Rockefeller et al., 2001).

Viewing the entire person when designing solutions for healthcare impacts the hospital experience by contributing to better health outcomes (Ulrich, 1991). The majority of this design-based research into healthcare relates to inpatient rather than outpatient experience.[12] As healthcare moves toward increasing outpatient treatments, a gap in the knowledge has developed about aspects that improve the experience, with recommendations focusing around shorter waiting times and modern furnishings (Becker & Douglass, 2006; Arneil & Devlin, 2002). Good first impressions are vital, and wayfinding, being the first encounter employed for finding the appointment location, is a significant part of this. Wayfinding within healthcare is viewed as a 'big box' solution, due to its ever-increasing complexity and large scale (Jones, 2013, p.xv). A factor of this growing complexity is the large environments being constructed alongside an increasing population, thus proving wayfinding a crucial function of navigation (Gibson, 2009). When poor wayfinding occurs, it can reflect negatively on the organisation and the services being provided within it (Mollerup, 2013; Passini, 1996). Thus, wayfinding is inherently holistic in terms of its physical and emotional impact within an environment (Mollerup, 2013; Silvis, June, 2013).

12. This is in part due to the increasing pressures of health from an aging population
(Gressel & Hilands, 2008).

Wayfinding

Wayfinding[13] is a multi-disciplinary field that intertwines the roles of environmental psychology, geography, anthropology, architecture and environmental design (Passini, 1980; Figure 2). Known by a variety of other names such as environmental graphic design,[14] signage, sign-system design and architectural graphics, wayfinding continues to be the most prominent classification in terms of navigation in the built environment (Gibson, 2009; Figure 3). With close alignment between the structure of buildings and the readability of spaces, if wayfinding and architecture work in isolation, they will not achieve an outcome that can be easily navigated (Berger, 2009).

The first to discuss wayfinding as a subject in its own right, Passini (1980), defines it in relation to decision-making, as an approach for problem-solving within space and facilitating efficient navigation to a desired destination.

13. Exploring the role of urban design, Lynch (1960) coined the term "wayfinding", discussing how we orientate ourselves within a built environment and perceive spatial information.

14. However, 'environmental graphic design' encompasses all visual wayfinding, identity, information and 'experiences that connect people to place' (Society of Experiential Graphic Design [SEGD], 2015).
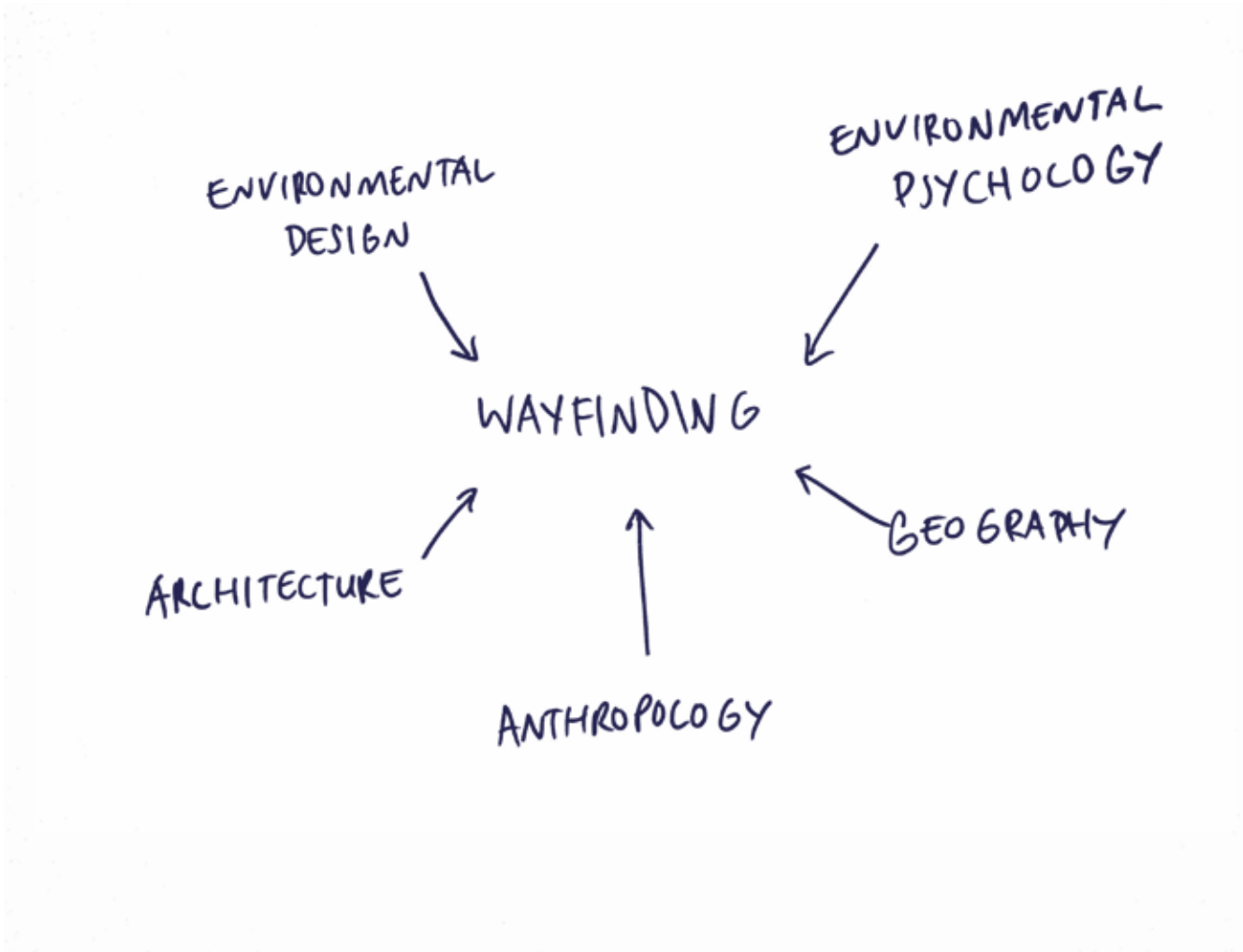
Figure 2. Passini, (1980). *Wayfinding fields.*

Representing the variety of disciplines that are incorporated into a well-rounded wayfinding system, everyone must collaborate in some form within a wayfinding project, via direct or indirect means. For example, when planning a building, understanding what impacts navigation, or understanding how environmental design can influence or co-ordinate with established behaviour.

WAYFINDING   IDENTITY

ENVIRONMENTAL
GRAPHC DESIGN

EXPERIENCES   INFORMATION
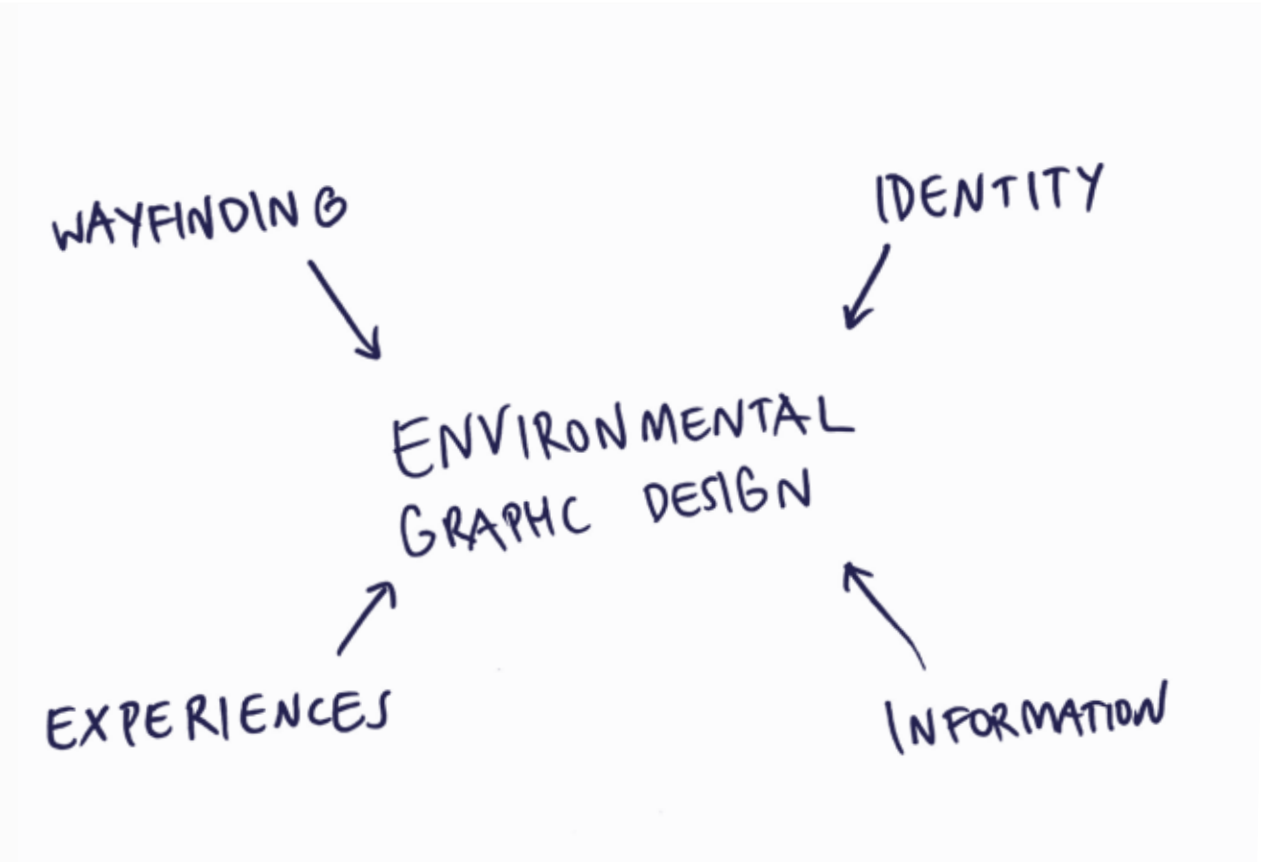
Figure 3. SEGD, (2015). *Environmental graphic design principles.*

While these may be categorised into disciplines, i.e., experience
design, information design, etc., they may be better represented
as principles for space and the user experience. This is due to
categories reflecting aspects that impact the wayfinder directly
(the final result of collaboration), rather than disciplines
involved in the execution of wayfinding (Figure 2).

Mollerup (2013) builds on this initial definition stating: "Wayfinding is what we do when finding our way [within] unknown quarters. Good wayshowing is user-led, [and] built on how we practice wayfinding" (p. 6).[15] When communicating spatial information, the utilised approach is integral to how the space is understood by the wayfinder when implemented, thereby affecting how the information is recalled and practiced by the wayfinder (Golledge, 1992). In terms of communication design, wayfinding leans toward the presentation of information, branding and graphics (Berger, 2009; Cezzar, 2016).

Broadly speaking, wayfinding concerns persuading the user (the decision maker), to trust and follow given cues with confidence to their end destination. As summarised by Gibson (2009):

> People will always need to know how to reach their destination, where they are, what is happening there, and how to exit. Great wayfinding systems employ explicit signs and information as well as implicit symbols and landmarks that together communicate with accuracy and immediacy (pp. 12-13).

15. For the sake of clarity within the exegesis, wayfinding refers to both the wayfinder seeking a destination, and as a discipline of communicating navigation through space.

Mollerup (2013) divides decisions into planning[16] and executor[17] segments. Exploring executor decisions, Passini (1980) discusses the executor decision-making process as a series of behavioural actions (Figure 4). Instructions and cues must be simple and direct, as the more complex the wayfaring process, the more room there is for error (Passini, 1980).[18]

Mollerup (2013) discusses persuasive environmental communications in terms of levels; technical and semantic levels must be achieved before opportunities for effectiveness can occur. At the technical level, communication needs to be legible and distinct, thus readable (Figure 5). The semantic level refers to the underlying message being understood and comprehended (Figure 6). Once technical and semantic issues have been achieved, communication can begin to influence behaviour and decision-making (Figure 7).

16. When one decides in advance to go to the destination, this is a planning decision (Mollerup, 2013, p. 22).
17. Executor decisions occur in contact with the environment, going to a place to arrive at the predetermined destination (Mollerup, 2013, p. 22), also described by Passini (1980) as wayfinding decision-making processes.
18. Only one subtask can be completed at one time; they may overlap, but are singular in execution (Passini, 1980).

Figure 4. Passini, (1980). *Executor decision diagram.*

Each branch displays the variety of executor decisions that can occur when completing one over-arching planning task. While each decision point presents an option until the destination is reached, the wayfinder evaluates each according to time, complexity and added value to the experience.

Figure 5. (2015). *Technical level.*

For example the type chosen is the appropriate style and size,
and the cue is not hidden or peeling off the surface.

Figure 6. (2015). *Semantic level.*

The male and female pictograms, for example, are generally known
as being related to bathrooms.

Figure 7. (2015). *Effectiveness.*

Communication is clear and direct and situated at direct eye-level. Language and images are used to reinforce understanding. Information reflects expected needs and questions regarding the space, providing opportunity for effective behavioural changes.

Vision is typically used to make sense of our surroundings as we seek distinctive forms to create a 'sense of location' (Golledge, 1992). As noted by Lynch (1960) "A good environmental image gives its processor an important sense of emotional security" (p. 4); thus, wayfinding supports users and contributes to feelings of ease within the environment (Gibson, 2009). For wayfinders, anxiety typically occurs when they become disoriented or uncertain of their current direction, usually in an unfamiliar place (Gibson, 2009). This can be due to little prior knowledge of the environment, as there will be few or no cognitive reference points to provide orientation (Kaplan, 1976).[19] Stress and anxiety can be caused by inadequate information, or if already present, this emotive state can cause a lack of focus and the misreading of cues (Golledge, 1992). Thus, wayfinding is ideally designed for the first time user, with the designer anticipating navigational needs in order to reduce the potential for creating anxiety. Wayfinding has the potential to move beyond avoiding the negative effects of navigation, to create an environment that has the potential to maximise the depth of human experience within a space (Lynch, 1960).

Within wayfinding, no one medium should singularly support the journey (Berger, 2009; Figure 8). Mollerup (2013) outlines a wayfinding communication hierarchy: 1. environmental cues; 2. direct labels; 3. self-explanation (p. 54). Lawton (1996) discusses the variability between individuals and maintaining orientation, putting forward the notion that individuals focus on different types of wayfinding at different points in the journey.

19. We read, process and remember environments through cognitive maps. See cognitive maps in Appendix 3 (p. 528).

Signage

Placemaking
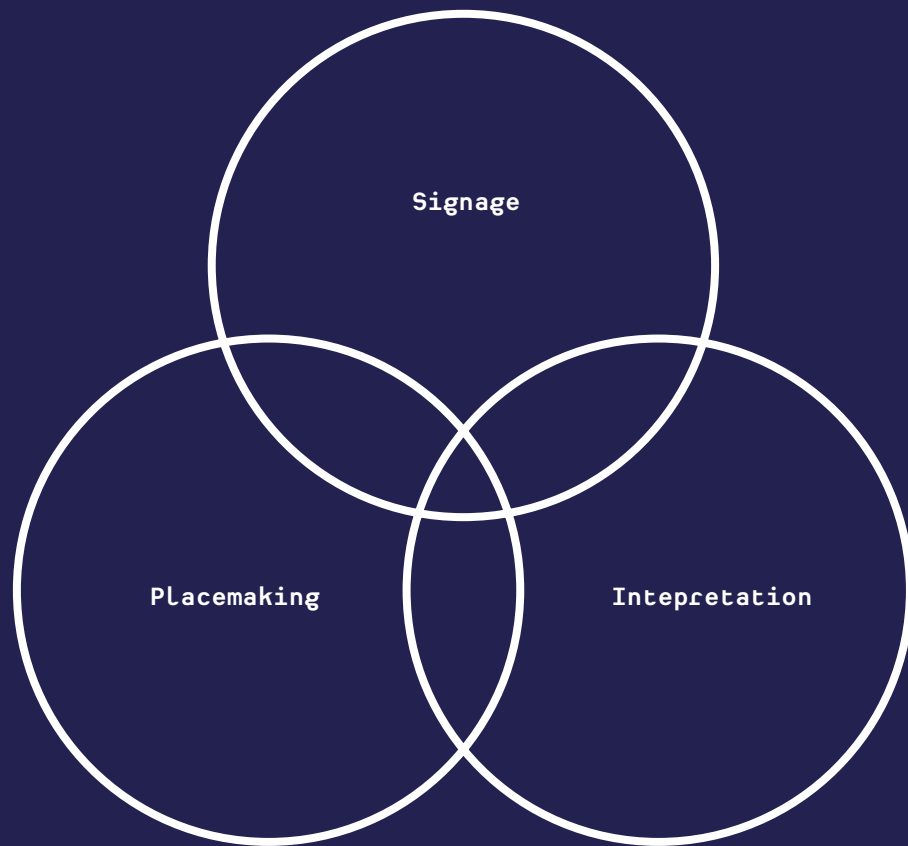
Intepretation

Figure 8. Calori & Vanden-Eynden, *The three main components of EGD & how they can overlap*.

Outlined are wayfinding aspects specific to environmental graphic design practice: signage, interpretation and placemaking. This explores the explicit and non-explicit communication aspects of design, and how these should be considered when executing a wayfinding project.

Having a broader understanding of the spatial environment, placemaking or placeshowing, can express itself in a variety of forms that are both explicit and non-explicit (Calori & Vanden-Eynden, 2015, p. 9). Placemaking provides a strong sense of understanding place, and ties branding and identity into the environment to create a solid sense of orientation (SEGD, 2015). This provides a spatial understanding beyond the one destination or pathway option, allowing for the ability to find other locations that may be important or relevant to the wayfinder (Mollerup, 2013). As stated by Aristotle (cited in Bonnet, 2015, p. 2), place "gives bountiful aegis – active protective support – to what it locates".

Gibson (2009) discusses the importance of coordinating communication across various mediums, to provide consistent communication using the same names and terminology.[20] For example, place names and instructions on a website that are also found within the environment, thus creating a consistent experience.

Though signage is the most practical option in terms of cost and turnaround, and often becomes the default option, it should be considered a last resort (Mollerup, 2013). Inside a new building, signage can be utilised less; however, in an older, retrofitted environment that often tend to have maze-like tendencies, signage is often the only option for facilitating clear communication (Silvis, June, 2013).

20. Furthermore, the logical rather than political naming of places is vital in terms of communication (Gibson, 2009).

Wayfinding employs various signs to communicate cues for different purposes, e.g., directional,[21] identification,[22] orientation[23] and regulation[24] (Gibson, 2009; Mollerup, 2013). Staggering information is important, as doing so will keep from overwhelming the wayfinder and minimises opportunities for forgetfulness (Silvis, June, 2013).

Creating a wayfinding strategy involves anything from planning how the user will move through the space, to maintaining consistency when rolling out the actual system, especially where this is done in a pre-established environment. Berger (2009) notes that the best wayfinding projects are those that serve both user and client, as good wayfinding must take into consideration the bottom line, i.e., cost.[25] When constructing a wayfinding strategy, the team responsible can vary in size, depending on the project, stakeholders involved and project impact (Figure 9).

21. These point you in the direction of a specific location and continue to validate that the wayfinder is on the correct path (Gibson, 2009, p. 50; Mollerup 2013, p. 60). Directional signage should be employed first to push wayfinders through to the desired space, followed by orientation information that links to key wayfinding points (Silvis, June, 2013).

22. The function of the space and what is around it (Gibson, 2009, p. 48).

23. These state where the wayfinder is in relation to what is around them, often through directories and maps (Gibson, 2009, p. 52; Mollerup 2013, p. 60).

24. These indicate what behaviour is expected within the space through explicit messaging and must be carefully crafted in order to not make the wayfinder feel unwelcome (Gibson, 2009, p. 54; Mollerup 2013, p 60).

25. Design and financial sustainability of the wayfinding system is considered more important than initial implementation (Gibson, 2012).

The client team

The building design team

The wayfinding, signage & implementation team
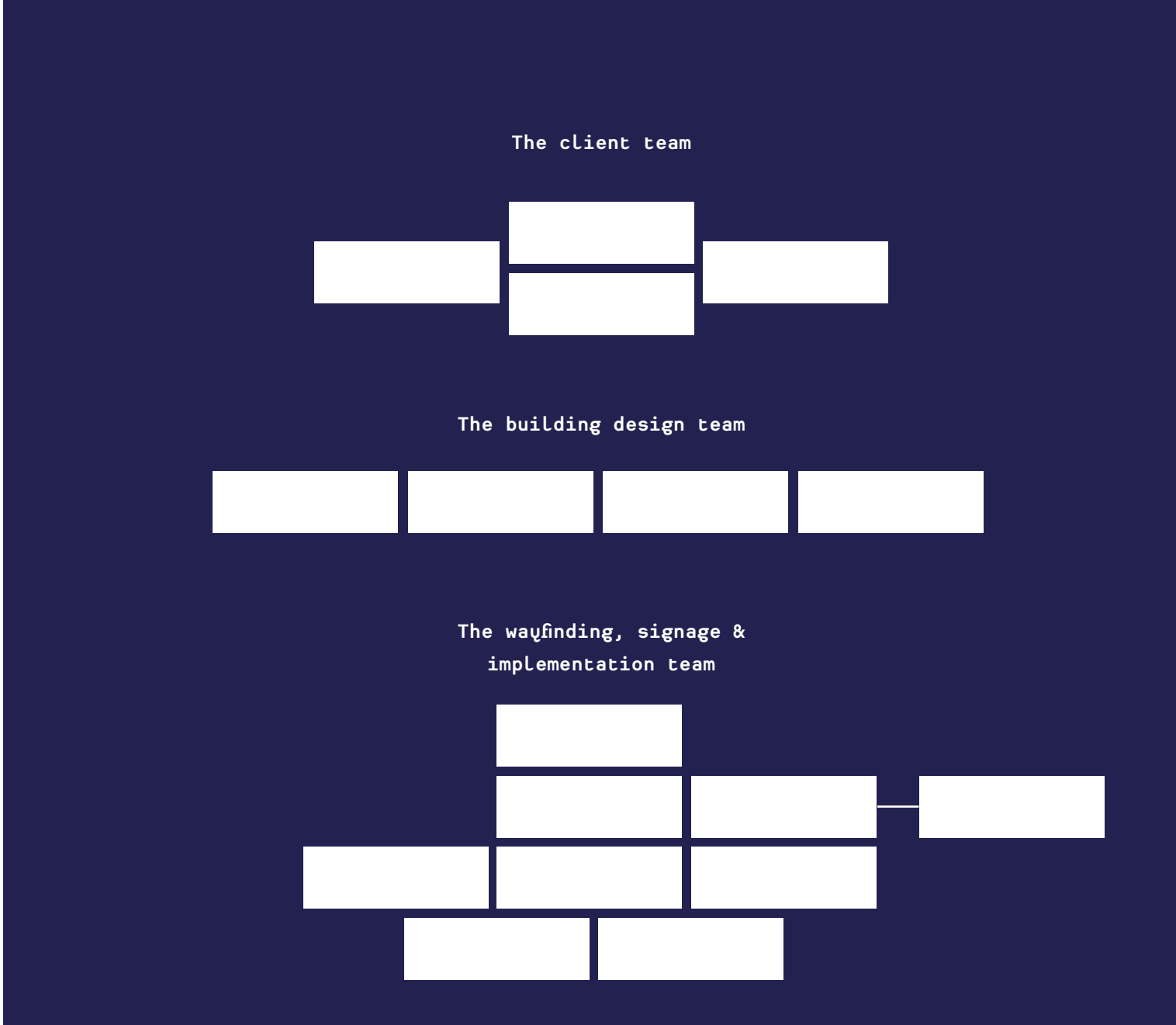
Figure 9. Gibson (2009). Large project diagram.

With varying numbers of team members, depending on the scale of the project, collaboration occurs between the client, architect and wayfinding team. The client team may encompass the business owner, project manager and varying directors. In the case of large scale and impactful projects, the city or national stakeholders may be involved in the team. The building design team focus on the structure and presentation of the environment and may include the architect(s), interior design experts and a sponsorship and wayfinding planner, if the project is large in scale. The wayfinding design and implementation teams are generally led by a creative director, with a team of designers focusing on different aspects of execution and implementation.

Achieving a consistent wayfinding system (beyond initial implementation) is realised by establishing a clear guide for wayfinding cues and principles that can be re-applied as the building changes and updates over time (Calori & Vanden-Eynden, 2015). Thus, when ad hoc and inconsistent signage is used, it is generally a symptom of a non-maintainable system, where staff believes that official signs do not meet their current needs (Mollerup, 2013).[26]

When planning the strategy, a wayfinding journey map is needed to show the different steps and decision points one must make in order to reach the destination (Berger, 2009). This goes beyond entering the facility, extending to the first point of contact with the organisation (Berger, 2009). When making a journey, the prepared wayfinder is always favoured, as they have already begun building their cognitive map and therefore, has an initial understanding of the space and wayfinding tasks prior to arriving (Mollerup, 2013, p. 68).[27] While most do not plan for short journeys, it is nonetheless helpful within complex environments, as is common in the case of healthcare (Mollerup, 2013, p. 68). Pre-visit material such as verbal information, printed collateral, maps and the Internet can enable planning regarding how to get to the location and then navigate within it (Mollerup, 2013, p. 68).

26. Within particular environments, such as an airport and healthcare environments, where safety is a concern, ad hoc and inconsistent signage can contribute to the anxiety of the wayfinder (Mollerup, 2013).

27. Yet the understanding of the environment does not truly begin until one is immersed within it (Golledge, 1992).

In recent years, the scope of contemporary wayfinding has been extended from real space into the digital realm, as our reliance on digital information grows. (Tate, 2014). This age of information has been identified by Wurman (2001) as an "explosion of non-information" (p. 19), where the definitions of data and information are blurred. Information generates meaning and understanding that is 'mined' from data (Wurman, 2001).[28] On a delicate balance, limited and excess information both create little confidence and hinder communication, thus disseminating information is vital to this equilibrium (Levitin, 2015; Wurman, 2001). As we must remember more, removing task remembrance from the internal mind to external cues, (e.g. the environment), can aide in this diffusion of information (Levitin, 2015). While there is a definite shift from the physical to digital in terms of information, both are perceived within spatial terms (Tate, 2014; Wurman, 2001). Keane-Cowell (2013) states that our expectations of analogue space have risen to match those we hold of its digital counterpart:

> We have become used to navigating our way through the proliferation of data out there thanks to highly structured information architectures, hierarchies and search paths. Offline, [the] level of our expectation with regard to how we encounter and experience the analogue world has grown to match [environments]… [This] has created a greater need for wayfinding systems that help us [move forward] with a healthy degree of confidence (para. 4).

28. "In distinguishing the raw commodities that are the building blocks of meaning, with meaning itself the true meaning of the word, *information*"(Wurman, 2001, p. 15).

As we continue to have ever-growing expectations, our environmental and information tastes are becoming increasingly refined (Berger, 2009; Wurman, 2001). Where information had previously been a highly controlled resource, there is now a surplus of information and increasing options for accessing it. "This quantity over quality shift in our culture has created an even deeper need for truly informing experiences – for insight, the most precious form of information" (Wurman, 2001, p. 16). As our appetites continue to grow, the way we consume and communicate information may fundamentally change, with no single 'right way' of gaining access to it (Crooks, Lankow & Ritchie, 2012; Wurman, 2001).

The term 'information architecture', as coined by Wurman, is defined as "the creating of systematic, structural and orderly principles to make something work – the thoughtful making of an artifact, idea or policy that informs because it is clear" (Wurman cited in Resmini & Rosati, 2011, p. 22). Thus, information architecture is a broad discipline that enables clear direction from the architect, allowing for the creation of consistent communication through various information channels (Information Architecture association [IAI], 2013).[29] This architecture can be viewed from a variety of perspectives, e.g., information design, information systems and information science (Resmini & Rosati, 2011, p. 23).[30] With each information architecture style, the purpose is simple: to create clear instructions that others can follow, resulting in cohesive information environments (Resmini & Rosati, 2011; Wurman, 1997).

29. Put simply: "making information simpler, more direct, and more comprehensible" (Resmini & Rosati, 2011, p. 23).

30. Information systems and science often lean towards computer systems (Resmini & Rosati, 2011, p. 23).

Healthcare

Patient-centric care is globally on the rise and focused on designing holistic, empathetic, value-based experiences within the healthcare environment (Golembiewski, 2015). This involves designing services, experiences and artefacts that address the real needs of patients, often making decisions *with* them, rather than *for* them. This shift in the meaning of quality care is influenced by:

> [Open] access to information on the Internet, a social movement toward patient advocacy and patient rights, and emerging evidence connecting patient-centered approaches, empathy, and compassion to better medical outcomes (Golembiewski, 2015, para. 4).

Making accurate, trustworthy health-related information more readily available online empowers decision-making about health (Jones, 2013; Wurman, 2001).

Patient-centred care creates supportive physical and emotional environments, particularly by focusing on and caring for the entire family, as opposed to focusing singularly on patient needs (Golembiewski, 2015). However, whilst emphasising care, the bottom line of cost plays a large role in design implementation in healthcare (Gressel & Hilands, 2008).

Within hospital contexts, the environment has a considerable impact on wellbeing and care. The space effects mental wellbeing, resulting in improved physical health (Ulrich, 1991; Ulrich 1992; Ulrich, 2000) and additionally, effecting satisfaction of experience and perceptions of care (Arneill & Devlin, 2002; Khan, 2012; Lachter, Malin & Raldow, 2012). Within an inpatient context, evidence has shown that better light, furnishings and privacy effect perceptions and health outcomes within the healthcare space (Ulrich, 1992). When wayfinding in complex hospitals, manifestations of stress through emotional and physical responses were found to have negative impacts on health (Carpman & Grant, cited in Huelat, 2007). Thus, the overall approach to health and the environment must be holistic and create a balance between emotional and physical needs (Long, 2001).

In terms of patient satisfaction in receiving care, Arneill & Devlin (2002) identified that patients judge quality based on what they know and their experience of the environment and staff interaction, rather than on clinical procedures.[31] While person-to-person interaction is vital, the environment facilitates a first impression of the service and continues to support the experience when staff is busy, unavailable, or when patients are waiting. Currently, within the waiting room environment, patient satisfaction is often judged quantitatively (shorter wait times), rather than qualitatively (human experience) (Becker & Douglass, 2006; Khan, 2012). As outpatients' contact with the physical environment is limited compared to inpatient care, alternative approaches to supportive designs are needed. When investigating stress

and anxiety within inpatient clinics, a lack of information was identified, while waiting times and the density of the small waiting environment were factors of stress (Nelson-Schulman, 1984). When testing medical and service information, patients in the above study became empowered by being able to communicate choice, and as a result, became more autonomous in the process.[32] Additionally, this self-reliance meant less staff time was required due to fewer patient demands (Nelson-Schulman, 1984).

Hospital navigation involves constant maintenance as the result of renovations; the shifting of departments and additional buildings are continuous factors (Berger, 2009). The buildings themselves are the most complex to create, due to the multitude of unique demands involving specialties, functions and regulations (Carr, 2011).

Wayfinding within healthcare is viewed as a significant systemic issue for designers, where technology and industrial design can have little impact on experience (Jones, 2013).[33] Due to this complexity, specialists and consultants in health and design must collaborate to bring an overall vision together, thus rendering design in health a specialised field (Carr, 2011).

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31. However, staff continues to have a major role in the perception of care, with the environment also influencing staff behaviour (Arneill & Devlin, 2002).

32. A "welcome" sign, hospital information booklet, patient letter and orientation signage were tested in the study (Nelson-Schulman, 1984).

33. See Appendix 3 (p. 530) for technology and healthcare.

Design

There are increased expectations regarding information transfer into the realm of the aesthetic, as evidence-based research reveals that designs that are pleasing to the eye are more effective, because they make us feel better (Norman, 2004; Figure 10). Emotions affect everything, from the way we think, behave and feel. "Without emotion, our decision making ability would be impaired. Emotion is always passing judgments, presenting you with immediate information about the world" (Norman, 2004, p. 7). We judge everything on first impressions. "Design, by its very nature, demands to be judged when you initially encounter it, because it is supposed to solve a problem" (Kidd, 2015, p, 2); thus, most viewers can upon encountering a design can evaluate if it is successful or not (Kidd, 2015).

Design often serves as an argument attempting to persuade the viewer firstly to read the design, engage with it, and then change their behaviour or actions as a result of the design (Forlizzi & Lebbon, 2002). Due to the prevalence of visual culture in contemporary society, form must be manipulated using image and text in a sophisticated manner (Forlizzi & Lebbon, 2002).
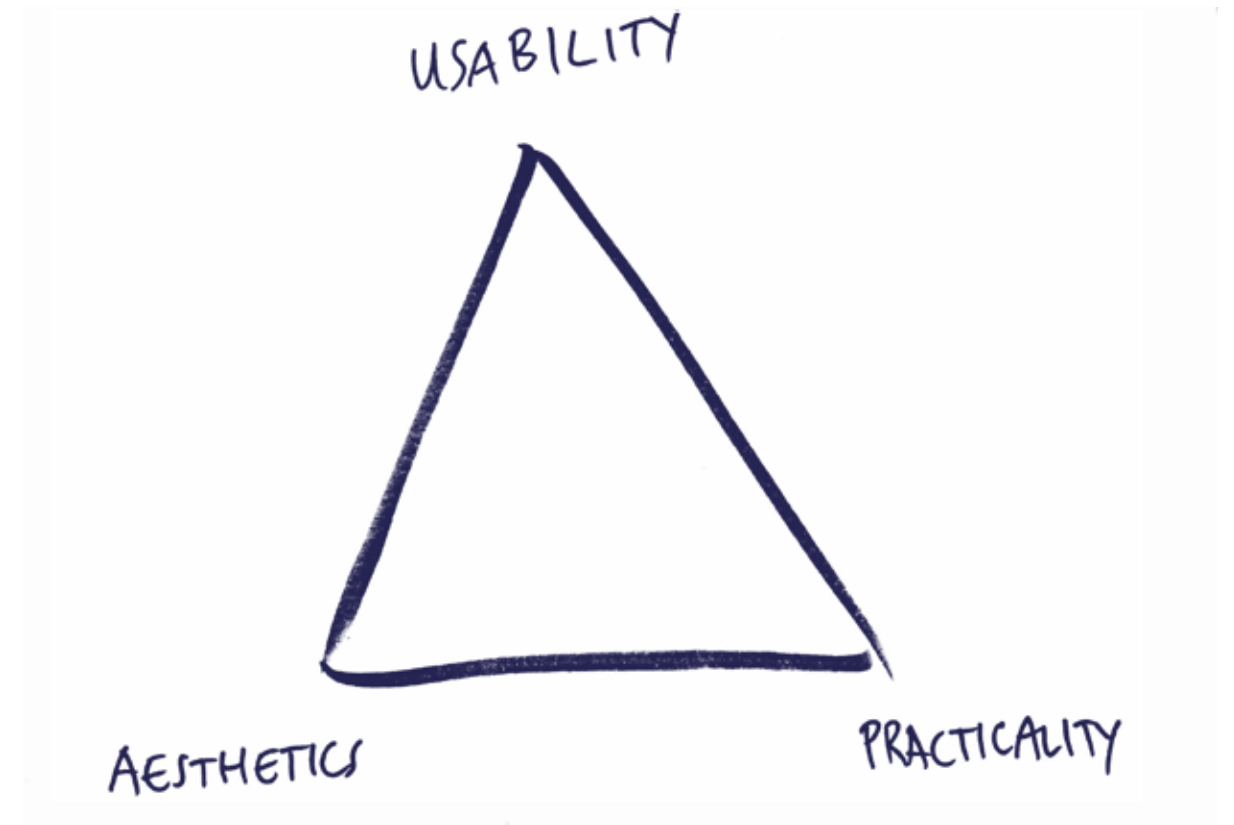
Figure 10. Norman, (2002). *Visualisation of design principles.*

While aesthetics are important, visibility and practicality cannot be ignored, or vice-versa. Each presents a delicate balance that the designer must weigh accordingly, aiming to bring the most positive impact possible to the experience.

Simply put, since designing communication involves the management of both image and text, the layers of this communication can be divided into semantics,[34] syntax[35] and semiotics[36] (McCarthy, 2013). However, Lupton (2010) explains:

> The dominant subject of our age has become neither reader nor writer but user, a figure conceived as a bundle of needs and impairments – cognitive, physical, emotional. Like a patient or child, the user is a figure to be protected and cared for but also scrutinized and controlled, submitted to research and testing. How texts are *used* becomes more important than what they mean (p. 97).

Thus, through effective communication, as well as anticipating and testing possible actions, the artefact may be subjected to thorough affordances,[37] intended or otherwise. These guide the user in terms of how the object should be used, and in turn modifies what an object does and can do

34. Semantics can be defined as the literal and typographic meaning of words, phrases, and sentences (McCarthy, 2013, p. 51), otherwise known as the "meaning of information" (Heller, 2014, p. 222).

35. Syntax creates the focal point, with the ordering and placement of sentences influenced by hierarchy, such as size and colour (McCarthy, 2013, p. 51).

36. Semiotics analyses and considers the relationships between meaning and form, where signs only gain meaning through representing an idea or object (Heller, 2014, p. 222; McCarthy, 2013, p. 51).

37. Affordances are parameters of what a design, that can also be used as indicators of how something works (Norman, 2002, p. 9).

(Norman, 2002). Graphic design serves to communicate messages effectively. If it does not achieve this, it is not a good design (Rand, 1947). In design, both function and form play a crucial role, in many instances maintaining a balancing act between direct communication and the allure of mystery (Kidd, 2015). When design requires the viewer to try harder to understand it, it is not *bad* design; however appropriate context is imperative. "Mystery, it must be said, can also be terrifying: phantom pain, sudden change, irrational behavior, the loss of power. The threat of the unknown"(Kidd, 2015, p. 7).

Traditionally, the graphic designer is consulted for front-end development, with content and target audience pre-established (Jones, 2013; Kidd, 2013). However, more frequently, designers are being consulted at the beginning of a project. McCarthy (2013) explains that, "As graphic designers use typography, page composition, space and book structures to influence reading and pacing, visually-minded authors know that their narrative can be enhanced by graphic interventions"(p. 71; Figure 11). Alternatively, content and form are being increasingly separated, as guidelines must be built for consistency across multiple digital interfaces (Lupton, 2010, p. 98).[38] Yet through guidelines, cohesive branding can deliver powerful visual literacy across multiple mediums (Lupton, 2010, p. 100).

38. Examples such as these exhibit the importance of information architectures in the age of information.
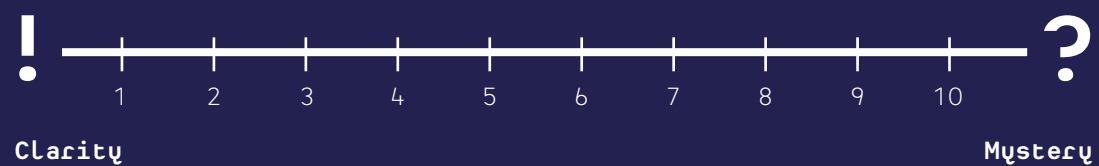
Figure 11. Kidd, (2015). *Clarity vs mystery diagram.*

By placing a design on the scale one can begin to judge if the placement is appropriate to its context and purpose. For example, when seeking to excite the viewer, erring on the side of mystery is best. However, if reassuring or giving instructions, nothing less than absolute clarity will do. This is due to clarity having a no-nonsense, direct and trustworthy sense of communication, while mystery is evocative and seeks attention (Kidd, 2015).

The best designs are created from accurately defined problems and by identifying real needs (Kidd, 2013; Rand, 1947). However, in order to solve a design problem, there must be an understanding of how the design communicates, and why the solution works (or fails):

> Graphic design needs your mental participation, even if it's subconscious. Graphic design is message-sending into the brain. It is a cerebral experience, not a physical one. Architecture wants you to walk through it. Industrial design takes your hands (or other body parts) to appreciate it. Fashion makes you put it on. But graphic design is purely a head trip, from your eyes to your mind (Kidd, 2013, p. 4).

A variety of models exist that explain how we communicate and understand, both on a clear informative level, as well as on an emotional level. A systematic way of looking at how communication occurs is by using the Shannon-Weaver diagram (Figure 12), which simplifies the process of the journey of a message, from sender to receiver, and explains the impact that noise or distraction has on communication. Examining the emotional impacts of communication, Norman (2004) discusses this by using layers of understanding, i.e., the visual, behavioural and cognitive, and how these can enable or hinder communication (Figure 13). However, when designing for understanding, it should not be misunderstood that simplifying information enhances communication, as simplification can hinder an understanding of how a design works (Norman, 2002).
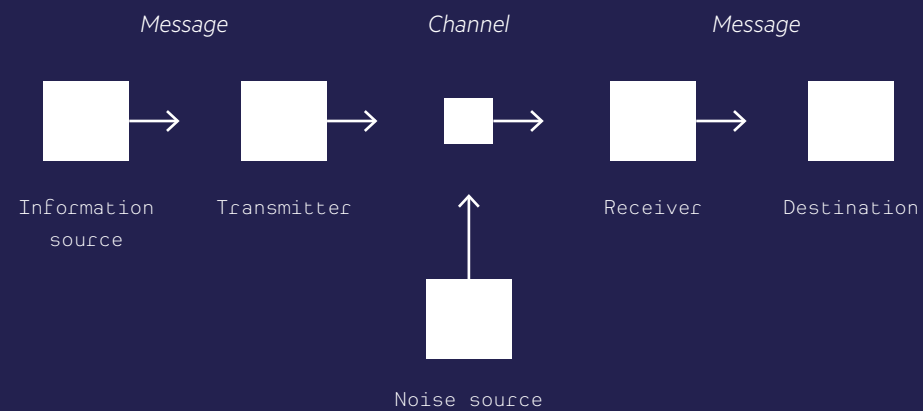
Figure 12. (n.d.). *Shannon-Weaver model of communication.*

This model describes how, when one communicates, it can be misinterpreted as having an unintended meaning. This is due to the variety of processes communication goes through from being sent to being received; additionally, communication is also disrupted by noise, as no communication exists within isolation.
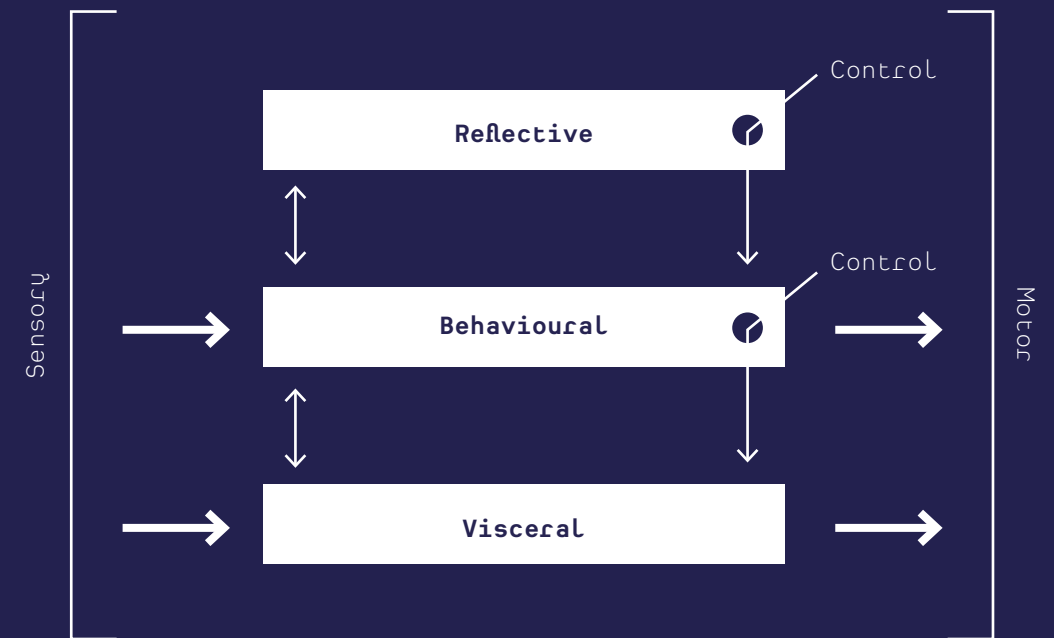
Figure 13. Norman, (2004). *Three levels of processing: visceral, behavioural, & reflective.*

Everything we do and interpret has cognitive and affective value. Affect is either positive or negative. In terms of cognitive meaning, we create or assign meaning, whereas with affective meaning, we create or assign value, thus modifying the way in which we think (Norman, 2003). When experiencing a positive effect, one is more likely to forgive faults or shortcomings, as this affect induces relaxation and curiosity. A negative affect will more likely cause people to focus on faults, thus noticing them more (a phenomenon known as focus). This focus causes behavioural and reflective actions to pause, relying instead on the visceral to solve the problem at hand.

Health & design examples

When reviewing health and design projects, a range of examples was examined and aspects of each approach were evaluated. On the part of either an external consultancy or an in-house hospital team, there was a focus on integrating design disciplines in order to solve a problem, with varying degrees of execution. How these designs had been integrated into the hospital context was investigated in order to create a consistent experience. The ranges of scaled changes were explored, from fixing current problems to aspirational future concepts, evaluating the pros and cons of each. Various levels of engagement were employed with staff and patients using various methods, from designing *for* to designing *with*.

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Figure 14 A. Innovations in compassionate care project, orginal and new appoinment letter compared.

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Figure 14 B. Innovations in compassionate care project, trialing wayfinding signage.

Figure 14. UCHD, (2010). Innovations in Compassionate Care Project.

Better Outpatient Services for Older People, NHS, 2010. Sheffield Teaching Hospital.

The UCHD (User-Centred Healthcare Design) outpatient project was an interdisciplinary approach to co-design, using service, graphic and environmental design to create a solution for an elderly persons outpatient clinic (UCHD, 2010). The rich user engagement of patients and staff ensured accurate emotional mapping, thus foreseeing anxiety and stressful moments in the patient's pathway (UCHD, 2010). Capturing users' voices in this project was its strength; however, from a communication design perspective the design outcomes did not appear to be consistent in their visual language. This may have been due to designing within the restraints of the organisation; however, due to this restraint, it is likely that the letter would have been easily implemented. While the project was holistic in its approach, i.e., viewing the letter, environment, signs and service together as a solution, it appeared to focus on processes as opposed to design.

Figure 15. Fuel for, (2010). *The waiting room.*

Self-initiated design project.

The Fuel For design proposition presents a cohesive information system in which each component of the outpatient journey is addressed (Fuel For, 2010). It reflects the needs of the context in terms of appointment preparation and wayfinding to the clinic, with the focal point being the waiting experience (Fuel For, 2010). The environmental design is the hero in this concept, addressing the different activities that occur within the space – waiting, information points, interactive activities for children and promoting a healthy lifestyle. Like the UCHD (2010) concept, users were engaged through focus groups and interviews in order to identify the problem. While the concept appeared well rounded and researched, this is an aspirational piece of work. Due to being presented and executed as a stand-alone conceptual piece, there is little recognition of how it can be integrated into a real, whole hospital ecosystem.

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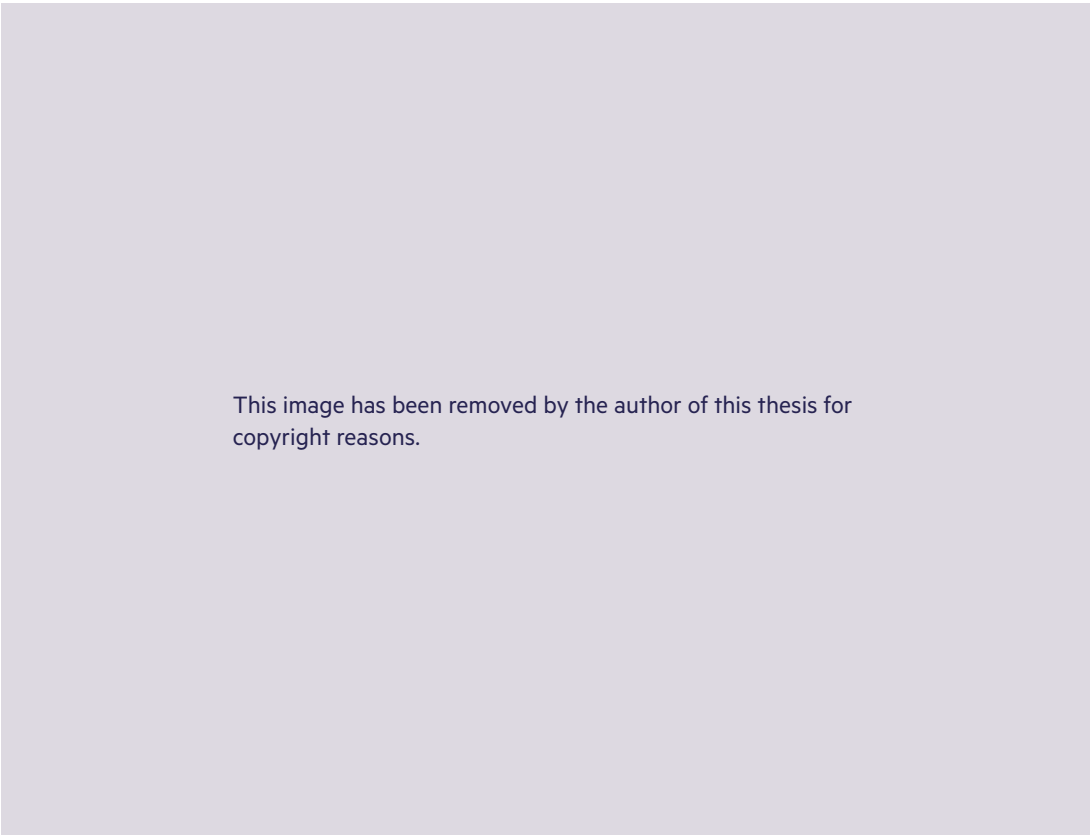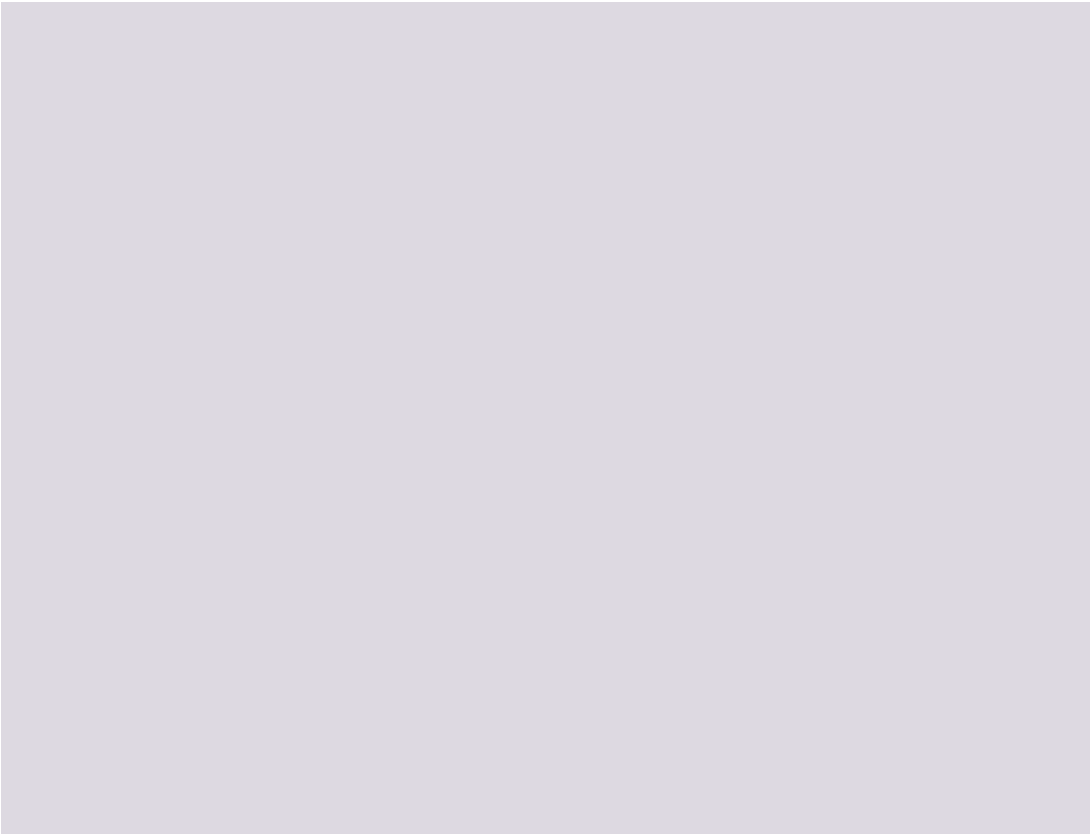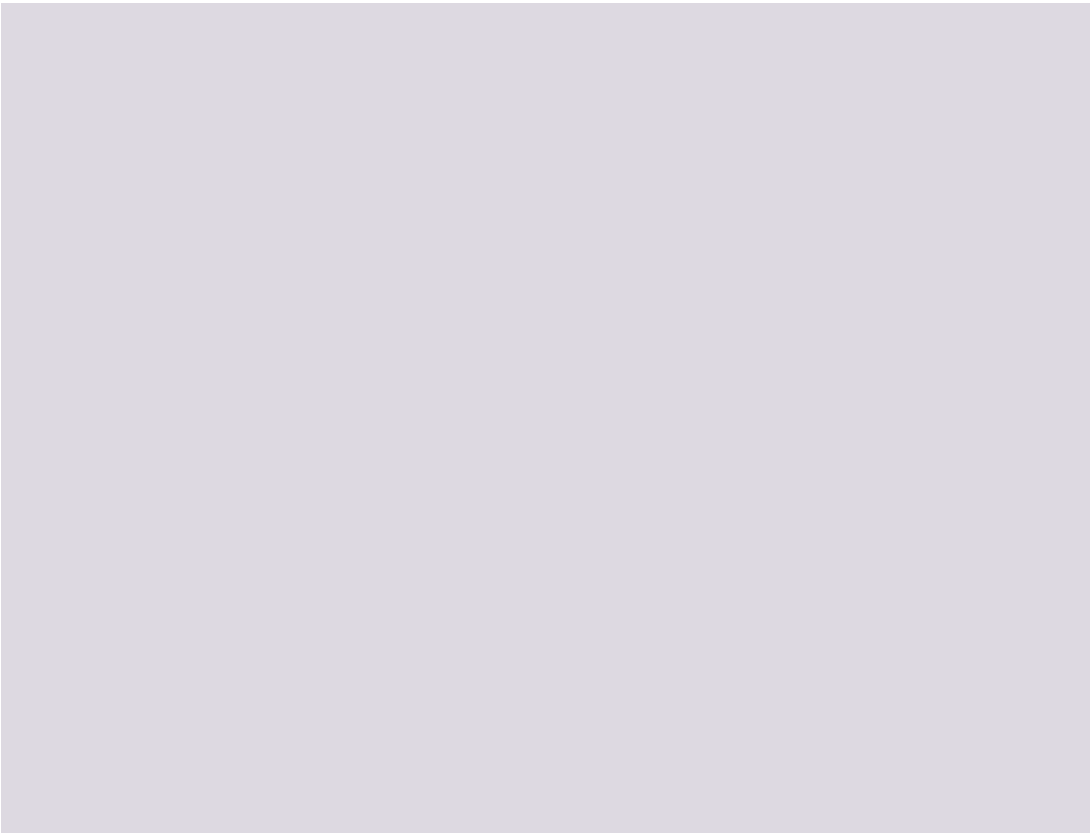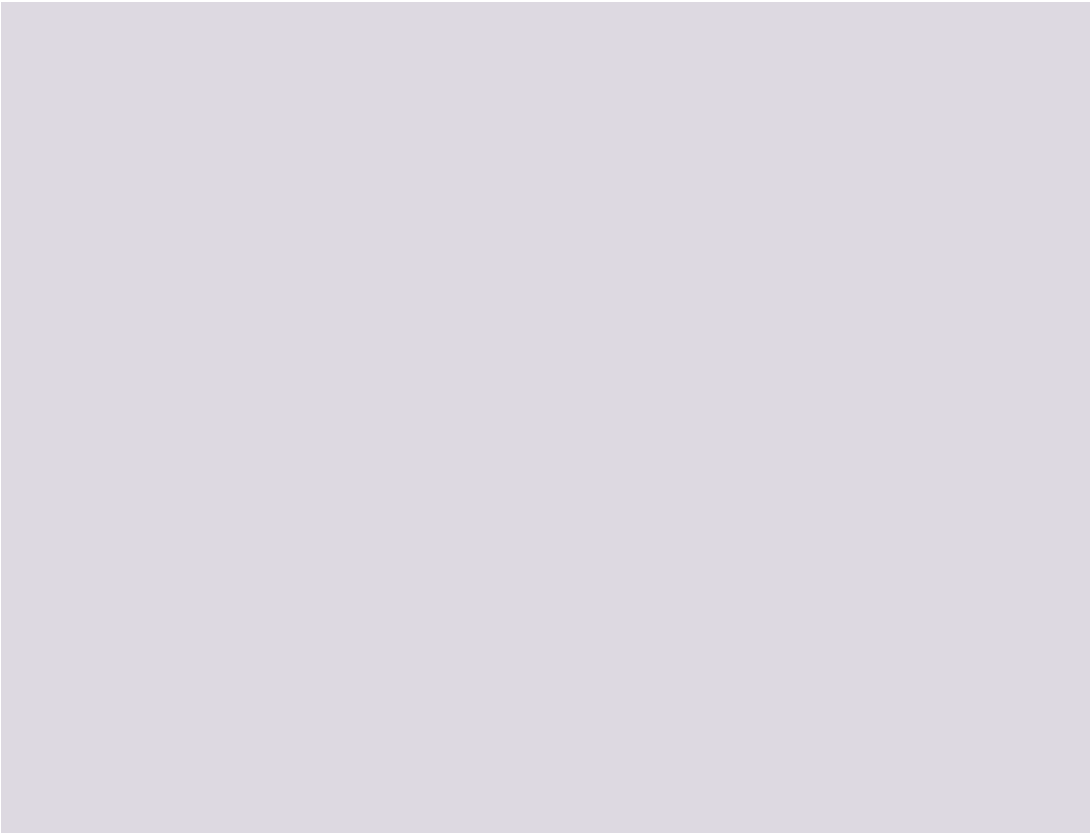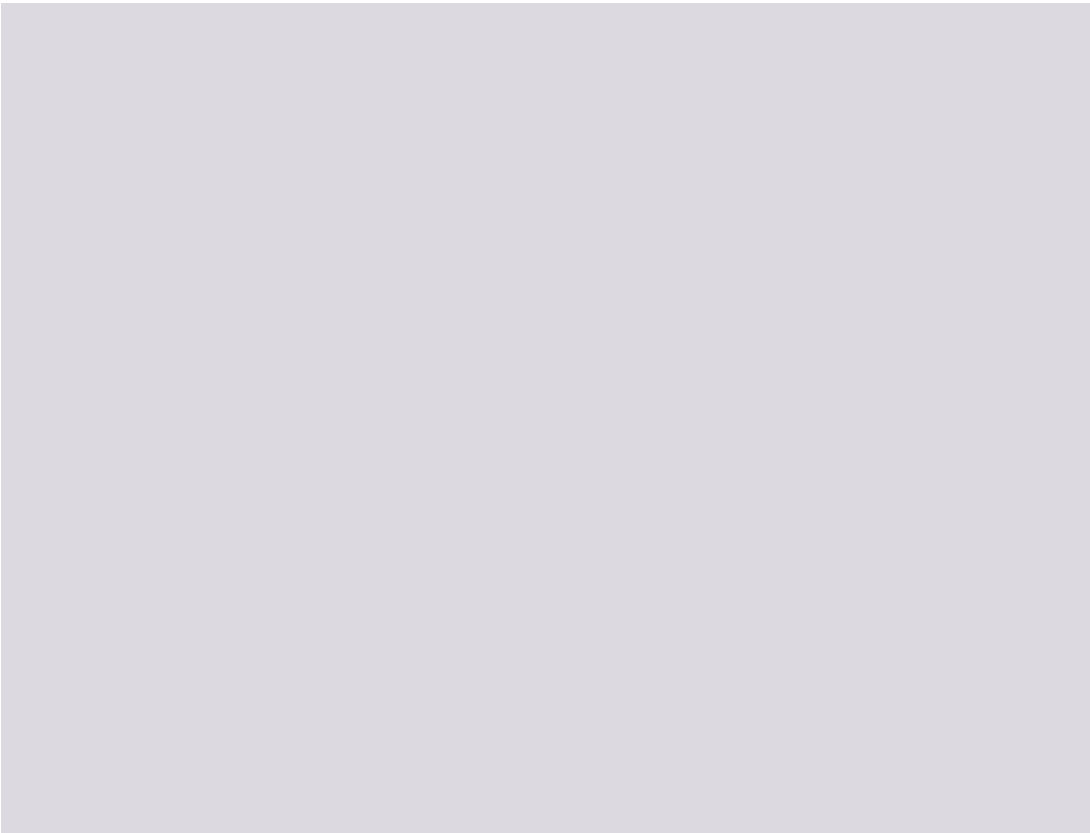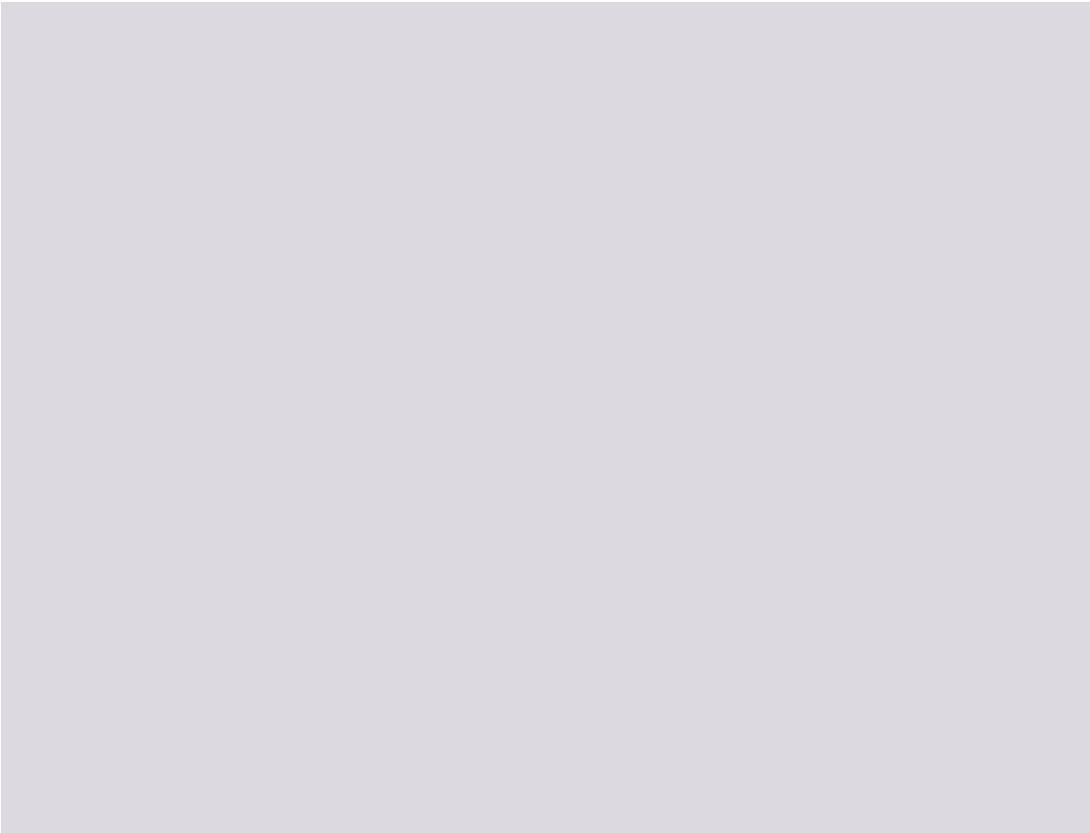
Figure 16. Toormix, (2015). *Park d'Atencions.*

**Vall d'Hebron University Hospital (Barcelona).
Children's Daytime Oncology and Hematology Center.**

A children's centre redesign by the Toormix Studio, encompasses
the entire design of a department—crossing service,
environmental, and branding, curating the user-experience design
(Toormix, 2015). The entire environment is considered, with
careful thought for maximum impact and utilising white space.
It appears to be a child-friendly space that still manages
to address the needs required by the environment, providing
wayfinding cues that serve to navigate and soften the clinical
environment and provide privacy, as well as areas for both
children and parents in which to remain occupied while in the
ward. However, it is important to note that this environment
is presented in isolation, rather than how it fits within the
rest of the established hospital ecosystem. Additionally, it
does not appear to discuss the long-term sustainability of the
environment, e.g., reordering signage, stopping ad hoc signage
from occurring, furniture etc. to prevent replacements within the
ward that are 'off-brand'.
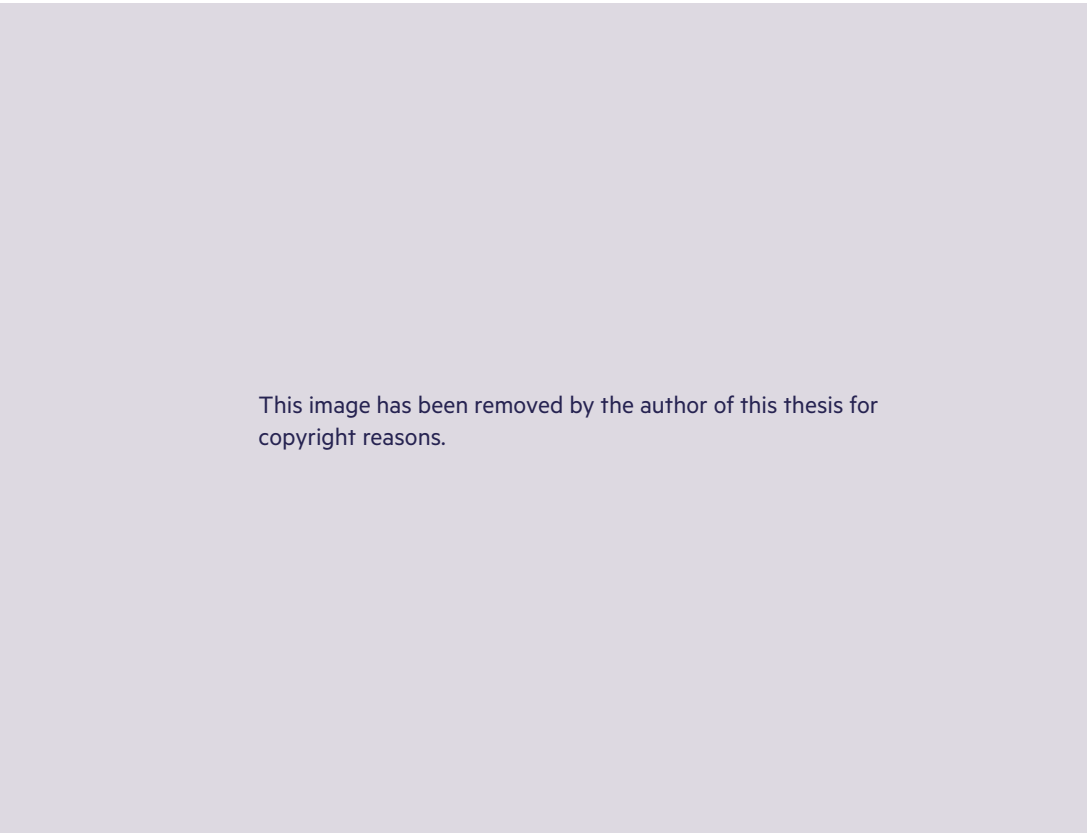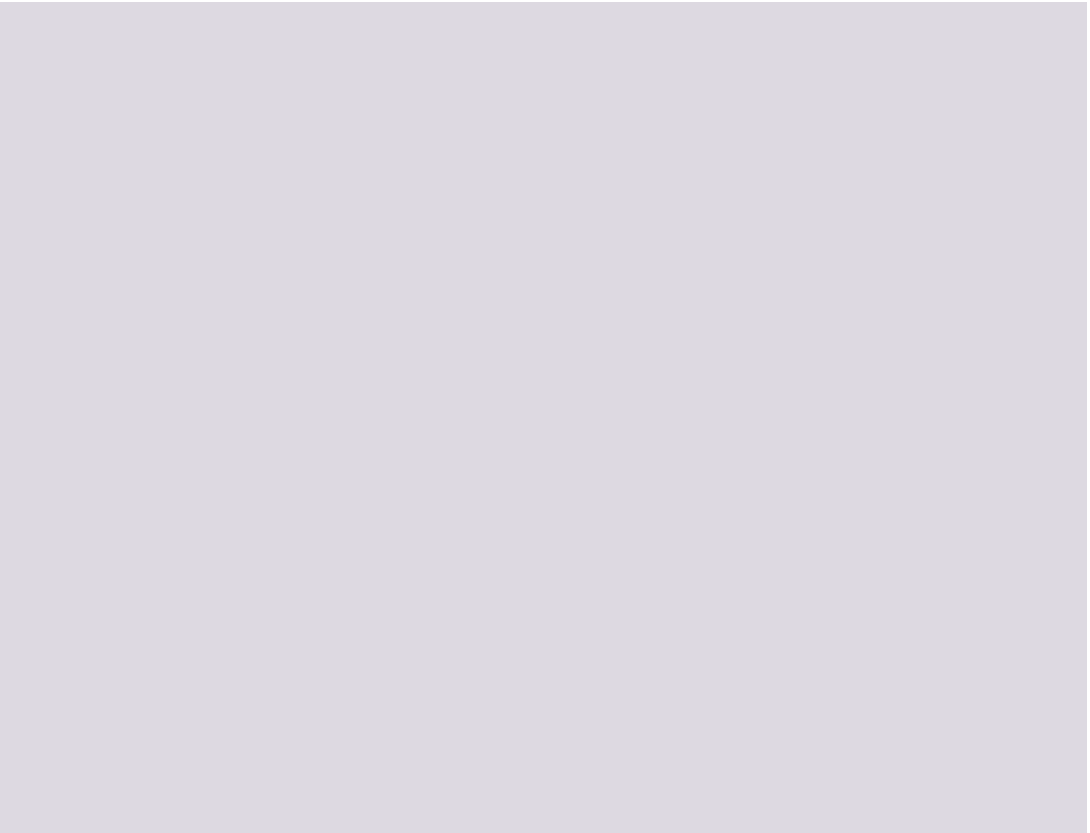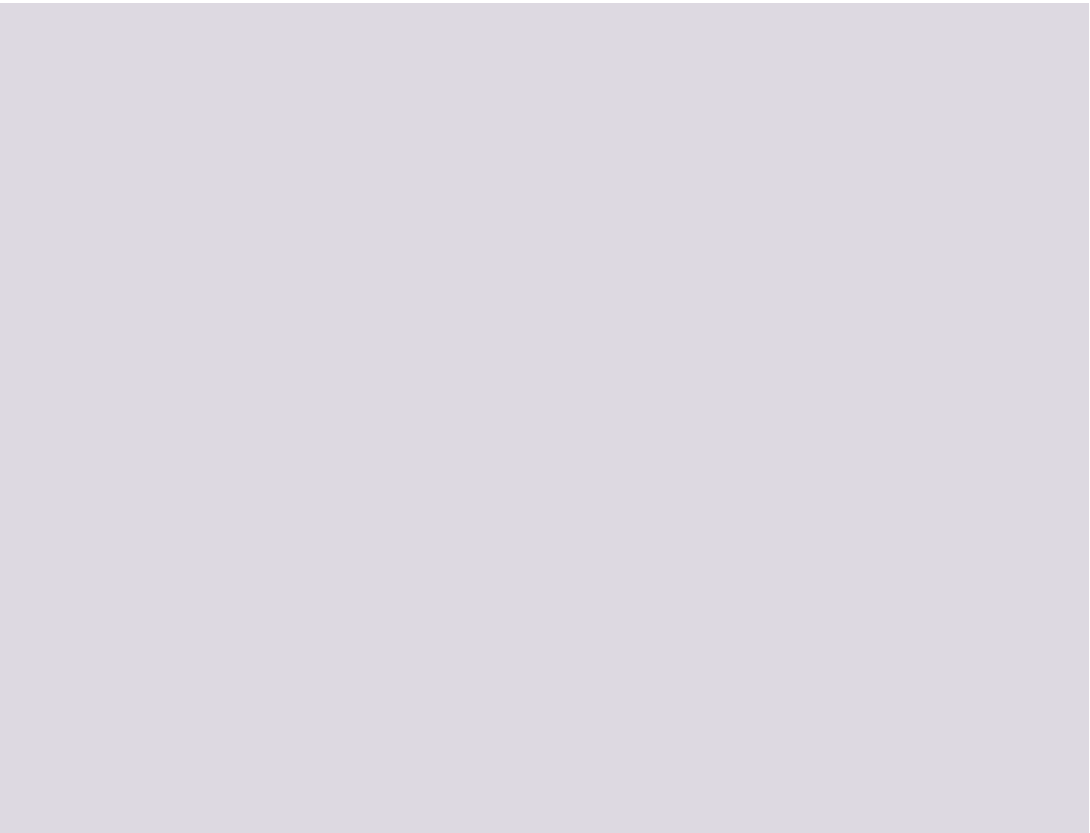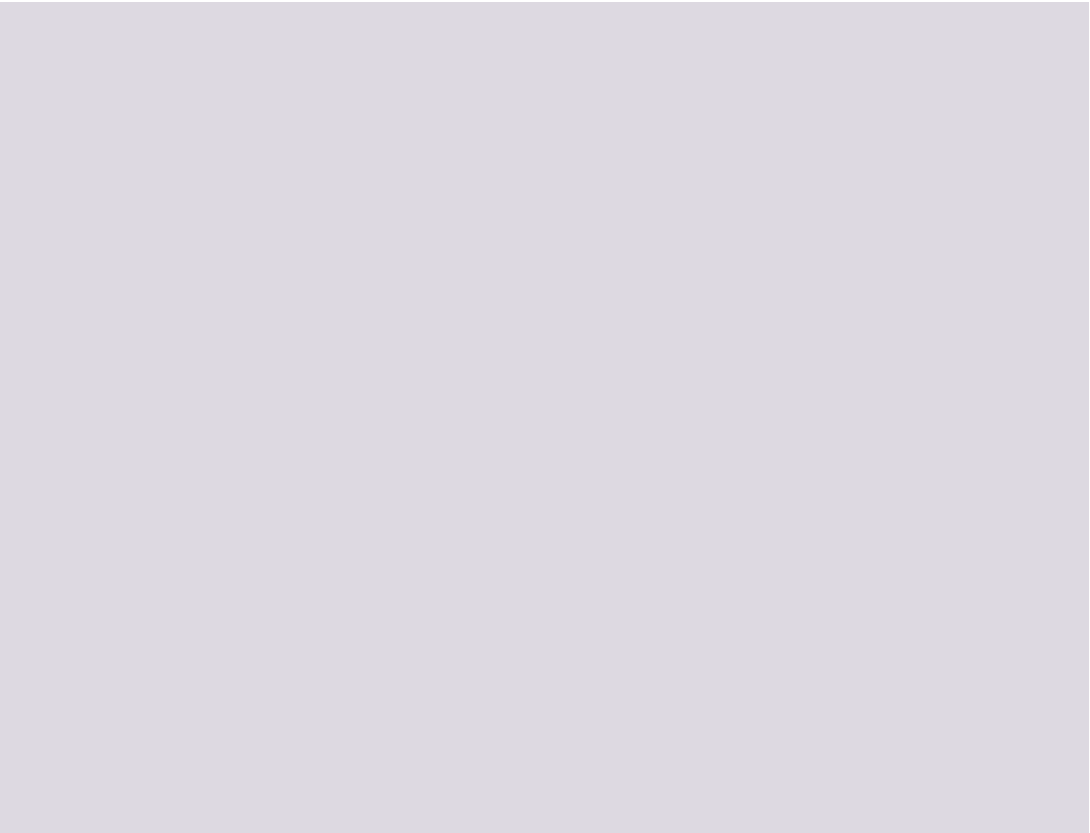
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Methodology

Traditionally, design is neither taught nor led from a caring perspective. Design solutions applied to health can be just as easily incorporated into the environments of corporate clients, or for successfully advertising a cup of coffee (Jones, 2013). While the designer may have good intentions, Jones argues that a far more rigorous decision-making approach is needed to heighten the understanding of the end user (Jones, 2013).[39]

This research uses qualitative and quantitative methods (to a degree), and is practice-led.[40] This approach aligns with the exploratory nature of design-led projects (Swann, 2002). Qualitative methods aim to understand the subjective thoughts and emotions that contribute to decision-making, as people reason in words rather than numbers (Jones, 2013). As noted by Gray (2009):

> [W]ithin qualitative research, the role of the researcher is to gain a deep, intense and 'holistic' overview of the context under study, often interacting with the everyday lives of individuals, groups, communities and organizations. It is [a] naturalistic approach that seeks to understand phenomena within their own context-specific settings" (p. 164).

39. It is important to note the end 'user' is not only the patient, but also numerous stakeholders, services and sectors (Jones, 2013).

40. That is, the project contributes knowledge about practice (Candy, 2006, para. 3).

The current research employs human-centred and participatory design frameworks with an action research methodology, exploring how empathetic communication design can contribute to the health seeker's wayfinding experience within a hospital context. Through action research's cyclic, evaluative nature, it aligns closely with the iterative design process and the planning, problem-solving and complexities of collaborating with stakeholders (a process that is essential to a real world research project). As a result of a bottom-up approach to design, the focus is primarily on understanding the individual health-seeking experience, therefore gaining empathy to health seekers in the department. Through this emapathetic process, it ensures designs are led by the needs of the health seeker, rather than organisational restraints. Being design-led, practice is used to respond to ideas and reframe the design problem.

Theoretical Frameworks

As the nature of the design research is person-focused and has the potential to effect change within an organisation, empathetic and collaborative frameworks are employed. Focusing on embracing complexities and the sustainability of solutions, human-centred design is user focused; thus, where design is concerned, the user's needs are the first priority. Participatory design provides a collaborative mindset, outlining methods for designing alongside users in order to build ideas and problem-solve together. In this way, it moves beyond the empathetic mindset of human-centred design to provide tools and methods for engagement and collaboration, vital in instigating sustainable change.

Human-centred design

Human-centred design[41] is an approach that supports the desires and limitations of the user at every step of the design process, aiming for them to be able to use the design solution with as much ease as possible (IDEO, 2015). The process focuses on the users and their tasks early on in the process alongside ongoing research (Travis, 2009) in its aim to create a solution with a positive impact (Durall & Leinonen, 2013). Closely aligned with a design thinking[42] approach, human-centred design provides a framework for rational and inspirational thought, as feelings and intuition provide a rich premise for innovation and feasibility (Brown, 2008).

Human-centred design research encompasses a set of methods and practices aimed at gaining insight into what would serve or delight people. It investigates behind the scenes, looking at individuals, situated contexts, cultures, forms, history, and even good business models for clues than can inform design. Furthermore, good human-centred design research amplifies the designer's ability to shape popular culture and to smoothly translate values through design (Laurel, 2003, p. 17).

Whilst beginning with user needs, human-centred design must always consider factors that affect the design solution (Figure 17). Both end-users

41. Also known as universal, lifespan, inclusive, or user-centred design (Greenhouse, 2012).
42. As noted by Brown (2008)" [design thinking]...is not only human-centred; it is deeply human in and of itself" (p. 4).
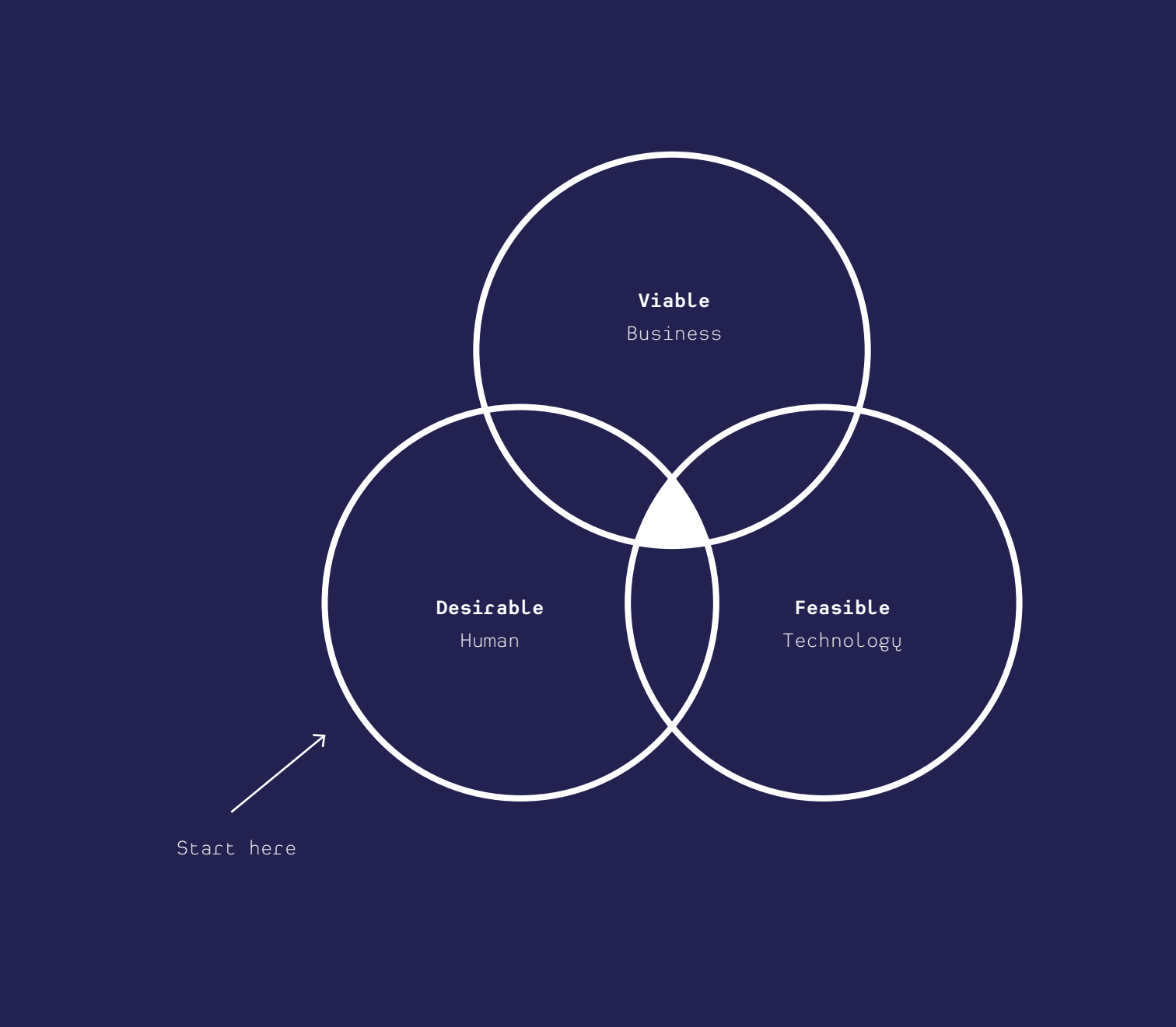
Figure 17. IDEO, (2015). *Creating real impact.*

When beginning a project, it is important to focus on the human aspects thereof; however, as it progresses business and technology must be taken into consideration in order to create a sustainable solution.

and stakeholders are viewed as being part of the same reality as the design solution, rather than existing within separate realms (Durall & Leinonen, 2013). Often a balancing act between human, business and technology, this interconnection enables a sustainable solution in which a full understanding is present of how the design will be used and integrated into both the users and stakeholders' lives (Greenhouse, 2012). As noted by Brown and Wyatt (2010), through collaboration between users and stakeholders, and by adhering to feasibility "[the human-centred design process] allows high-impact solutions to bubble up from below rather than being imposed from the top" (p. 32).

The process often fluctuates between conceptual thinking and the formulating of tangible ideas (Figure 18). This divergent thinking approach (and being open to new ideas) is important for building the premise for innovation, and implicit in this process is that ambiguity be embraced and applied to drive the process forward in search for answers (IDEO, 2015). Regular prototyping is one of the fundamental processes of this approach. By building quick experimental prototypes, the moving on to more laborious and complex one, ideas can be shared, tested and improved throughout the process (IDEO, 2015; Koskien et al, 2011).

A human-centred framework is based on the premise that errors are not the fault of the user, but rather that of the designer paying insufficient attention to the user's needs and behaviour (IDEO, 2015; Norman, 2002). As such, the designer must develop a deep understanding of the user in order to communicate the design intentions effectively (Norman, 2002).
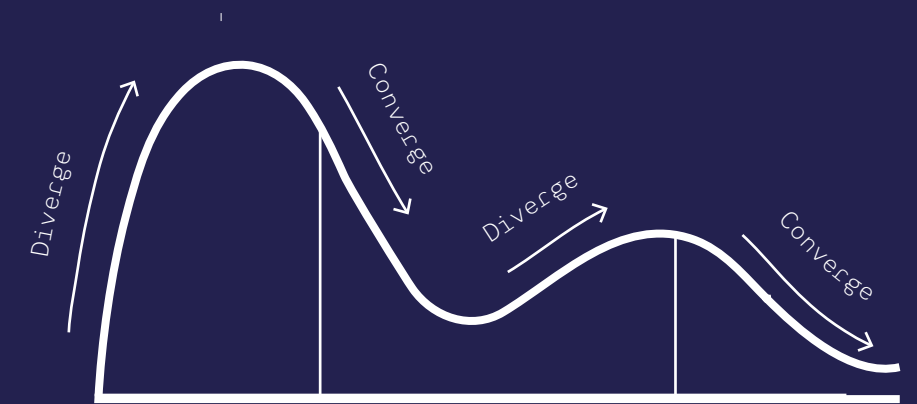
Figure 18. IDEO, (2015). Divergent thinking.

Acquiring such a deeper understanding requires the designer to truly empathise with the user, moving beyond superficial assumptions and opinions to find repeating patterns of reasoning (Young, 2015). Through this empathetic approach, the design stays grounded to the needs of the user, embracing their complexities and values into the design process (IDEO, 2015). It is important to note that while this approach to design is not stylistic, useful design does not exclude this quality (Norman, 2002; Greenhouse, 2012).

Participatory design

Within participatory design, the role of the designer extends to include facilitator, mediator and engager (Manzini & Rizzo, 2011, p. 200). Used for social innovation and change, such an approach democratises design, i.e., "those affected by the design [can] have a say [in its creation]" (Manzini & Rizzo, 2011, p. 201). This approach realises that in order to create designs that serve the intended end users, those users' input must be gained during the early stages (Durall & Leinonen, 2013). Therefore, participatory design is designing *with*, rather than designing *for*, where the role of the user is either that of subject or partner (Standers & Stappers, 2014; Figure 19). Users are engaged either through probes, toolkits or prototypes (Standers & Stappers, 2014), a process where designer and users work together: "The act of making here is not just a performative act of reproduction, but a creative act which involves construction and transformation of meaning" (Sanders & Stappers, 2014, p. 6; Figure 20). Participatory design allows for problem-solving with users for the current day, near future, or fictional future, as both immediate problems and ideal futures are explored (Sanders & Stappers, 2014, p.201).
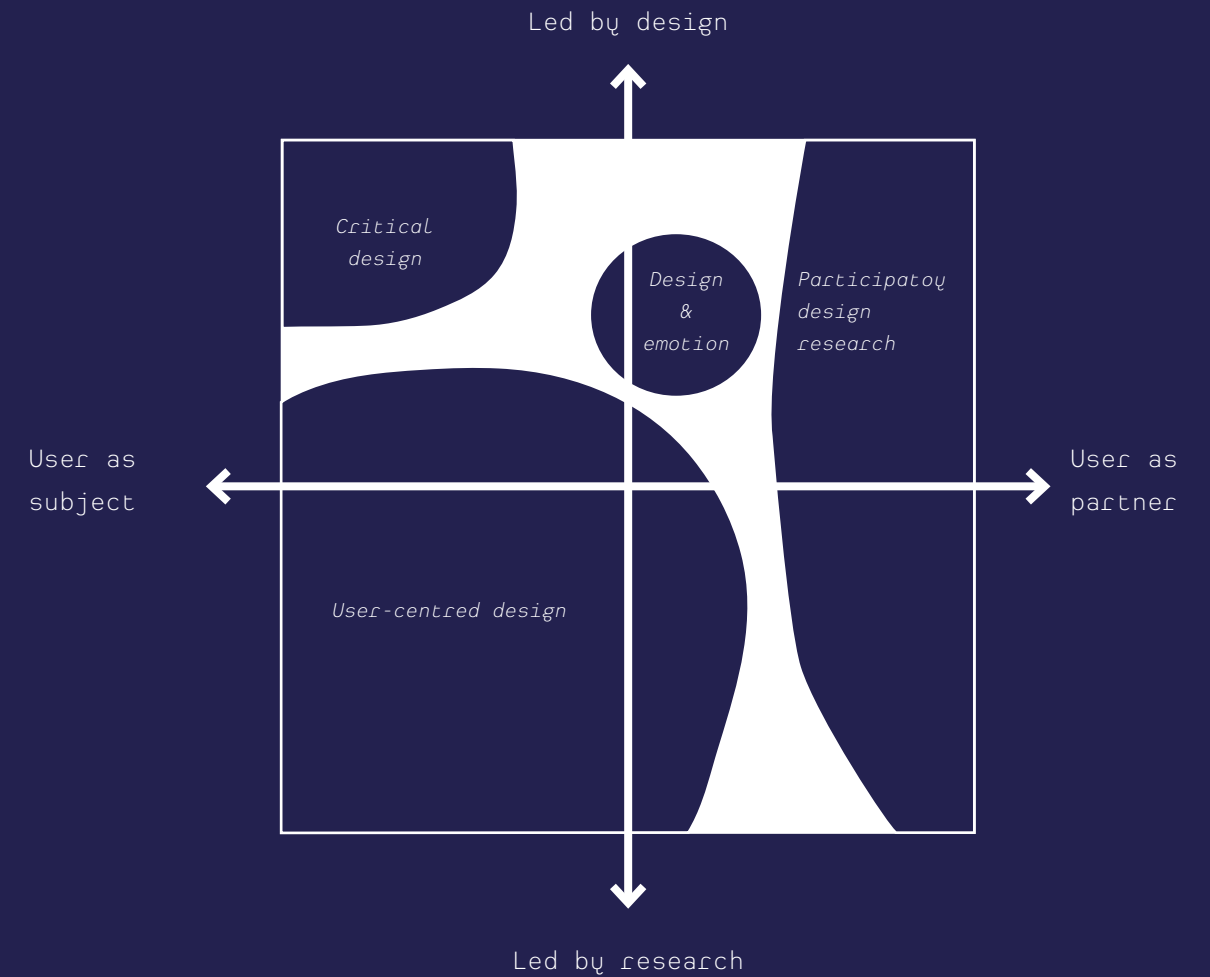
Figure 19. Sanders & Stappers (2014). *Map of design research.*

Engaging

Provoking

Serving

For   **Design**   *With*

Participatory design practices can be divided into local projects, short-term and framework projects, as well as large-scale transformation (Manzini & Rizzo, 2011). Design devices such as prototypes, mock-ups, models, sketches and artefacts are employed as participatory tools in this process (Manzini & Rizzo, 2011; Sanders and Stappers, 2014). Aligning with the bottom-up approach, it focuses on social innovation by using design as a driver (Manzini & Rizzo, 2011).

Participatory practice allows those who are impacted on by design decisions to co-create the solution, enabling relationships to be forged that have the potential to extend beyond the project's duration. However, gaining access to participants can make this process difficult.

Figure 20. Sanders & Stappers (2014). Movements of design across time scales.

Ethical considerations

As the research framework for the current study was human-centred, participation was required in order to validate assumptions and to ensure that the proposed design solution was appropriate not only for the health seeker, but also for stakeholders and staff involved.[43] Participation in the research involved observation, expert interviews, conducting a survey, as well as feedback on design solutions.[44] It is important to note that adult supporters (parents/guardians, experts) rather than patients were participants in the research, due to this approach being a more efficient method within the limited timeframe. Formal ethical approval for this project was given by AUTEC on 5 May 2015 (number 15/114).[45]

Methodological Framework

Action research is appropriate for this research because it embraces complexity and multiple variables, in particular, real world projects that encourage social change (Gray, 2009).[46] It is a focused pursuit, where action is key for maintaining momentum in pursuit of problem-solving (Schön, 1983, p. 56; Edward & Willis, 2015, p. 11). The influence of this approach is that it is conducted 'in the field' as opposed to within a highly controlled setting (Edwards & Willis, 2014, p. 4). In action research, both the research and outcome are driven by the researcher's active engagement: "Research that produces nothing but books will not suffice" (Edwards & Willis, cited in Lewin, 2014, p. 11).

Typically cyclic in nature, action research follows the following process: planning, acting, observing and reflecting (Swann, 2002; Figure 21). While focused on problem-solving, this occurs traditionally within a local, contextual arena, as opposed to a one-size fits all environment (Edwards & Willis, 2014). It is a non-linear process that is closely aligned with designers' work processes, where a problem is continually revisited in order to solve it (Swann, 2002; Figure 22).

43. When not consulting the end user, solutions are often proposed that are unimportant or irrelevant to the true problems that the user encounters (IDEO, 2015).

44. See ethics application in Appendix 4 (p. 534) for codes of conduct.

45. AUTEC ethical approval number 15/114; see Appendix 4 (p. 534) for full application.

46. Action research within this project is discussed in context to design practice, and how this methodology aligns with the iterative nature of how designers work – as opposed to the more traditional change management perspective traditionally found within healthcare.
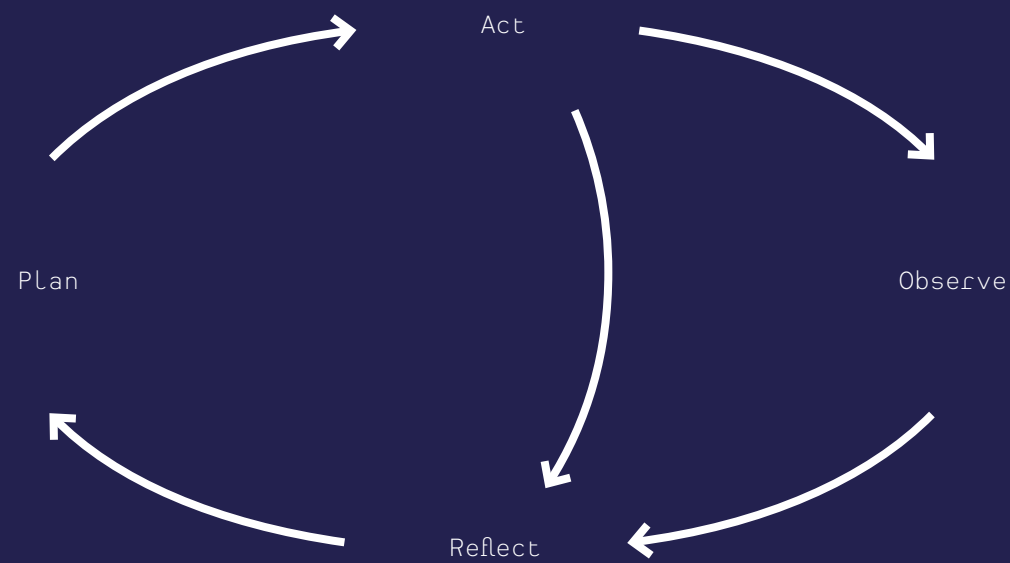
Figure 21. Schôn, (1983). *Action research process.*

When following research cycles, there is continual evaluation (or reflection) at each stage of the process, i.e., reflection-in-action and reflection-on-action.
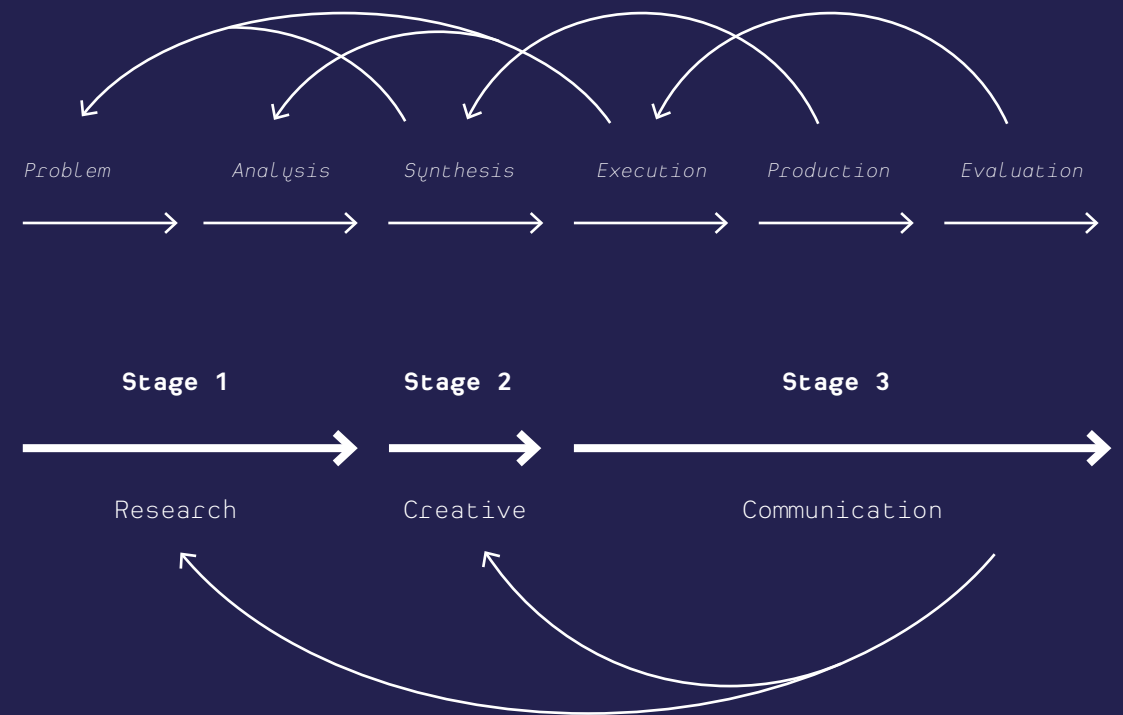
Figure 22. Swann, (2002). *Design process.*

Throughout the design process, the problem is continually revisited and reframed. This is a non-linear process, often with multiple phases occurring in tandem.

Due to its focus on evaluation and reiteration, action research works well in approaches where the final outcome is undefined, the process often beginning with little knowledge of the problem (Gray, 2009; Swann 2002).

As the process is documented throughout the action research process, it removes the 'mystic creative' stigma by providing evidence of critical thinking (Swann, 2002).[47] This reflection throughout the process, especially in hindsight, is a deliberate undertaking in which the researcher steps back to critically evaluate practice in order to prevent a routine from occurring that may prevent critical problem-solving (Keitsch, 2008; Schön, 1983, p. 61).

The action research method helps to break the barrier between theory and practice, "In addressing real world problems, the action researcher becomes directly involved in the research project as a change agent, devoted not only to studying organizations and processes, but also improving them" (Gray, 2009, p. 312).[48]

As such, when conducting real world research using this approach, the following modes are applicable: participatory,[49] insider[50] and external action research.[51] Additionally, informal observation can occur during day-to-day activities within the organisation, providing knowledge of its inner workings and reasonings (Gray, 2009). Through this method of investigation, problems are not seen in isolation, but as a network of complex cause and effect events (Gray, 2009). Thus, through collaboration between education and industry, education has the potential for leading and effecting change (Swann, 2002).

47. However, it is important to note, when problem-solving in design, holistic thinking and intuitive process should not be overlooked in the final execution (Swann, 2002, p. 51).

48. This aligns closely with a design-led approach, due to its solution - rather than problem solving nature (Swann, 2002), which offers potential design solutions to the organisation with which it is aligned.

49. Participatory action research occurs where there is genuine and immersive participation, and where participants are the focus of the research and involved in data collection and analysis (Gray, 2009).

50. Insider action research occurs when conducting research within one's own organisation and is therefore familiar with the culture, social connections and jargon of the environment (Gray, 2009; Coghlan, 2001).

51. External action research occurs when the researcher works separate but alongside other professionals, collaborating in order to achieve change (Gray, 2009).

Methods

Focusing on the emotional impacts of wayfinding – specifically within
healthcare – ensures the negative points in the experiences are understood,
therefore appropriately approached and designed for. The first phase of
this research focused on empathy-driven methods in order to discover how
health seekers perceived, used and engaged with the environment.[52] The
second phase, having developed a greater understanding of the context,
was employed generatively and using empathetic insights to drive practice,
since being design-led, there is a focus on creating solutions in response
to ideas and problems. Throughout the research, ongoing critique and
feedback sessions were held with stakeholders and other projects to ensure
collaboration, the sharing of knowledge and the building of relationships.
The methods applied in this research are thematically presented below
in order to align them with the discovery, analysis, ideation, evaluation
and critique and feedback phases of the research process. Methods
within these phases overlap, since design is not a linear process. Due
to limitations in terms of gaining information and data, the method was
often re-evaluated and different approaches were explored (Figure 23).

Figure 23. (2015). *Timeline of this research.*

Timeline of the events, methods and processes of the research.
It displays to overlapping of phases, and the nature of the non-
linear process.

52. As noted by Young (2015), to develop *true* empathy is to be innately curious about
    others.

Observation

Photo documentation

Ethics application   Expert interviews

Experience mapping

                                      Role-play

                                      Rapid prototyping

Sketching   Thumbnailing

                                      Analogous inspiration

            Stakeholder critique & feedback

Discovery

Analysis

Ideation

Evaluation

September	October	November
●	●	

ADHB wayfinding committee est.   *ADHB student presentation*

Survey

Photo documentation

Expert interviews

Experience mapping

Expert role-play

Prototyping   Installed prototype

Developing concepts

External existing wayfinding analysis

Stakeholder critique & feedback

Discovery

Analysis

Ideation

Evaluation

Discovery Methods

Observation

Observation of participants provides an unobtrusive method for learning about the particulars of an environment (and how participants interact with it or another given situation) firsthand, without the bias of second-hand recollection (Marshall & Rossman, 2010, p. 139; IDEO, 2015). In the case of firsthand accounts, participant observation is a time-consuming method that, in order to gain concise results, should ideally be conducted over a significant period of time. However, when observing, the researcher places meaning on what people think and feel and therefore assumptions are made. Observation is a useful tool when working with an unfamiliar space, however, as it can reveal problems or aspects of problems that are not observed by stakeholders.

Observation occurred in the initial stages of the project via three distinct uses of documentation: mapping the area, people interacting within the space and engaging with new ideas and concepts (Figure 24).[53] Handwritten notes were digitised and revisited in stages of mapping assumptions and validations, immediately following each period of observation. Visual recordings proved easier to reflect upon at later dates due to being concise and accessible. Observation provided a first-hand account, contributing to an understanding of the current state of the environment and multiple user demands, thus helping to further knowledge about the design problem.[54]

53. For more details on observation time, dates and notes, see Appendix 5 (p. 570).

54. As noted by Durall and Leinonen (2013), initial exploration of the environment is often rapid; however, it nonetheless serves the purpose of identifying potential challenges and design interventions.
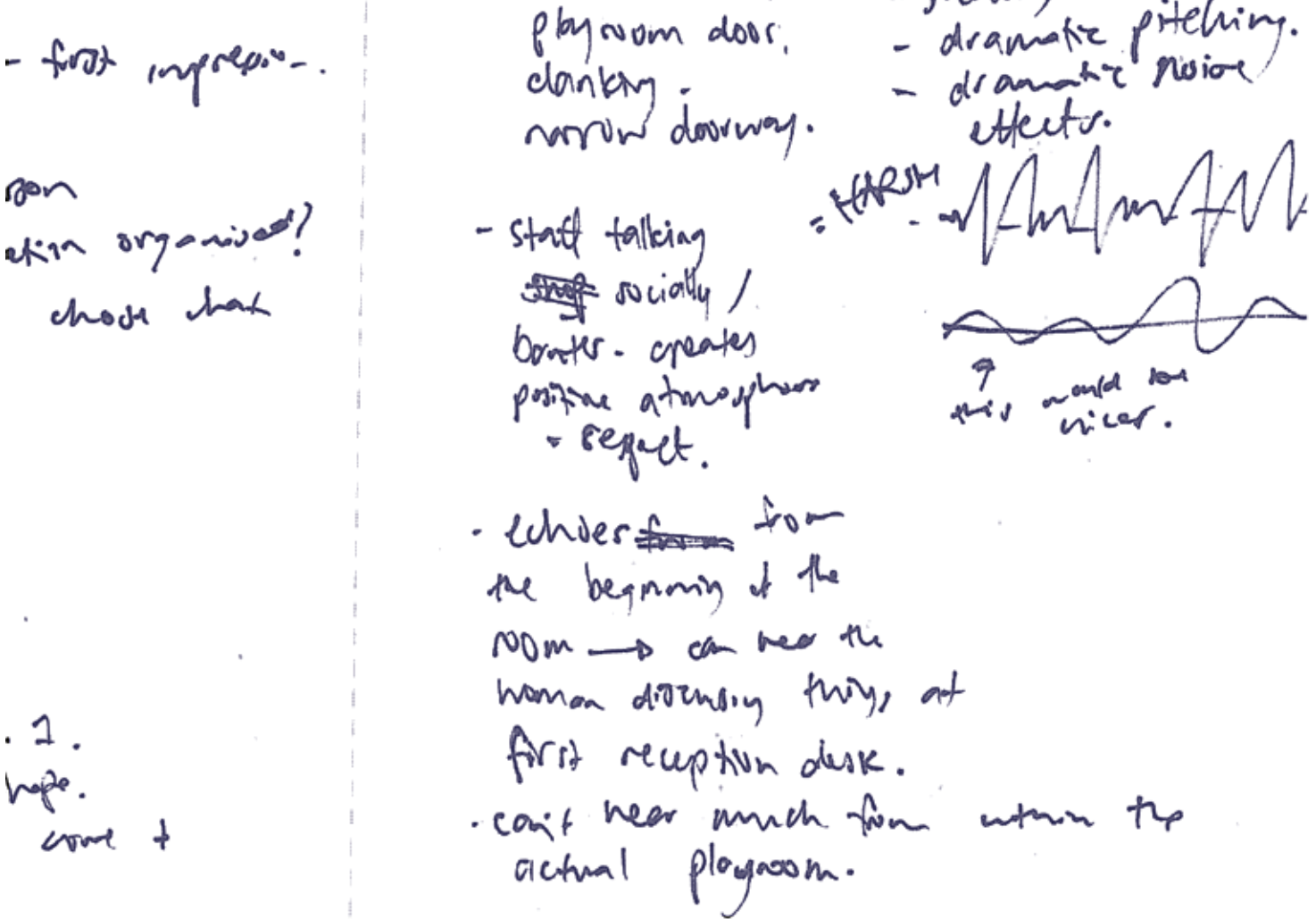
Figure 24 A. (2015). *Mapping the area.*

Mapping the area began with a type of informal listening of the space; this was an appropriation of Young's (2015) verbal listening method and was applied holistically to the physical environment.

Looking for - anxiousness
  - stress
  - seeking / engaging with information.
  - where are people coming from?

vinyl into wall. → complements color to the pastel colored wall.

tically say ~~expect~~ reception
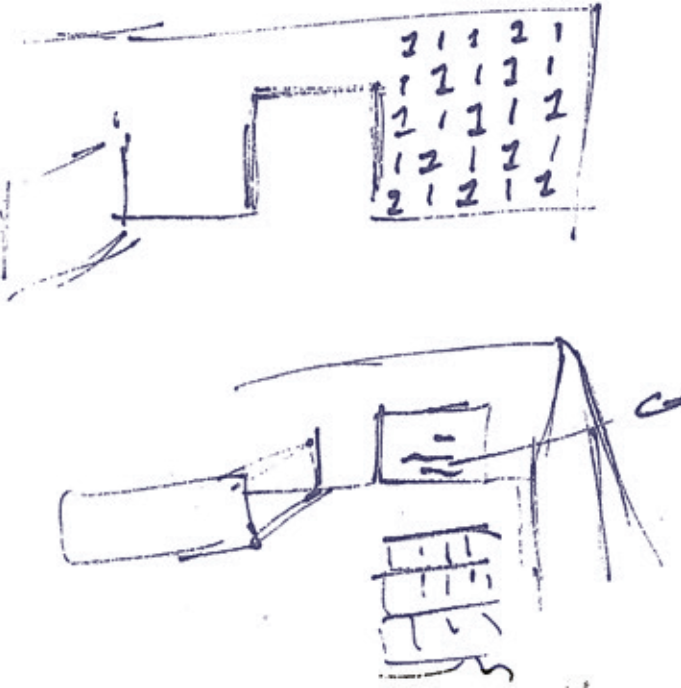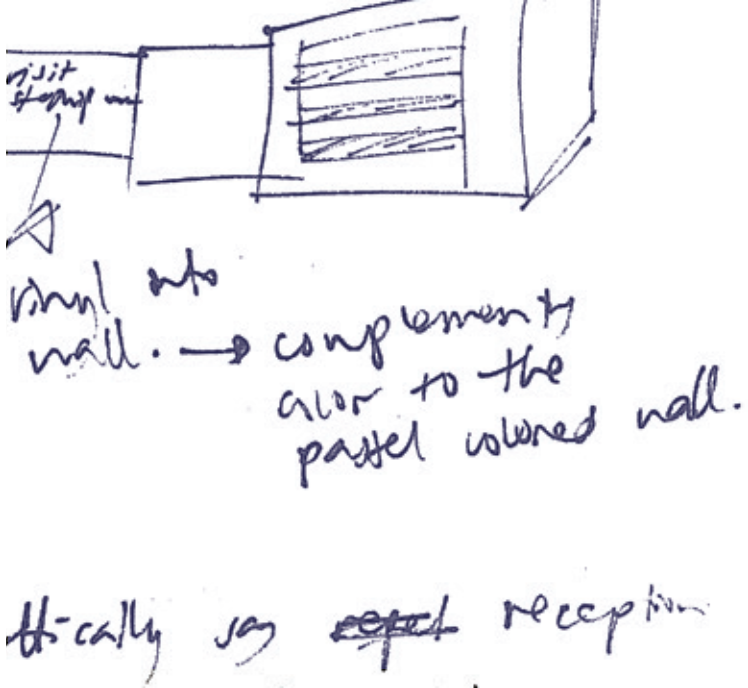
Figure 24 C. (2015). *Engaging with new ideas and concepts.*

New ideas and concepts were explored in the space using sketching and ideation. Otherwise known as body storming, this is where a form of brainstorming occurs within the space or context being designed (Milligan & Rogers, 2006). As the foundation of understanding within the context was built, observation organically turned into a generative session in which direct observations turned into solution-based ideas.

Figure 24 B. (2015). *Interacting in the space.*

Immersion within the environment provided an overview as to the surface-level functions, in which a deeper understanding could later be built upon. When observing people's interactions within the space, a question was articulated beforehand, then investigated and documented. Beginning broadly at first, this became increasingly specific.

Role-play

Simulating similar experiences via role-play (informance) is helpful when designing or researching for a group that the researcher has little in common with (Johnson, 2003).[55] Role-play provides a helpful means through which to communicate unforeseen complexities pertaining to the problem to the researcher, which in turn generates empathy for the group of users (Patnaik, 2009; Plowman, 2003). It is through the nature of pretending that the user stops being the separate 'them' and becomes 'us' (Johnson, 2003). Within the project, role-play was employed to simulate the wayfinding experience within the department being researched, tracking the user from home to check in, in a bid to uncover previously unconsidered emotional and physical factors of the journey.

Organised in tandem with another postgraduate student working within the Outpatient Department (and the charge nurse), as part of the role-play approach, an appointment letter was sent to my home address. For this exercise, I took on the mindset of a first-time user. The typical appointment experience of the health seeker visiting the department was thus simulated, as had been identified through consultation and observation. The experience was documented via quick note taking after receiving the letter and arriving at the department; these notes were later documented digitally, alongside a written reflection of the process.[56]

55. Similar to participant observation, where the researcher becomes immersed in the setting, documenting experiences, and emotions (Gray, 2009, p. 400).
56. See Appendix 5 for documented notes and reflection (p. 585).

During the initial stages of the research, adopting a beginner's perspective allowed for opportunities in which to gain empathy for the user's wayfinding, health-seeking journey to the department. The process provided insight about factors that impacted the experience that moved beyond the defined scope at the time, giving rise to a revaluation of the research focus. The busy schedules of the staff involved proved to be a limitation in the organisation and execution of this method. The role-play did not reach the appointment stage, thus omitting the important element that is the waiting experience, i.e., anticipation. After checking in at Reception, the charge nurse introduced me to staff members within the department to conduct informal consultations. Within this method, the patient-supporter relationship was not explored, as is typical within the department; this was due to ethical limitations.

Expert Interviews

Interviews with experts (within their field) can help to provide context and insight that may otherwise remain unknown to a researcher (IDEO, 2015, p. 43). These are usually one-on-one meetings, lead by the researcher, and range from unstructured to highly scripted events (Ireland, 2003). When gaining empathy and insight for those you are designing for, an interviewer must listen and be curious (Young, 2015). Expert interviews were used to gain a holistic understanding of the context, and to identify the impacts of wayfinding on staff within the hospital.

The experts interviewed hailed from a variety of backgrounds within healthcare, from high-level management to on-the-floor staff, contacted through Starship project managers, the charge nurse, or directors of the DHW Lab. All experts were from Auckland Hospital; however, there was a combination of experts from Starship and the primary hospital, due to limited availability and contacts. Interviews with experts were semi-structured with six question prompts; in-between these, further questions were intuitively asked in order to gain more in-depth insight when necessary.[57] Conducted both in person and via phone,[58] the interview location and method depended on the availability of participants. Interviews began with the researcher listening and effecting limited note-taking, alongside documenting what was remembered after completing the interview. This was quickly found to be difficult, as specific quotes and statistics were not retained. Later interviews were audio recorded to better enable subsequent thematic analysis (and to help accurately identify useful quotes). This meant that during the interviews, the researcher was able to better focus on the interview and discussion, which helped to steer the interview as themes or topics of interest emerged.

Experts with a range of backgrounds were interviewed, allowing for a rounded understanding via various perspectives, giving the background to complex problems. Throughout the project, there was some difficulty in terms of gaining contact with day-to-day staff in the department. This may have been due to

57. See Appendix 4 (p.552) for indicative questions.

58. As noted by Young (2015) phone interviews can cause those interviewed to open up more, due to the enforced physical distance.

pressing priorities, alongside the high staff turnover observed throughout the year. Without the participation of the Starship project managers and charge nurse, it would have been much more difficult to gain access to participants for interviews, as these staff members facilitated initial introductions to most of the experts recruited. Interviews in person were generative and had flow, while interviews via phone tended to be stilted and less in-depth. Factors pertaining to the difficulty of gaining a deeper insight may have been due to differences within disciplines (on the whole, clinicians had little time for completing a face-to-face interview), lack of time, and the absence of a face-to-face rapport.

Photography

Photography serves as a useful visual documentation tool that can enable the recording of a specific time and place, which can thereafter be applied for later analysis. As opposed to multiple visits to an environment, object, or form, photography allows for remote viewing and the analysis of snapshots. This recording method can give rise to later evaluation of environmental themes and wayfinding design opportunities.

Within the research project, photography was practiced to record current states of the environment, which often reflected the scope of the research at the time (Figure 25). Other wayfinding sites were additionally documented using photography to help explore relationships between healthcare wayfinding practice and external parties (Figure 26).

Figure 25. (2015). *Photographing Auckland Hospital.*

Initially focused on the perimeter of the department, as research continued, the documentation of spaces grew. Due to images being intended for later use in in situs and ideation, they were taken at a high resolution with an SLR camera. This remote analysis meant that spaces were not repeatedly visited, saving time and avoiding the potential disruption of day-to-day operations.

Figure 26. (2015). *Auckland Museum rear entrance.*

Photographing external sites was efficient, as it allowed for a primary focus on the experience. An iPhone 5 camera was used during external site visits, as the focus was on recording for later analysis, rather than high quality images. Technical aspects of wayfinding were examined in particular, for example, consistency and alternative visual cues.

Alongside recording, photography proved to be a helpful tool for later analysing common themes[59] and provided sketch images for use in ideation and mocking up environmental solutions.[60]

A number of photographic shoots were conducted throughout the research, varying from documenting Auckland Hospital, to exploring off-campus sites. Exploratory photo shoots (off-campus) proved helpful as a documentary method, as some sites would often not be revisited. The limitations of photography on the hospital campus was significant, however, since live environment spaces often changed, rendering many of the images out of date quickly.

Due to the sensitivity of working within a hospital context (and the need for protecting the privacy of patients and visitors), taking images on the hospital campus meant that very specific protocols had to be followed:

Ensuring a staff badge was worn at all times.

Avoiding including people in photographic frame and taking images either very early or very late in the evening in order to minimise capturing the public and staff in photos.

When organising a shoot, the day and time for doing so had to be pre-approved by project managers.

59. See review and analysis of existing wayfinding solutions method.

60. See sketching and prototyping methods.

Due to security around the campus, if images were taken without clearance, security had the right to prevent and delete photographs as a result of privacy violations. On a number of occasions, security stopped shooting to confirm that approval had been granted.

At times, it was difficult to gain high quality images for in situ renderings, as photographs had to be taken quickly to prevent staff or health seekers being captured in the frame.

Analysis

Review and analysis of existing wayfinding solutions

Comparing and evaluating existing designs allow for standards to be set in terms of what is expected within the field of the design solution being created, as expectations in this area are ever increasing (Berger, 2009). "The aim is to understand the environment, situation, and culture [in which] the design takes place" (Durall and Leinonen, 2013, p. 110). Therefore, considering not only the project's scope, but the broader cultural context in which it is situated is required. When examining wayfinding designs where a user's experience is integral to its failure or success (as opposed to conducting analysis through photographs, literature or theoretical applications), when possible, it should be experienced first-hand.[61] Existing wayfinding was therefore analysed to explore the possibilities of wayfinding design, alternative ways of communication, and how these aspects can serve to be empathetic to wayfinder needs.

Existing wayfinding

A review and analysis of current wayfinding systems in multiple hospitals and in non-health related sites were undertaken to better understand the execution and design of wayfinding.[62] This was conducted by visiting the environment and documenting the experience, through note taking and photography. These approaches explored how other wayfinding systems worked, both for the user and a stakeholder.

Throughout the experience, notes and first impressions were documented via a beginner's perspective. When possible, a specific location within the context was identified prior to visiting, thus creating a destination for the internal wayfinding journey. Images were taken that were later categorised into themes that reflected wayfinding principles within the space (Figure 27).[63] When possible, supporting wayfinding communication was collected (e.g., exhibition catalogues, maps, etc.). Initially responding to the content, themes later became more presubscribed, depending on the aspect of wayfinding being investigated (Figure 28).

61. This is particularly relevant, as images can be enhanced, curated and expertly presented in a way that excludes flaws within the design and its execution.

62. Auckland Airport, Auckland City Hospital, Auckland Art Gallery, Auckland Museum, several New Zealand public hospitals were visited and documented.

63. Photographs of Starship Outpatients were categorised and later used to influence current state survey questions in the subsequent health seeker survey. See Appendix 4 for survey (p. 553).

Figure 27. (2015). *Screenshots of Starship Outpatient Department photo analysis and categorisation.*

Images were firstly categorised in Adobe Lightroom; colours served to distinguish between qualities when sorting, allowing for grouping to be easily effected and sorted within the program. Following on, these images were exported to folders. However, this created limited visibility in terms of overall themes later in the research; as such, image categorisation was re-evaluated in later analysis.

Figure 28. (2015). *Hospital wayfinding analysis, page 2.*

When evaluating images of wayfinding following an external hospital visit, images were placed and methodically grouped within a document according to themes (see research journal, p. 124). Depending on the type of environment or number of images taken, this comprised of up to four pages, with headings for each column set. Not all images were used; only examples of a particular theme or phenomenon of the context were selected.

The analysis of wayfinding within the Outpatient Department was more in-depth and solution-focused than other wayfinding environments investigated, as the aim here was to identify common themes and alternative approaches for moving through environments (Figure 29 and Figure 30).

When visiting non-healthcare contexts, the destination was predefined in advance, using preparatory information where possible, e.g., a website. Due to being open to the public, these locations were easily accessible; however, often being places of leisure, these did not match the complexities found in healthcare. The Auckland DHB wayfinding committee led visits to other hospitals for seeking guidance on implementing wayfinding. In these instances, a formal tour would be organised for the committee, followed by an informal discussion about wayfinding implementation. Analysing a variety of wayfinding contexts provided a balance of approaches, from formal design execution (external to healthcare) to the management of a wayfinding project (within healthcare).

Figure 29. (2015). *Visibility in Outpatients, map.*

This birds-eye view allowed for an analysis of how a
first-time user might view and remember areas of this
space. By studying the department upon entering, an
analysis was initiated to define where impactful design
interventions might be placed.

Figure 30. (2015). *Outpatient route photo analysis.*

When analysing key steps in the internal wayfinding journey,
photos were printed and highlighted to signify areas of
importance and potential opportunities for a wayfinding prototype
intervention. Thumbnails allowed for an efficient evaluation of
spaces that were considered key points in the wayfinding journey.
However, as was later discovered, deciding the intervention
placement purely using images can lead to overlooking factors
within the environment that had not been captured, due to being
outside of the frame.

Analogous

IDEO (2015) discusses analogous inspiration as a way to "help [one] isolate elements of an experience, interaction, or product, and then apply them to whatever design challenge [being worked] on" (p. 53). Once negative environment phenomena had been identified within the Outpatient Department, an exploration took place to determine if and when these phenomena had been intentional within alternative contexts.

When identifying the large amount of visual noise and sounds within the Outpatient Department, parallels were drawn with loud and busy retail environments. Stores were identified and visited consecutively, documenting experiences via photography and note-taking (Figure 31). Later, notes and imagery were compiled by summarising key impressions and relationships with the Outpatient Department.

This exploratory method was utilised during the early stages of the project. Once negative aspects had been investigated, questions quickly arose as to the nature of positive environments. Shifting to positive phenomena, contexts such as art galleries and museums were identified as next points for investigation.[64] By examining environments that were the opposite of the context being researched, a spectrum could be created comprising positive and negative attributes, appropriateness, and how these work together when used intentionally or otherwise.

64. See Existing wayfinding analysis.
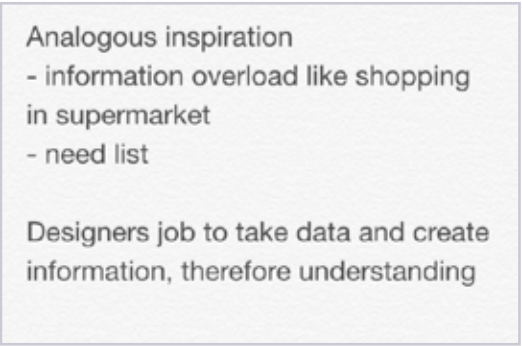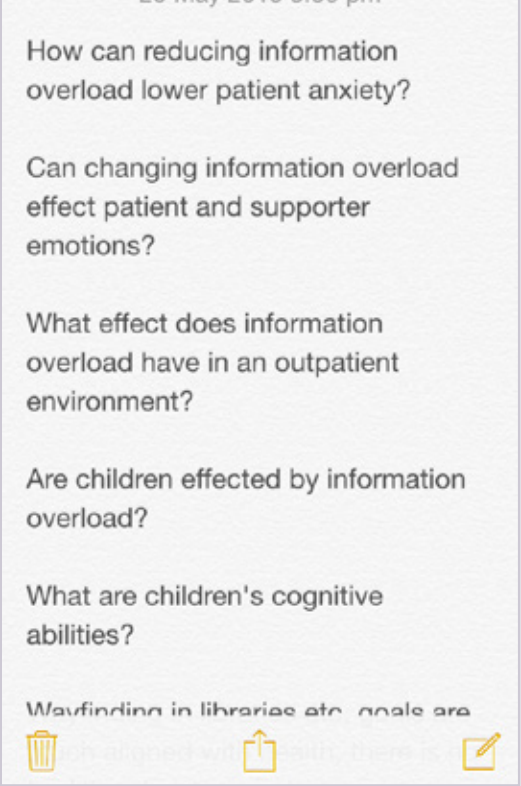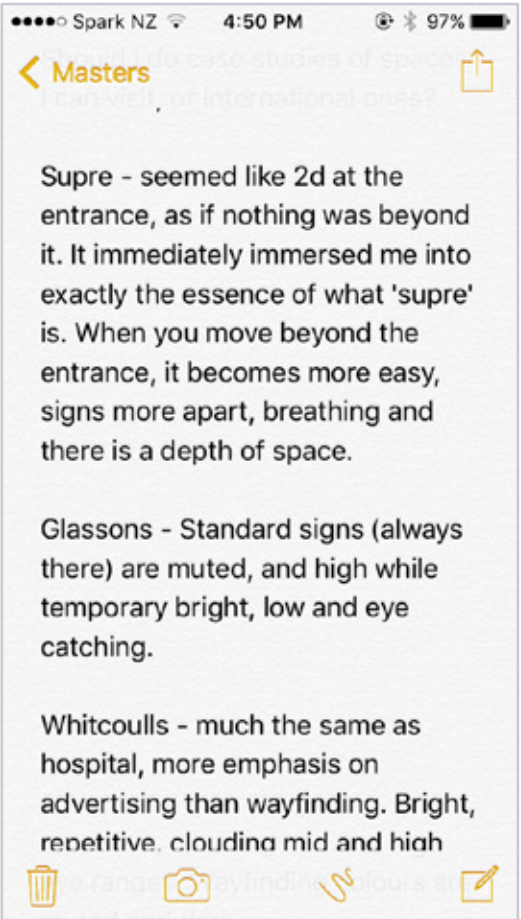
Figure 31. (2015). Analogous inspiration notes, screenshots.

Once I had walked through the retail stores (e.g. Glassons, Supre, Valley Girl, Whitcoulls) and had taken in the visual impact of the environment, I exited and documented insights using a note-taking app on a iPhone 5. These insights and further questions were kept brief and concise.
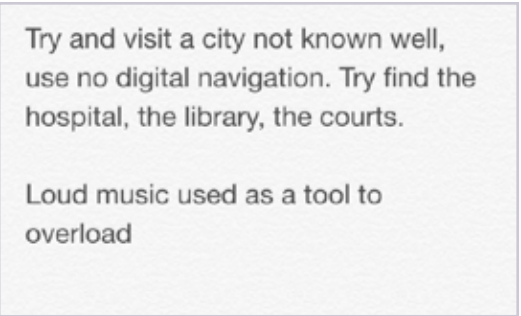
Analysis through design

Information design can be used to visually present data, themes, hierarchy, etc. (Crooks, Lancow & Ritchie, 2012). These aspects can in turn be used as an analytical medium for discovering relationships between data, or to highlight presentational and communicative findings or processes (Crooks, Lancow & Ritchie, 2012). Visually evaluating findings is aimed at capturing themes and helping to establish the problem at hand, thereby identifying where a design solution will be most effective within the health seeker's wayfinding journey.

Used as an alternative analysis tool, poster design was employed to capture assumptions and to document journey mapping, expert interviews and survey findings (Figure 32, Figure 33 and Figure 34). This was undertaken to capture insights from dense, text-heavy documents. The graphics helped to separate assumptions from validated facts and captured my beginner's perspective, which continued being developed and informed throughout the project. Moving beyond an informative process, this approach subsequently became more generative and was used to identify gaps in the health seeker journey, thus assisting to generate potential solutions (Figure 35). However, as the research developed, posters and infographics subsequently became a validation method for current design concepts. Thus, later posters were not designed with the same rigor as earlier designs, due to core themes already having been identified.

The production of posters facilitated more open reflection on assumptions and findings as a whole compared to viewing on a computer screen (Figure 36).[65] However, while displaying visual assumptions and findings allowed for quick reference, it did not demonstrate the depth of the data found in the initial recordings (data, reflections, full quotes, etc.). Creating more engaging ways for communicating data allowed for findings to become more transparent to those invested in the project.[66] However, at times, these were difficult for viewers to understand, as I was still building and understanding of the Outpatient department; as a result, designs were not clear.

65. However in placement of designs, this could have been better utilised by placing in the DHW Lab, as opposed to in the university studios. This is due to maximising visibility to colleagues, alongside visitors to the DHW Lab giving informal feedback.
66. This was especially relevant when sharing data with Starship project managers, for whom text-heavy documents were part of their day-to-day routine.

Biggest problem for staff

Getting patients healthy

Preparation	Travel	Waiting	Consultation

Patient/supporters not confirming appointments in a timely manner/at all.

Patient/supporters not arriving on time

Patient/supporters not prepared for appointm...

Getting right informat... for clinicians and roo...

Biggest problem for patient

/level/building

Directing to the right waiting area

People being in the wroing area, staff ... ck people are in the right

Directing patients to x-ray

Directing patients to x-ray

Getting self healthy

Travel	Waiting	Consultation

No participation in the journey

Could have list to pack own bag for trip?

— this is not addressed at all.

Staying entertained

Not being in control of own health seeking experience

Directing patients to x-ray

...blem f...

...ant), ...after or ...ne too.

...me

...intment is

...o make ...intment

Getti...

Finding their way t...

Reliability of public transport

Cost of getting there — indirectly helpy

Traffic

Being lost

Missing appointment

Price of parki...

Keeping the patient/other sibli... happy

Figure 32. (2015). *Assumption and journey map.*

The assumption and journey map were created in tandem, highlighting the assumed emotions of the Starship Outpatient experience and wayfinding tasks to be completed. The colour-coding and clear lines quickly identify separations in time categories within the wayfinding journey and it various complexities.

Figure 33. (2015). *Expert interview posters.*

Key themes and quotes were highlighted using a strict grid and
limited space. This meant that only the most important aspects of
interviews were chosen to be displayed. In instances were interviews
were particularly beneficial, another poster was added for the
expert.

Figure 34. (2015). *Current state survey findings poster.*

Survey findings balanced key quotes gained from data, thus
validating and disproving previous assumptions. Core findings were
clear and immediately visible; however, upon further viewing,
additional insights can be found.

Figure 35. (2015). *Experience map interventions screenshot.*

These journey maps were initiated with the task of identifying design interventions (maroon) specifically related to the wayfinding tasks underneath on the diagram. By mapping ideas against the journey the design was able to remain grounded to the needs of the health seeker, and the particularities of Auckland City Hospital's Starship Outpatient Department. Constructed in Adobe Illustrator, initial ideas were documented, however later moved to tactile mediums (Post-its) due to flexibility in iterating ideas.

Figure 36. (2015). *Wall collage.*

When placed side-by-side, posters informed one another and helped the viewer to draw connections between common themes for later reflection. This display allowed for a holistic view of the design problem and its complexities, as ideas could quickly be developed and evaluated against current knowledge being presented.

Experience mapping

Travis (2009) discusses the importance of "Early and continual focus on users and their tasks" (p. 19) in the context of a human-centred design approach. The experience map is both person and solution-focused, and analyses the current and proposed experiences of the end-user (Young, 2015). By visually mapping the current state of the health seeker's wayfinding tasks, information, behaviours and complexities to their destination, an HCD approach begins to identify design interventions that will fit within the available parameters. Within the current research experience, jouney mapping ranged in terms of medium, from low to high fidelity, depending on responding, experimenting and prototyping ideas.[67]

Early focus on health seeker tasks were documented and divided into planning and executor decisions, thus quickly establishing the most important factors.[68] Fluctuating between low-fi and refinement methods throughout the research, this enabled the flexible idea generation of potential solutions and subsequent analysis and synthesis (Figure 37 and Figure 38).

67. As noted by Sanders and Stappers (2014): "Earlier in the design process other types of visualisations (e.g. scenarios, storyboards) are made to allow us to experience, text, transform, develop and complete our early ideas" (p. 6).

68. "To understand how the physical design of the Outpatient Department supports care, it is important to understand the journeys that patients make through the department" (Khan, 2012, p. 3).

Figure 37. (2015). *Experience map, post-its.*

Post-it notes were employed to quickly organise and re-categorise ideas and actions. Due to its iterative nature, when working out a process or idea, these notes can quickly be discarded and reworked. For example, once the basic journey had been established, it was rebuilt using colour coded actions and by assigning tasks to different health seekers.

Figure 38 A. (2015). *Generative experience map.*

The following figures display examples of the process of building a journey, from an iterative to refined output. Using Post-its meant ideas and interventions could be moved with ease when establishing an approach.

Figure 38 B. (2015). *Generative experience map.*

Design interventions were then collected in an information graphic in Adobe Illustrator, and ideas further evaluated or discarded. In this document opportunities were more fully developed, and expanded. This would later be simplified and refined for presentations.

This later development of ideas was crucial to the evolution of prototypes, as the map evolved from a method of documentation to being a generative method for the development of new design solutions. Through reiterative mapping of the proposed designs against the journey of the health seeker, the impact of solutions was measured.

The approach to mapping the experience of the journey reflected the solution-focused aspect of design, i.e., once the problem had been better established, emphasis shifted to how design could be used to problem solve. Using the map helped to identify gaps in the journey and inturn, highlighted opportunities for adding value to the experience. Continual reflection on mapping the experience of the Outpatient Department allowed for concepts to remain connected to the problem and solution, thus reviewing impact on the entire broader wayfinding journey, beyond a singular intervention. As I was an outsider to the Outpatient Department, exceptions and variances to finer points were involved in producing the current state experience maps. However, the method fulfilled its purpose of outlining key tasks and gaining feedback from Starship meetings, which subsequently validated the accuracy of the content.

Personas

Personas are imaginary users created to help envisage the way in which solutions might play out on a range of user types (Nielsen, 2012, p. 4). This approach can be used to validate a design and to identify the limitations of a solution: "Person-focused generative research is a powerful sibling to solution-focused research, telling you the story of why someone makes decisions [the way they do]" (Young, 2015, p. 37). When creating a persona, it is important to incorporate depth and personality in the representative of the group in order to humanise the user from being an abstract concept into someone with wants, needs and fears (Nielsen, 2012, p. 5). Within the present research, this method of user representation explored the diversity of health-seeking wayfinders (in particular, supporters) within the Outpatient Department, and how they may be represented.

Personas were generated from observation notes and based on impressions of real supporters and patients within the space (Figure 39).[69] Aspects of these groups' traits and behaviours were validated through subsequent expert interviews. Being broad in terms of health seeker backgrounds and needs, there was nonetheless a focus on capturing diversity within the environment and avoiding stereotyping.

69. These were based on the primary supporter, but included the rest of the family. This was due to a patient never coming alone to an appointment, and the impacts of health being beyond the individual.

Felicia
Malaysian-Indian, Resident
35 years old
Middle Class
Full time parent, partner is primary income
2 Children, 4 & 6 years old

East Auckland
Married
Tertiary educated

Mid-high technology user, up-to-date with most trends in the past 2 years.

Looks for ways to make things easier, and seamless with current everyday life.

Both parents come into the appointment, with both children.
- Full family unit

Anna
Maori, citizen
37 years old
Working Class
Single parent
1 child, teen

Central Auckland
Single parent
Secondary educated

Mid technology user, only upgrades when something is well established, broken or no longer supported.

Just wants something easy and effecent to use. Is wary of fads, simple is best.

Brings teen to appointment as supporter.

Murray
Maori, citizen
42 years old
Middle Class
Full time, salary
2 children, 9 & 11 years.

West Auckland
Shared custody
Secondary educated

Mid technology user, highly influenced by peer reviews and content rather than changing on own initiative.

The less he has to look at the manual, or instructions the better. If he can't figure it out in the first use test, he won't use it again.

Is only patient and supporter, as Mother can pick up the eldest from school.

Mary
Pacific Islander, Immigrant
47 years old
Working class
Full time parent, part-time shift work
5 children, youngest 4 years - eldest mid teens

South Auckland
Married
Secondary educated

Low technology use, may have limited access to wifi/smart devices at home.

Has to use the family car to go to the appointment, therefore has to take all the kids. The eldest sibling acts as a secondary supporter, looking after younger siblings while mum focuses on the patient.

Chen
Chinese, second generation
29 years old
Upper-middle class
Full time (but currently on maternity leave), partner is also full time.
1 child, 18 months

Central Auckland
Married
Tertiary educated

High technology use, on the ball with the newest trend and app. Everything in their lives (where possible) is streamlined through devices, they are highly adaptable to change.

The whole family comes to the appointment (1 set of grandparents included) who also live at home with the couple.

PERSONAS

Date: September

Assumptions
Based upon real people, and families seen when observing outpatients. Other facts such as whole families visiting is further supported by expert interviews.

Education levels, and social status, use is from insights further gained from expert interviews. Technology use is assumed from previous, alongside 4 year employment at electrical company, and observed interaction with devices in Starship.

Figure 39. (2015). Personas.

Education levels, social status, cultural backgrounds and technology use were documented, most being assumption-based. While the primary supporter was documented, other members in the family were additionally recorded.

However, in order to effectively communicate, a target audience must be defined. Focusing on health seekers with more complex needs (i.e., factors linked to the problems they were currently experiencing) inadvertently resulted in a target group being defined.

The above method captured the diversity of health seekers in the outpatient department, with a particular focus on who were assumed to be extreme users,[70] having more demands of the service. Created during the mid-stages of the research, once completed, this process was not revisited. The personas served as an informative rather than generative tool, due to a lack of identification concerning gaps in communication.

70. Extreme users are outliers who often have high demand needs outside of the mainstream. A design aimed at these outlying users will nearly always work for others (IDEO, 2015).

Ideation

Research journal

A journal is a useful tool for documenting ideas during a project and can assist project management and reflection. It is common for the visual and theoretical aspects in visual-based research to work side-by-side, aiding in the production of a coherent design (Newbury, 2001). In the context of the current research, journaling, documented insights, as well as ideas and explorations of time can help to discover how the problem of wayfinding among outpatients can be defined and solved.

Throughout the research, documentation was captured using both bound journals, and digital documentation. Theory, planning and practice worked in tandem, functioning as design principles of potential solutions (Figure 40). Later, notebook use progressed from involving overarching explorative ideas to include the specifics of sketching and planning concepts for execution (Figure 41). The digital journal collated these thoughts in a more formal manner alongside analysis and the planning and evaluation of methods and process, which were effected on a regular basis (Figure 42 and Figure 43).[71]

Used as a method for collating research and defining problems and potential solutions, the use of journals was most useful when planning either outputs or points of action.[72] Bound journals served as a medium for generating ideas with which to further define and understand the problem at hand, and were later useful in planning the execution of ideas. The digital journal was an analysis tool, where regular synthesis and review of ideas presented aspects that were considered important to the research.

71. This was approximately every 2-3 weeks, fluctuating according to planning, analysis and testing.

72. As noted by Gibson (2009, p. 25), planning and strategy is at the core of a good wayfinding project.
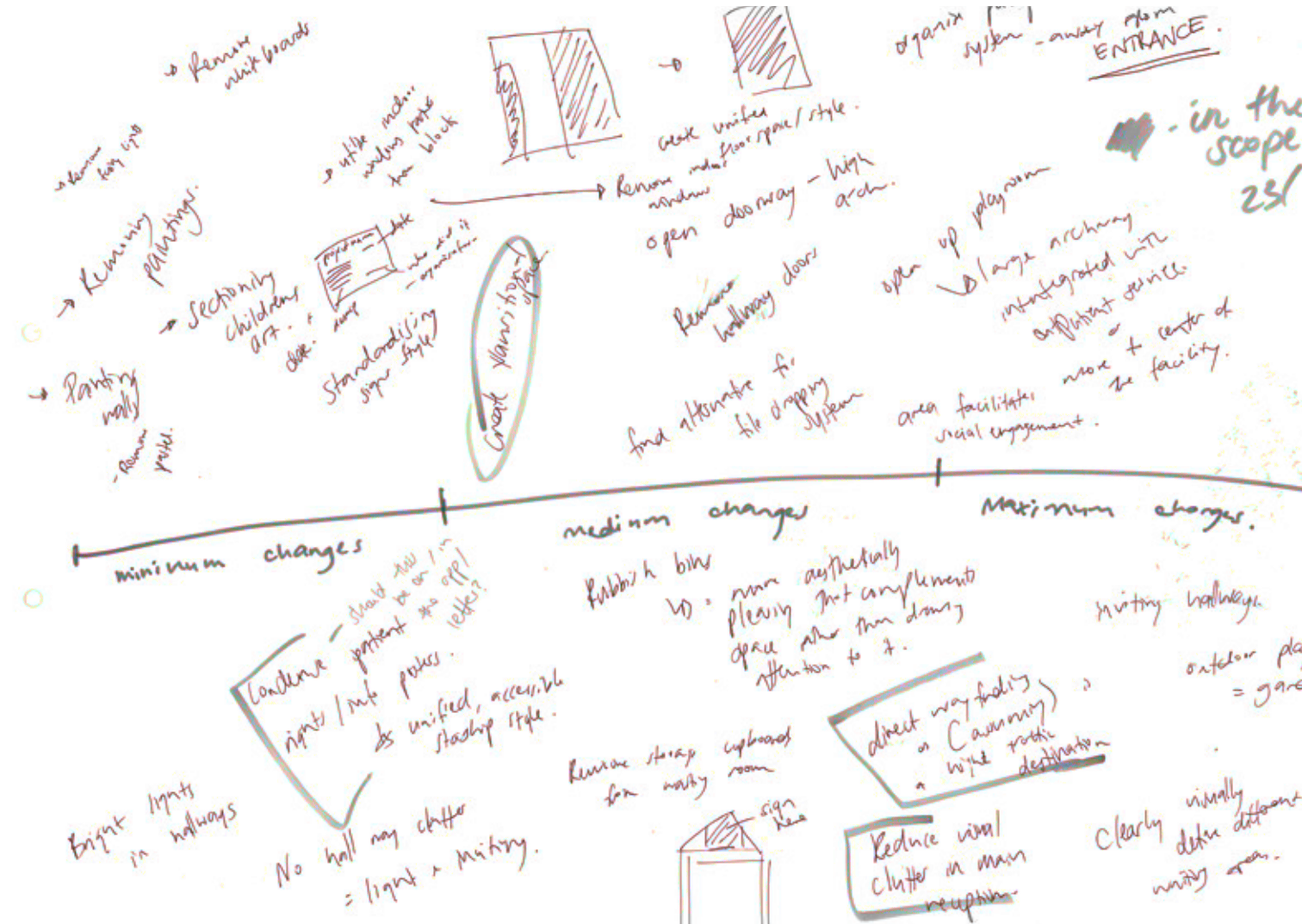
Figure 40. (2015). *Research journal, A3, close-ups.*

The larger A3 format was utilised at the beginning stages of the project to explore potential of the project, through mapping design interventions and visualising theoretical themes and focus points. Sketching and theory became more refined as the project progressed (Figure 41). However, planning (due to becoming more direct) was separated from ideation.
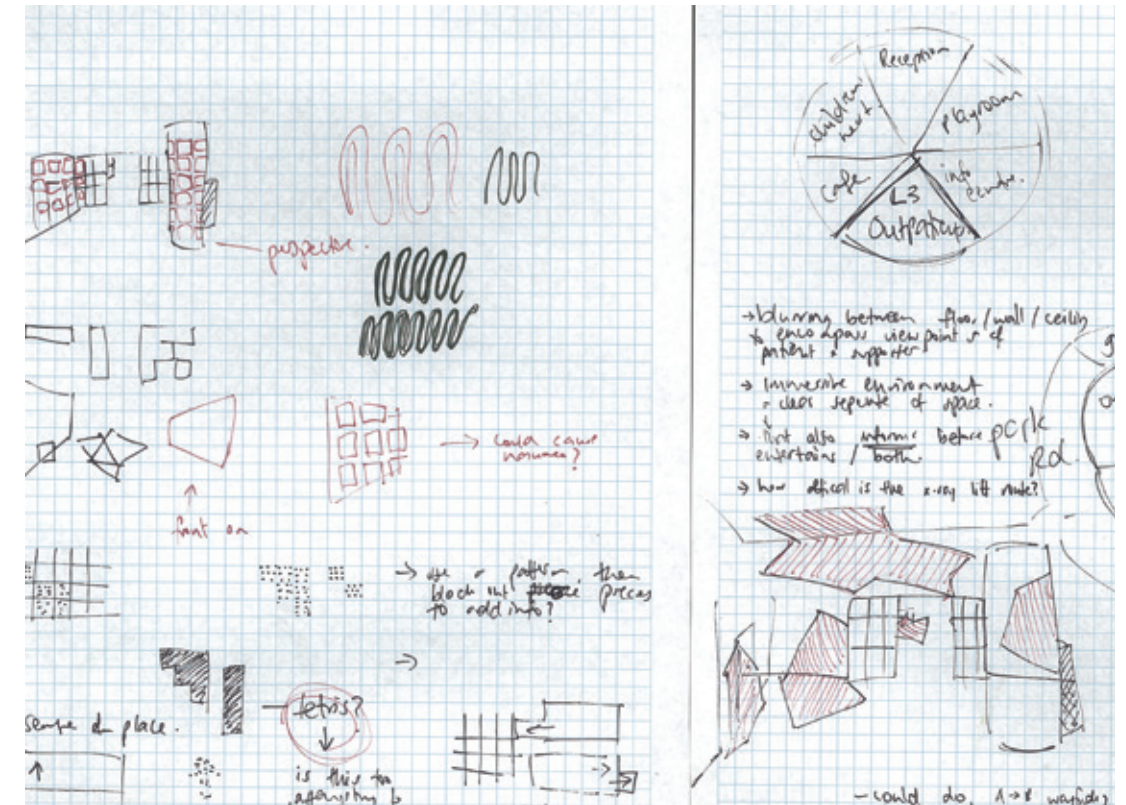
Figure 41. (2015). *Grid A4 Journal, close-ups.*

The A4 bound notepad (being easy to transport between locations), reached its height at the end stages of the project where planning was focused, and execution of ideas happened in rapid succession. This format allowed meeting notes, concepts and plans of action to be separate, yet in the same location making it easier to plan and review work to date.

Figure 42. (2015). *Digital journal week 10 review.*

The digital compilation retained a linear timeline of the project, capturing thoughts, topics, scope and ideas. With each research cycle, a review of completed work, difficulties, and planning for upcoming weeks were documented for supervisors and myself to review, then later discuss. However, if something was deemed unimportant at the time, it was omitted, making it difficult to relocate. Collated in a Adobe InDesign document meant content was grouped, thus easy to browse and compare beginning assumptions to later findings.

Figure 43. (2015). *Digital journal, expert role-play evaluation and analysis.*

This particular process was used to formally plan, and later review findings when evaluating design concepts (Figure 58). This semi-structured approach allowed all aspects (plan, assumptions, findings and images) to be collated until formally writing up results.

Mind mapping

Mind mapping is a useful method to explore connections between ideas and plan potential actions or areas for exploration. This method is especially helpful when mind dumping,[73] where later evaluation may reveal the beginnings of a significant idea (Oldach, 2000, p. 17). In this study, mind mapping was employed as a method to establish current knowledge and areas for exploration, which often led to reframing the research.

Mind mapping occurred throughout the project in order to establish priorities within the design principles of the project and to identify points of action (Figure 44). This method was further employed during periods of uncertainty to redefine the scope of the project, and to explore different directions within it (Figure 45).

With each mind map, ideas were documented using an unfiltered approach in order to capture current understanding, alongside redefining the problem, either in terms of designs or the research itself. This served as a tangible basis from which to methodically evaluate, keep or discard ideas.

73. Mind dumping is an exercise in which any and all ideas that come to mind are
     immediately documented (Oldach, 2000, p. 17).

Figure 44. (2015). A3 research journal, design principles, close-up.

Taking into consideration the issues that the design would address, aspects of the research were mapped and connections drawn between ideas. Due to completing early in of the project, this was structurally incoherent, but nonetheless helped to identify areas yet to be fully explored. Demonstrating how broad the project was, it displayed the domino effect of one change affecting the entire system, e.g., information and wayfinding.
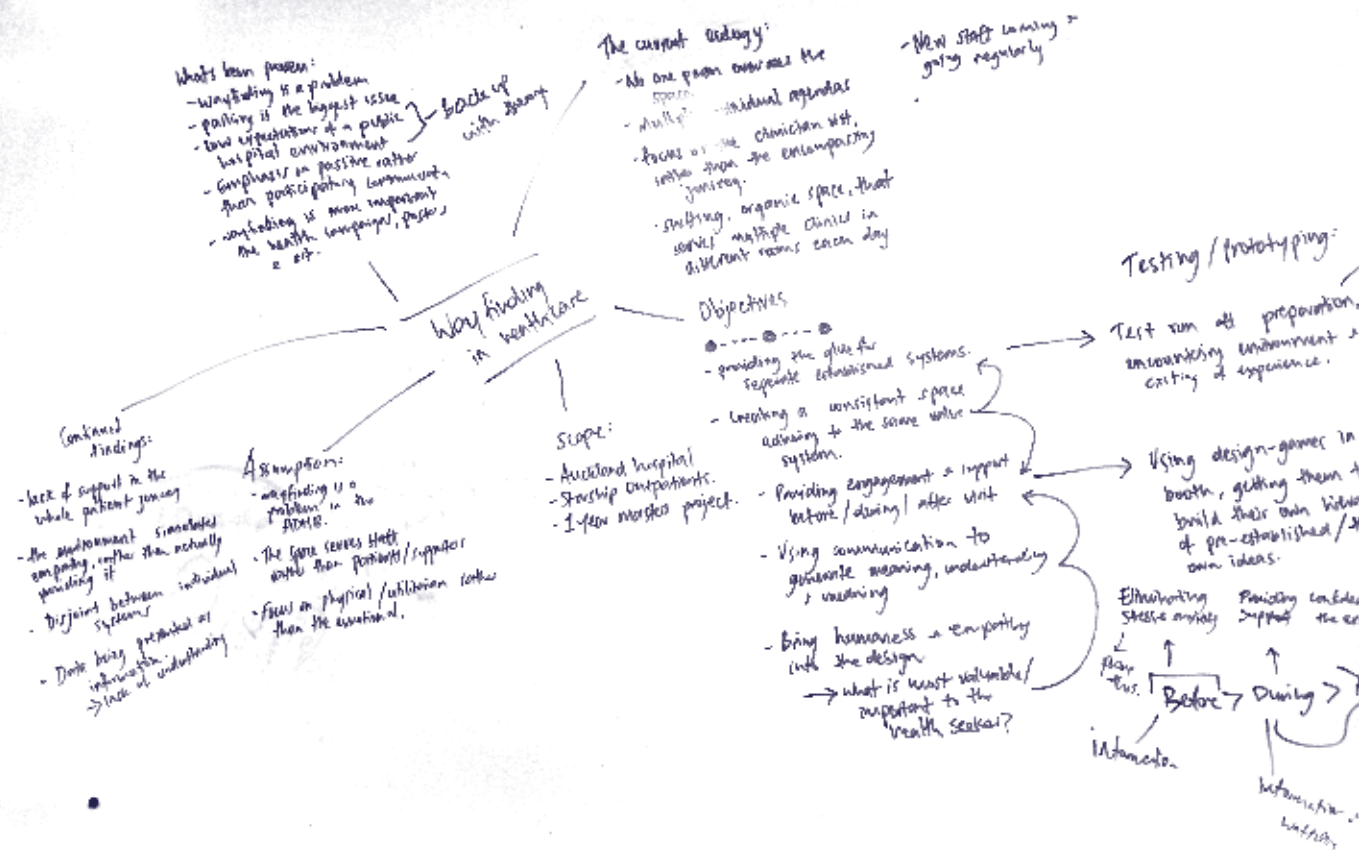
Sketching

Sketching is a powerful method with which to visually explore ideas in
an attempt to bring form to a solution (Bar-Eli, 2013; Cassidy & Stone,
2010). This approach serves to evaluate conceptual ideas, a process in
which the sketching of potential solutions and defining the problem often
occurs in tandem (Bar-Eli, 2013).[74] Ideas can be quickly communicated
and evaluated by both the designer and stakeholders (IDEO, 2015, p.
64). In the current research, sketching was approached as a way in
which to engage the problem through concepts and iteration.

Throughout this research, the approach to sketching varied and was
used to establish the problem and develop an understanding thereof,
evaluate and refine concepts, as well as communicate a design.

In the early phase of the project, large-scale and digital sketching traced over
photographs of the outpatient environment as a means for exploring concepts
about and the structure of the space (Figure 46 and Figure 47). Thumbnailing
explored ideas with efficiency, quickly iterating and trialling a range of
approaches to the design problem (Figure 48).

74. However, it is important to note that unlike the traditional design process, where
    making begins once the problem is identified (Sanders & Stappers, 2014), making and
    generating ideas is continuous throughout the human-centred design process (IDEO,
    2015).
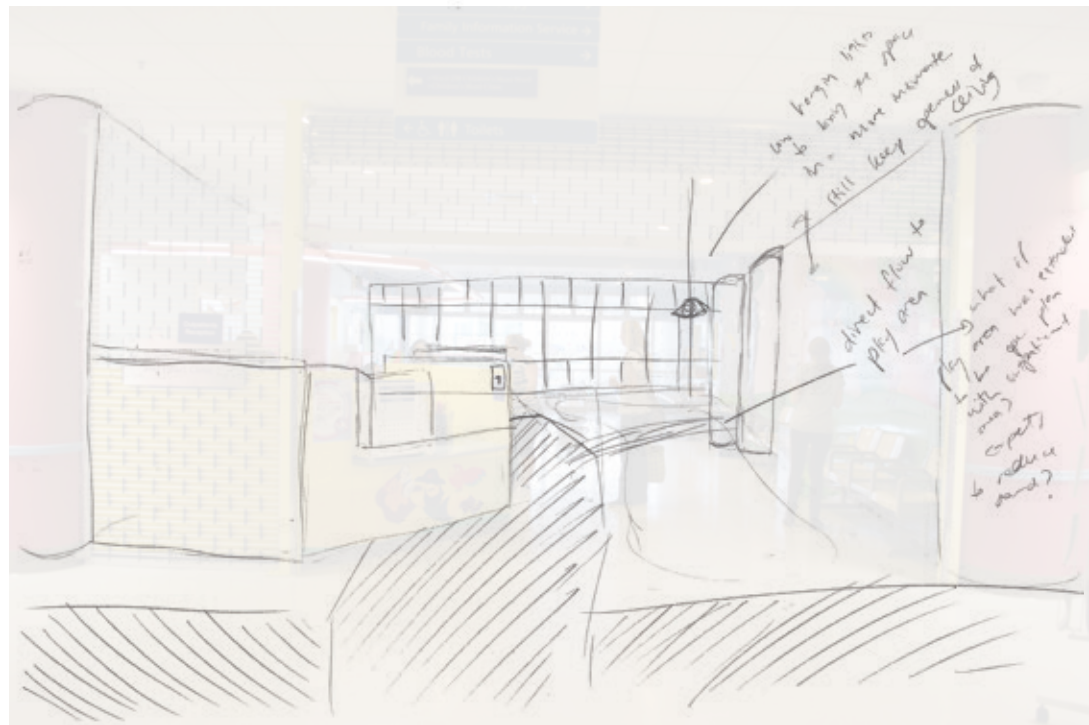
Figure 46. (2015). *A3 tracing of the environment.*

Large-scale photographs of the Outpatient Department were printed
and traced over to explore what an ideal OP environment might
look like. By outlining the layout of the space, the structure
could be more clearly identified without the existing visual
noise. While the large scale made it difficult to instigate ideas
quickly and iteratively, it contributed to a better understanding
of the problem and facilitated questioning of the status quo. For
example, questioning the placement of current information and
services.

Figure 47. (2015). *Digital sketching, Outpatient entrance.*

Images were imported into Photoshop, where a white overlay was
utilised and potential design inventions sketched using a drawing
tablet. A digital version of Figure 47 allowed for concepts
to be quickly iterated and for various options to be explored
within the same document by using layers within the software.
In particular, there was a focus on flow within the space, and on
visible pathways.

As previous sketching had been initiated from photographs or representations of the outpatient environment, explorative approaches involving freehand in-space sketching and mark-making[75] also occurred (Figure 49 and Figure 50). By synthesising previous approaches to sketching, concepts were reiterated into a cohesive solution, creating hi-fidelity representations for review and approval by peers and stakeholders (Figure 51).[76]

Through efficient sketching, ideas can be explored and iterated in rapid succession. In this research, hi-fidelity images served as probes for testing the feasibility and enthusiasm regarding design prototyping with stakeholders. By drawing over representations of the environment such as photographs or vectors, these contributed to better understanding of the space, rather than generating ideas. This way of working was largely due to the restraints of the project, where limited photographs of the space were available due to restrictions on-site. However, once an understanding of the space had been established, more exploratory methods enabled connections back to visual principles, rather than the effective placement of cues.

Figure 48. (2015). Thumbnailing vectors, close-ups.

By simplifying key wayfinding points in the space, vectors were created from photographs. These were thumbnailed on A3 sized paper to explore. Due to being an efficient method, multiple ideas could be quickly explored, and quickly iterated after evaluating their potential.

75. This was an explorative experiment, an element of reflection and testing commonly applied in action research (Schön, 1983, p. 148). It was particularly significant as it enabled an element of play within the process and not over-thinking the outcome.

76. See critique and feedback.

Figure 49. (2015). *Mark marking of Starship Hospital colour palette meanings.*

The visual equivalent of mind dumping, this was an unedited mind-to-paper process. Stepping back from practical inventions, this was a holistic, intuitive approach that employed previous Starship design principles to reinvent a visual approach.

Figure 50. (2015). *In-space sketching of Starship wayfinding route to Outpatients*

Due to sketching over and from photographs for the majority of design problem solving, re-familiarisation with the Outpatient Department was initiated. I was immersed within the space, sketching that which was in front of me. These sessions took approximately two to five minutes to complete; the focus was on capturing forms and previously unobserved phenomena. Being efficient in this process was essential to prevent being disruptive in high-traffic spaces.
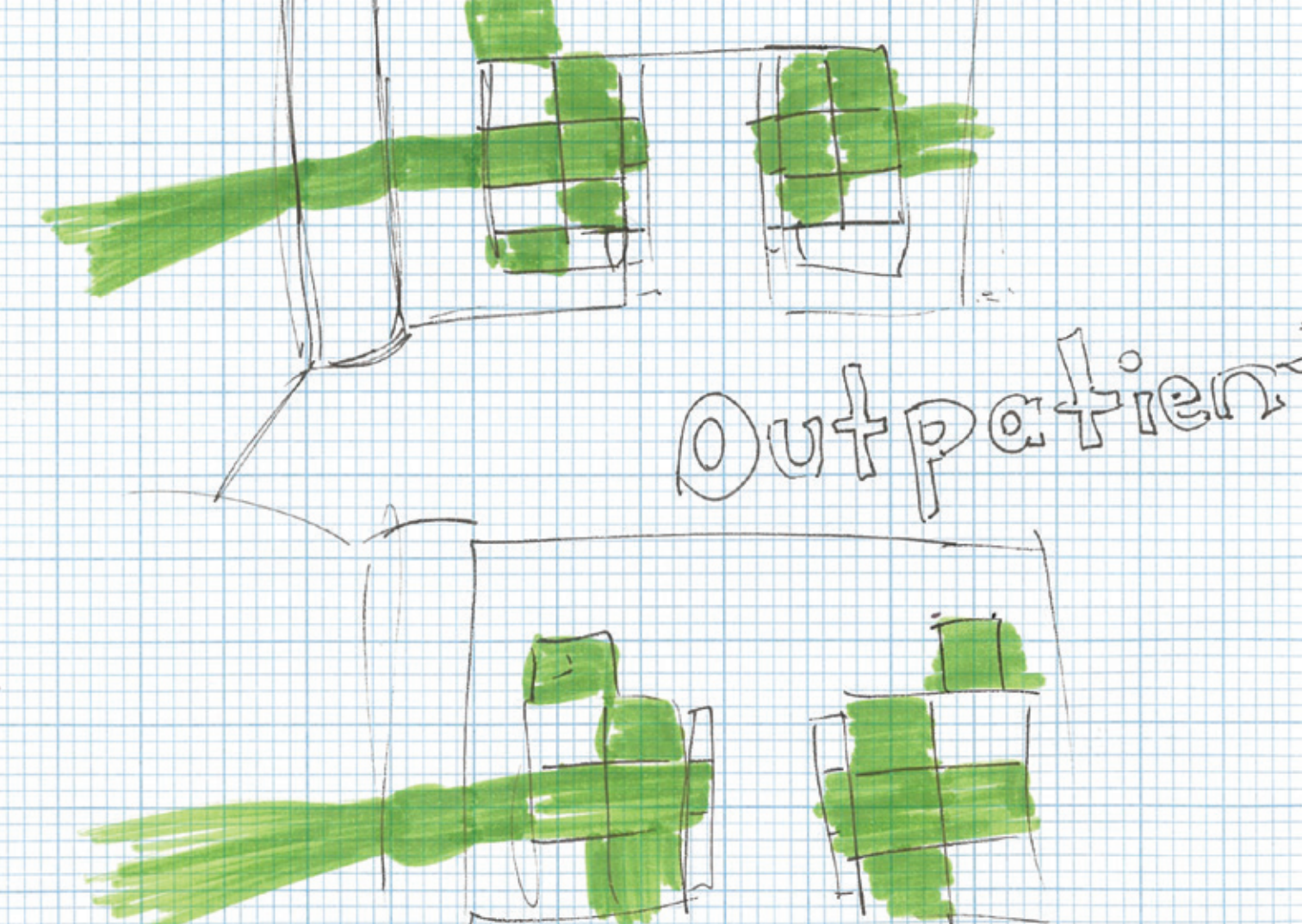
Figure 51 A. (2015). *Synthesis and iteration.*

Unstructured thumbnailing was kept small and rough, as a trial and error approach began forming coherent concepts. Becoming increasingly specific to the outpatient environment, these concepts were transferred to Adobe Photoshop in order to evaluate concepts in situ.

Figure 51 B. (2015). *Duotone in situs Outpatient Department Entrance.*

Black and white photographs were used for the evaluation of concepts, form and placement within the environment. This minimised distraction within the pre-established environment. However, this method of placement overlooked the impact that visual noise and colour had within the space.

Figure 51 C. (2015). *In situ wayfinding images, Starship Outpatient entrance*

It was imperative that in situs of the wayfinding prototype images reflect the actual environment and materials that would be used. This was because final design images would serve as communication tools for gaining approval to install the wayfinding prototype.

Prototyping

A early concept or sample was built to test whether it could either be replicated or learned from ("Prototyping definition", 2016). Prototyping provides a valid design process for the practitioner as a means for reflecting on tangible ideas, a process in which reflection is both an attitude and output (Milligan & Rogers, 2006). This iterative process allows for failure to occur early (IDEO, 2015), as according to Norman (2002), it takes approximately six to seven attempts to get something right. In this study, prototyping focused on realising concepts and testing ideas, as well as exploring feasibility of design solutions with stakeholders.[77]

Early in the project, rapid paper prototyping was employed to test ideas with multiple components quickly, in order to view it as a whole (Figure 52). Later, paper prototypes were used to gain feedback from colleagues and stakeholders, enabling them to quickly understand and evaluate the concept (Figure 53). A wayfinding prototype was approved by stakeholders and installed in the Outpatient environment for the in situ evaluation of solutions, to take place toward the end stages of the research (Figure 54). Environmental prototyping was large scale and costly, and was therefore executed only once with minor iterations.

77. As noted by Sanders and Stappers (2014) "Iterative prototyping can be viewed as 'growing' early conceptual designs through prototypes into mature products (or services, environments, experiences, etc.)" (p. 6).
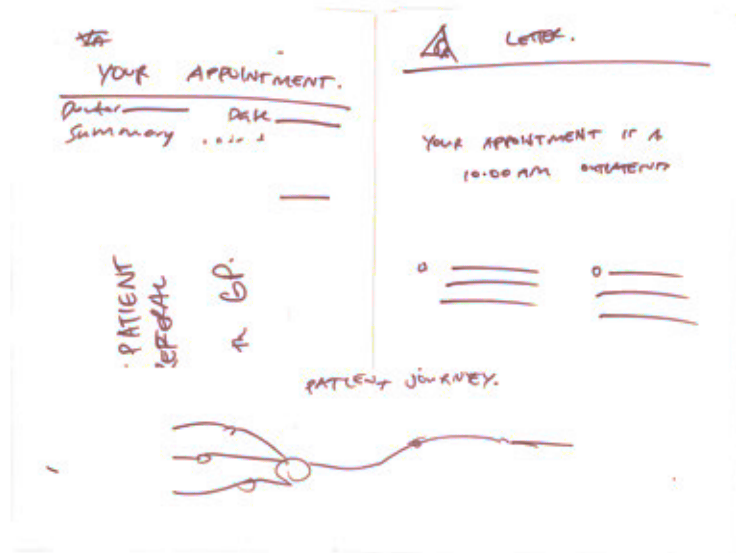
Using paper, pen and scissors, an information package was quickly realised. Each segment was assigned a title and a brief description detailing its purpose and what it contributes to the artefact. These were kept rough and were rapidly assembled in order to view how the entire design might work cohesively, and to explore its interactive nature. This allowed for technicalities such as size and purpose to be established, prior to measuring and placing detailed information in Adobe Illustrator.
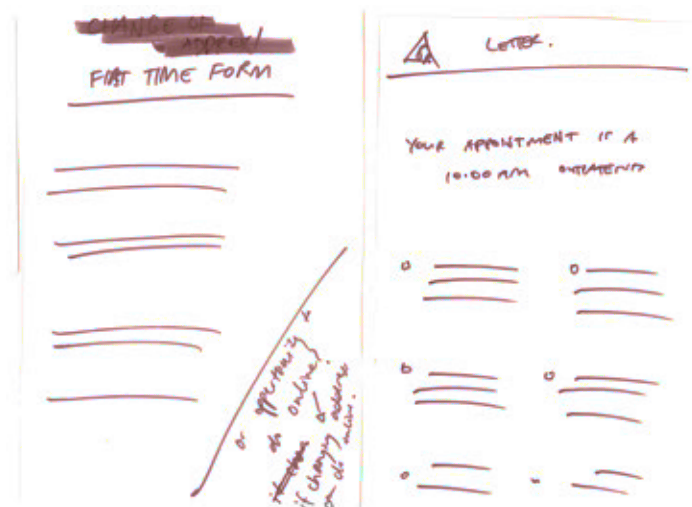
Once concepts had been loaded into Adobe Illustrator, the artefact was printed, used as intended (written or drawn upon) and then evaluated (by myself, colleagues or stakeholders). This ensured that there was enough space for writing information, and that visual cues were direct. Due to paper prototyping being a cost-effective prototyping method, iteration occurred often.
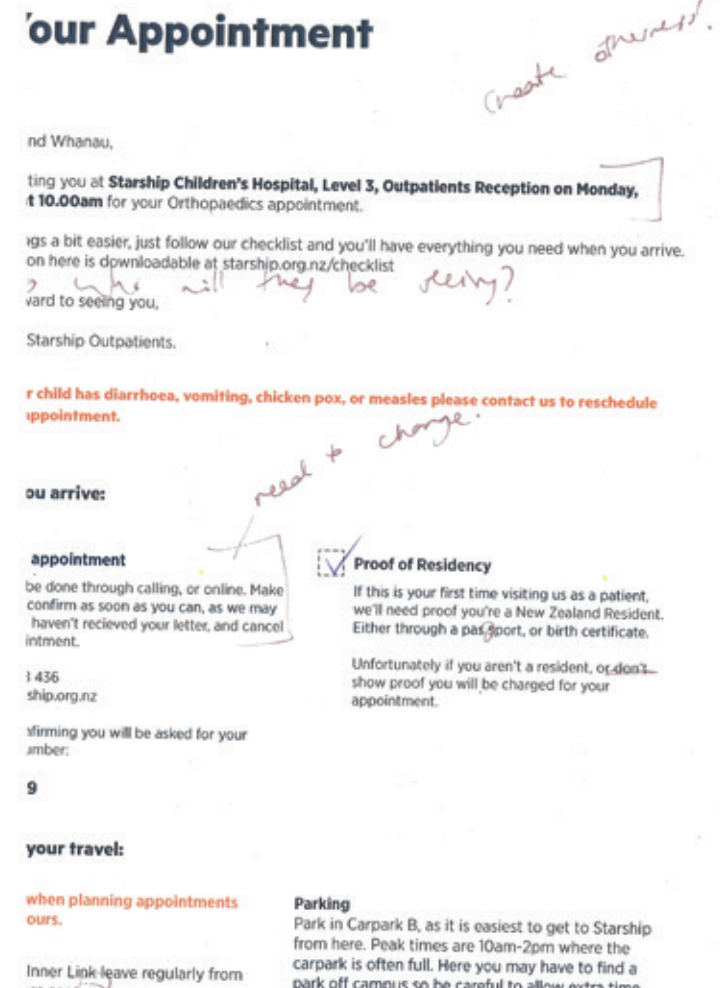
Prototyping focuses primarily on how something works, rather than how it looks. This was helpful in the initial development of ideas. Prototyping serves as a platform for communicating focused discussion around an artefact, as well as to test and challenge the status quo, as it allows others to experience something that had not previously existed (Standers & Stappers, 2014, p. 6). This was particularly helpful when communicating with stakeholders. The artefact supported discussion, the exploration of concepts, restrictions and feasibility. The challenges, particularly with regards to a wayfinding prototype (in a large hospital) were managing size, as well as determining which elements were most important to evaluate. Having stakeholder's efficient approval was crucial for maintaining research momentum. Unlike a paper prototype, the environmental installation was not moved from the space and due to its temporary nature, there was a limited timeframe for gaining feedback and critiques. However, testing in the space was imperative, because though a solution may appear to work onscreen, it can nonetheless fail in reality, as some variables can only be discovered in situ.

Figure 54. (2015). Installed prototype, Starship Outpatient entrance.

The environmental prototype was installed using approximately 25 meters of vinyl, which was cut and installed by me, with the help of colleagues; the process took four days in total. Due to the large scale of the install, a compromise was expected from stakeholders. Due to this, measurements and feasibility within the restraints of materials was not explored before seeking approval from stakeholders. Once measurements were completed and restraints firmly established compromises had to be made within the design.

Evaluation

Survey

Surveys can provide an accessible and quick way for gathering a sample[78] of data from participants, as these can be anonymous and brief, are low-risk and easy to disseminate. However, the data collected may lack depth and reasoning beyond opinions of participants (Fowler, 2013, p. 124). Within this research, surveys were used as a method for understanding the problem and to later prove that the design solution had solved this. Thus, survey's served to formulate a perception of the current state of the wayfinding experience and to evaluate the impact of the installed environmental prototype in the Outpatient Department.

Four anonymous surveys were applied using paper and digital formats, alongside a physical stand,[79] each approved by project managers prior to being installed or sent out.[80] All surveys conducted focused on being efficient regarding participants' time, due to the significant potential for the presence of stress within the department, as identified through consults.

78. Where a small number who participate in the survey represent the collective view of the population or group being researched (Fowler, 2013).

79. A 'Happy or Not' stand, this wirelessly collects quantitative data using a range of four positive to negative smileys buttons in response to a prompt ("Happy or not", 2016.).

80. See Appendix 4 (p. 553) for surveys.

Paper-based surveys were installed in the outpatient department and in the main waiting area at Reception. At the start of the project, a survey was disseminated in the outpatient environment in order to understand whether wayfinding was considered a problem within the department. Due to ethical limitations, surveys were aimed at supporters (parents and guardians) rather than patients (children).[81] Questions were developed from early research assumptions and knowledge of the hospital environment.[82] The typical outpatient demographic informed via consults was considered and survey collateral (information book, poster, survey, and collection box) was designed and worded accordingly. The survey material was designed to contrast the vernacular in the department in order to maximise potential engagement (Figure 55). Later in the research, following the installation of the wayfinding prototype, a second survey was conducted to evaluate whether the goals of the design had been met, i.e., successful wayfinding (Figure 56). Additionally, an anonymous quantitative approval scale was deployed, using the 'happy or not' terminal to elicit immediate first impressions among visitors and staff about the prototype, which was located in front of the outpatient entrance (Figure 57). To gain a more detailed perspective of other users in the space, staff was asked (via an online survey platform) to anonymously evaluate this prototype. Staff was recruited via email by Starship Children's Health project managers.

81. However, a child always has an adult present, as it is the adult that brings them to the appointment.

82. See existing wayfinding analysis.

Figure 55. (2015). *Survey current-state install set up.*

Acknowledging mediums and presentation of information that was typical in the space, there was an attempt to brand the material consistently using an opposite aesthetic to what was present. Monochromatic and handwritten forms were used throughout the information booklet, survey, poster, feedback box and pencil holder. This was conducted over to a total of two and a half weeks, in two installs.

Figure 56. (2015). *Survey prototype evaluation install set up.*

Similar principles were adapted to the current state survey's visual look; however, there was reflection inside the information booklet, survey and poster of the forms applied in the prototype. This was to connect the survey material with what that which it was evaluating. This was installed for a duration of two weeks.

Figure 57. (2015). *Happy or not data collection.*

Initially, participants were asked, "What did you think of the blue wall graphics?", but this was later modified to, "The blue graphics helped me to know that I am in the Starship Outpatient Department", due to previously focusing on aesthetics rather than functionality. Responses were recorded over a period of 10 days, using a scale of 'smileys'. This was placed at the entrance of the department, at the end of the wayfinding journey. While doing so slightly blocked the impact of the blue install, this could not be helped, as the survey stand's placement needed to be as explicit as possible.

The questions in both evaluation surveys were similar and focused on proving whether goals and assumptions of the environmental wayfinding prototype were effective.[83]

The survey could have gained richer data if it had been a longer document and if the researcher prompted participants within the reception and waiting areas. The placement and presentation of the survey for the environmental prototype was not explicit and caused confusion. The survey 'happy or not' stand scale of measurements can give an overall indication of approval; however, this is limited, as it does not capture complexity or the reasoning behind decision-making. However, unlike surveys, this quantitative survey stand was a quick method for gaining data and involved little commitment. Length of time to gain approval, alongside coordinating with other ongoing research and service improvement activities on the part of the ADHB and academics was the biggest barrier to survey implementation. Low response rates were consistent throughout each survey (excluding the 'happy or not' stand), making it difficult to draw accurate conclusions based on survey data only.

83. Due to accessibility and ethical limitations, health seekers and broader staff members could only evaluate the environmental aspect of the design solution. However, as users beyond the outpatient department will encounter this, the environmental design must be able to stand alone.

Expert role-play

Role-play is useful when testing concepts or solutions with primary end-users or stakeholders in mind (IDEO, 2015). By simulating the wayfinding health seeker experience, this method explored the experience of the outpatient department when encountering multiple mediums of communication, and evaluated the current state and later the full prototyped solution (e.g., referral, appointment letter and environment). Expert role-play was employed to inform and critique, generate new ideas, and later explore the feasibility and appropriateness of designs within the hospital.

The internal route from parking lots to the outpatient department was evaluated for the Auckland City Hospital. This was due to most experts already being on the hospital campus and time availability. Experts hailed from various backgrounds; the DHW Lab (designers from a range of backgrounds) and the ADHB (stakeholders, leadership, managerial and clinical staff) were invited to participate and provided a range of different points of view, contexts of feasibility and noted gaps within the design, based on their expertise. Experts were recruited from among those who had knowledge of and an interest in the project, colleagues from the DHW Lab, as well as fellow students. The current state outpatient experience role-play included designers from a range of fields and who had varying familiarity with the hospital; this was done in a bid to gain a variety of perspectives, since wayfinding is a multidisciplinary field, despite the current study being a communication design project. Members of the ADHB and designers were invited to role-play the full wayfinding prototype in order to gain feedback about its feasibility and to gauge the

enthusiasm for a solution of this nature. Sessions were outlined thoroughly beforehand in order to later compare them with an analysis of the findings (Figure 58). Role-play sessions ranged from including three to six experts, depending on their availability, and lasted approximately 60 minutes. An outline of tasks and wayfinding material were provided prior to the session for review. Appointments were staggered in three-minute intervals to ensure individual-based wayfinding decisions. When the simulation was complete, discussion and notes were documented about the journey and artefacts; this included a critiquing session and developing design improvements (Figure 59).

Limitations appertaining to the above method included the experts having prior knowledge of the hospital[84] and the proposed artefacts as the result of ongoing critiques in the studio, meetings and presentations. In an attempt to limit the bias related to an expert's field of knowledge, experts from various backgrounds and with varying familiarity of the hospital were invited to attend role-plays. By having experts simulate the design solution, their understanding thereof was deepened; this was because they experienced the design, rather than being told about it.

84. However many did not use or were not familiar with public entrances and corridors.

The roleplay
Each expert is given a letter as only source of wayfinding information. This is addressed to them personally. For the sake of this study is given in person before the roleplay.

Each expert goes solo, the only requirement being they must find their way externally—by starting at either carpark.

Once returning to the Lab, using pen & paper to quicky document their journey and main insights.

When all have completed the journey, have a debrief with all experts of identified issues, concerns and highlights. A3 zeta pad, paper and post-its used to quickly turn debrief into a generative session.

**EXPERT ROLE PLAY PREP
—ORIGINAL LETTER DESIGN**

Date: September

Assumptions
Wayfinding favours the prepared traveller
Engaging & supportive artefacts/designs create a more stress-free, empathetic experience.

Goal
To understand how a cohesive information system can inform and improve stress promoting confidence in ones wayfinding journey.

Constants
Each expert goes alone
Straight after expert documents insights
There is a group debrief shortly after everyone has completed the journey (get them to go in 10 minute intervals)

Notes
The letter is only used in this rather than environmental information in order to identify points of difficulty.

Figure 58. (2015). Expert role-play current state prep.

Preparation for each role-play began by mapping the goals of the session, assumptions, participants, and constant actions for each individual. Points made here were used as points of reference when analysing results, and the success or failure of a design (see research journal).

Figure 59. (2015). *Expert role-play current state discussion.*

Once all returning insights had been documented, a series of informal prompts (linked to the identified goals of the session) were used to verify and challenge assumptions, thus generating discussion and solutions. Once the session was completed, a review of insights and assumptions validated and challenged was analysed. Notes from experts and ideas drawn on artefacts that were documented and later archived.

Stakeholder critique and feedback

When conducting research within an organisation, a sponsor with either financial or political backing is paramount, as action research should not be a solo pursuit (Gray, 2009, p. 314). Regular meetings and presentations were given to ADHB stakeholders throughout the research. This was to ensure that stakeholders had a clear understanding of the project's objectives, connections with other research activities, and that they were informed in terms of the research progress and findings. This provided an opportunity for gaining feedback on processes and ideas, and to collectively solve challenges pertaining to access and feasibility that emerged during the process.

Feedback meetings and critique sessions included the following:

Regular meetings with Starship project managers and fellow postgraduate students ensured quick problem-solving, project coordination and progress updates . These were conducted every two to three weeks, and as the project began to end became less frequent (conducted as needed).

Project managers

Meetings with project managers tended to be brief, providing quick updates about the project's progress and discussing any issues that needing solving. In order to be time efficient, these meetings were conducted with fellow postgraduate students who were conducting projects with Starship outpatients; meetings lasted approximately ten minutes.

Due to managerial roles and project hierarchy, project managers had the authority to approve activities within the space, such as photographing, surveying, qualitative data collection and environmental prototyping.[85]

The rapid nature of meetings meant that it was at times difficult to communicate the larger scope of the project beyond problem-solving current issues. However, counteracting these rapid meetings with formal presentations allowed for the full project to be communicated, including themes and conclusions.

Student coordination

As an addition to meetings with Starship, informal meetings with postgraduate students researching other aspects within the Starship outpatient department were conducted in the first half of the research. These meetings helped to co-ordinate and manage photography, consultations and activities in the space prior to meeting with project managers and sharing and comparing findings.

Meeting with other students working within the space ensured that staff's time was used as efficiently as possible. However, as the project developed and became more specific, there was little need to continue meetings and coordination. Sharing knowledge confirmed similar conclusions within the department and ensured that when opportunities were identified, these were coordinated. Later in the research, formal critiques were attempted of current designs; however, due to diverse timelines, this was unsuccessful.

85. However, large scale changes needed the approval of the Starship General Manager; this was effected by the project managers via email.

Ongoing critique

Formal and informal presentations served as a method for concisely relaying ideas, concepts and findings. Presenting findings and updates on the research to colleagues, stakeholders and researchers provided an opportunity for critiquing proposed ideas, as well as testing how an untried approach might be received. Throughout the project, regular presentations of the research at various stages of completion were conducted. Formal presentations were generally conducted with others at ADHB (e.g., formal student critiques) or in a research context (e.g., symposium). Informal presentations were aimed at small groups who had an interest in using knowledge to inform live projects within the ADHB.

Regular presentations allowed for gaining formal critiques throughout the year from designers and members of the ADHB, while at the same time facilitated sharing knowledge with real world projects. The various presentations throughout the year meant that findings, themes and potential design solutions were regularly summarised and evaluated.

Documentation of Research

The research was initiated in late 2014, where consultations began between Starship staff and other postgraduate students, to explore the possibility of collaboration between student research and the department. The staff that were met with wanted a new perspective on known problems in the Outpatient Department (e.g., waiting rooms and wayfinding), and were enthusiastic to see what design could bring to solving these problems. Due to the department being renovated at the end of 2015, there was the possibility for the research to inform upcoming changes. A member of staff with whom we met in early consultations (charge nurse) became our primary contact once the research year officially began in early 2015.

1. Discovering the problem

Initially, the scope of the research was contained within the physical boundaries of Starship's Outpatient Department, based on problems identified by staff. Alongside other postgraduate students, the charge nurse gave a tour, introduction of the outpatient department and the initial background and understanding of the services the department provided.

Beginning the research of the department environment required a holistic immersion on the part of the researcher into how outpatients functioned; this was due to an array of problems beyond wayfinding as identified by staff via consultations:

Staff using the corridor waiting space as a shortcut, creating a thoroughfare.

The busy nature of the department for patients.

The line to reception moving beyond the Outpatient Department entrance at peak times.

Observation

Undertaken in the main reception and waiting area, my observations revealed a variety of behaviours, activities and ways in which users interacted with the environment.[86] Common themes that emerged from these observations included:

Patients (children) were always accompanied by an adult supporter. Group size varied from one patient and one supporter to an entire family unit (including grandparents and other siblings).

Parking difficulties were a major cause of frustration for health seekers, due to insufficient parking on site and consequently, parking too far from the hospital campus.

Many health seekers appeared to have learned about the difficulties of the wayfinding journey to Starship Outpatients through trial and error, that is, by having repeated it many times. Those who were new to the department commonly displayed high levels of stress in terms of finding their way, while others asked for directions at Reception.

Appointment letters were often brought along to receptionist on arrival, despite not being needed for the consultation.

86. See Appendix 5 for observation notes (p. 570).

Different reception desks were labelled for specific clinics; however, due to the desks low height and long lines at busy times, it was difficult for this to be communicated to health seekers.

Most directional information was provided verbally to health seekers being directed to the numbered waiting rooms, and wayfinding difficulties to the x-ray area was a common issue.

Most visitors were not aware that there was a playroom in the department, or that the playroom served as an alternative waiting space for patients and siblings. The door to the playroom seemed to be a factor in the lack of knowledge about the service (Figure 60).

Staff contributed to a positive atmosphere, and exhibited good rapport with (what appeared to be) regular patients.

Heavy staff traffic in corridors consisted of clinicians and other non-clinical support staff. Due to staff traffic, high volume clinics and row seating, there was little sense of privacy (Figure 61). Observing from the perspective of this seating, I found the exposure unnerving at times, as seats were positioned directly opposite each other in the smaller waiting areas.

Visual noise and poor placement of information made it difficult to identify important communication (Figure 62). The sounds of televisions in the waiting areas were loud and distracting, often competing against the inherent noise within the department.

Figure 60. (2015). Starship Outpatients Playroom door.

The yellow door to the playroom is covered with ad hoc signage.
The colours blend into the illustrated mural on the walls of
Outpatients, rather than attracting attention. Furthermore, beyond
the door sign, it is not advertised in the department that a
playroom is available.

Figure 61. (2015). Starship Outpatient waiting areas.
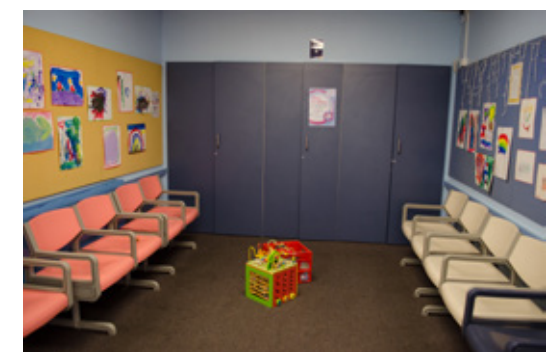
Figure 62. (2015). *ENT Waiting area, Starship Outpatients.*

A4 laminated signage directs health seekers through the process of the ENT clinic. There is no focal point within the layout of where to look first, nor any indication of what is most important. The child-friendly aspect dominates the space (e.g., mammoth and other film characters).

Expert interviews

Gaining contact with staff was difficult due to busy schedules (and the time needed for a formal ethics review).[87] Interviews were conducted with experts that included the following: charge nurse, information consultant, outpatient clinicians, psychiatrist, internal communications team member and an improvement specialist. A variety of experts had direct contact with health seekers or were in administration and managerial roles, either within Starship or as part of the overall ADHB. Interviews were staggered throughout the research, due to the difficulty gaining participants the latter's busy schedules.

Starship background

When Starship was built in the 1980s, patients with complex problems were kept in the children's health section, while those with more simple health issues were admitted to the adult hospital. In later years, all child patients were seen by Starship and the increased demand led to a struggle for space within the building. Compared to adult health, the demands of children's health are argueably greater, as post-surgery follow-ups with children are generally long-term, due to the nature of developmental growth. However, alongside the increasing demand, Starship had also built a rapport beyond the standard public hospital:

87. Starship project managers provided contacts for staff members that had identified themselves as being interested in the research, but it was nonetheless difficult to organise times for interviewing.

The good thing about Starship is [that it is] almost like "Starship Inc". It's not an anonymous hospital and Starship [has a high] pedigree...people are [in most cases] fairly comfortable coming to Starship... Starship [has a] good [reputation] in New Zealand (outpatient clinician).

Wayfinding

Discussing Starship Children's Hospital and outpatients, this department dealt with the highest volume of patients, making it the public face of the children's hospital.

[The Outpatient Department] is...the weak link in the chain at the moment... I get the [feeling] that you come to Starship, that [it] is [viewed] as a big institution and then the first point of contact is the shabby, old, poorly supplied [and] messy [waiting] room. [There are] little pockets of waiting areas everywhere. (outpatient clinician).

There are no specific signs that point to Starship's Outpatient Department, either in the main hospital building or once in Starship, many people lose their way once they move beyond the parking lot. There is no easily identifiable entrance to Starship, the Outpatient Department or many of the services available in outpatients, despite the fact that they are all situated closely together (e.g., Reception, the breastfeeding room, the playroom), making them very difficult to find.

Starship doesn't really look like it has a front entrance [and] the hospital doesn't really look like it has a front entrance. [Therefore], you can't tell [people] to "come to the front of the hospital". (outpatient clinician).

At times, health seekers might ask where to find the Outpatient Department when they were in fact already in the department, with the reception area only a few steps further (according to an outpatient staff member). Frequent wayfinding questions included where to find the café, specific wards, the x-ray area and the pharmacy.

Information & communication

Due to capacity, a democratic approach was taken to producing patient information, allowing staff within their departments to create their own collateral (health information packs, pamphlets, appointment letter templates, posters etc.).[88] More recently the communication and design teams has put in a process to proof content put into brand style and check for plain language . The importance of accessible language (as opposed to medical-speak) being used in patient-oriented material was further discussed:

[We] write [information] in a clinical [manner sometimes], [or] we write it in a way that is aimed at people with university degrees. [We] should be aiming at [reaching] people who have a reading age of ten (communications team member).

88. This creates information tailored specific to the department, while also maintaining a cohesive brand image.

Furthermore: "If you want to introduce [health specialist] language, it needs to be explained. Don't [simply] talk in jargon" (communications team member).

The majority of health campaigns within the hospital were developed directly by the Ministry of Health and other nation organisations, with little created internally. Much of the hospital's communication is poster-focused, using either poster holders in public spaces or presenting information as ad hoc material. According to a communications team member, part of the problem with managing material in public spaces is that everyone believes their information is the most important, and in past years there has not been a clear strategy to prioritise – this has got better over recent years.

Patients & supporters

It was common for entire families to come to the hospital to attend an appointment (all siblings and parents); however, it was unknown whether this was due to transport difficulties or as an act of support for the family member (outpatient staff member). A large spectrum pertaining to the emotional states of health seekers was frequently observed. Adult supporters often experienced negative emotional issues such as stress, anxiety and anger, as opposed to the children who were patients (outpatient staff member).[89] Starship aims to create a positive experience for children;

however, there needs to be support for parents, too, as their state of mind also affects the child's experience (outpatient staff member).[90] This was further validated in relation to the overall outpatient experience and the impact of current parking difficulties when visiting the hospital:

> I think in terms of the experience children get here, [in most cases they are] seen in a timely manner and it's a good experience. [What is particularly stressful for] outpatients...is [the] lack of [available] parking. [This] is a huge issue for families coming to this site... They arrive [already stressed], and often late for their appointments. [This likely] has [a bigger] impact on the successful [managing] of outpatients than anything else (charge nurse).

Furthermore:

> [People often experience some stress] finding a [parking space], getting [to the hospital] on time... I think a common experience is people being stressed about finding their way to the clinic (psychiatrist).

89. At times, when supporters were angry, frustrated, etc., it was found that they were often upset about phenomenon unrelated to what they were initially reacting to, i.e., waiting times, parking, etc. (source: outpatient staff member).

90. With regards to children's experience, the charge nurse discussed the difficulties Starship experiences due to catering to a wide range of ages. This may be due to the varying degrees of dependent patients, which is dependent on age and/or illness.

Transparency of processes

Issues of parking, the outpatient environment and waiting times revealed a lack of transparency aimed at the health seeker. This can cause anxiety as to what will happen next, either when arriving to or waiting in the Starship Outpatient Department. There was no means available for communicating to waiting health seekers about whether clinics were running late in terms of seeing patients, or why this was happening. It was not advertised that despite arriving on time, patients would not be seen immediately; alternatively, when this was communicated, wait times were vague.[91] This has the additional potential to add to the already established anxiety as a result of entering the health system:

> If you've never [before] had contact with hospital-based healthcare
> [involving] your children...it [is] going to be stressful. You're going
> to be anxious, it's unfamiliar, people are out of their comfort zone[s].
> [Situations like these make] people...vulnerable. (outpatient clinician).

Many patients and families visiting the Outpatient Department were regulars due to ongoing conditions and check-ups. Thus, many became familiar with a particular clinician and expected to be seen by the same

doctor at every visit. Due to scheduling and other commitments, this was not always possible; however, the change in clinician was not communicated in appointment letters, leaving health seekers to discover this on arrival.

Appointment difficulties

One of the major issues within the department was its high volume of patients and the importance of keeping appointments (charge nurse). It was not unusual for families to arrive at the hospital on days when their appointment had either been canceled, or they had misread the date or even the campus they were supposed to visit; this was largely due to a failure on their part to read appointment letters thoroughly.[92] Additionally, it was not uncommon for health seekers to miss up to two appointments in a row due to parking difficulties. No consistent standard was applied to letters sent by and contact from the hospital, with some health seekers receiving text message reminders from clinics, while others did not. Thus, appointments would have to be rescheduled, which can incur delays of weeks or months, depending on the nature of the appointment and its urgency. An interviewed clinician estimated "did not arrive patients" to be as high as 25% in South Auckland and 15% within Starship; in these instances, location confusion may have been a significant factor.

91. For example, orthopedic appointments were block-booked by the hour, meaning
    multiple patients received the same appointment time and were seen on a first-
    come, first-served basis, yet this method of queuing was not communicated to health
    seekers (charge nurse).

92. As noted by Silvas (Jun, 2013), when patients arrive late, ask staff for directions and
    complain about being lost, the current wayfinding is not working.

Narrow focus

Patients often struggle to understand the *how* or *why* of procedures within the hospital, which is the opposite of intuitive and makes little sense to outsiders. "People just don't understand how healthcare works" (improvement specialist). The hospital struggles to view the patient as a person with complex needs, values and concerns, as opposed to simply a disease that needs treatment (improvement specialist). While clinicians practice being patient-centred within the appointment, it is beyond that one-on-one of patient to clinician, but throughout the whole experience of a health service (improvement specialist). An interviewed psychiatrist discussed the importance of patient-centred care and engagement with families. Engaging with and gaining the trust of health seekers allows them to feel that they have an element of control over their health (psychiatrist). Stating "We're more likely to make a good choice if we feel like it's our own, [as opposed to] being told [what to do] or [being made to feel guilty]" (psychiatrist). This sense of control affects not only patients' mental but also their physical wellbeing: "[A significant amount of] medicines go down the drain [and] not down people's throats as an example of non-engagement in healthcare" (psychiatrist). In relation to Starship Outpatients specifically, clinicians can forget about the other elements of care and support that the department provides (outpatient staff member). An example of this is helping families find resources to better understand their health and perhaps recent diagnoses, taking into consideration that many may not be able to research concerns at home due to a lack of resources or know-how (outpatient staff member).

Photo documentation

The outpatient department was photographed to document and analyse the environment and the existing wayfinding. Photo documentation revealed the tension between clinical and child-friendly approaches, and the impact of the various remodeling instances that had occurred in the department. By reviewing photographs and spending time in the space, the following themes emerged:[93]

93. For full Starship outpatient site analysis, see Appendix 5 (p. 600).

Figure 63. (2015). Starship Outpatient Department Signage examples.

Up to nine different types of signage were found within the department, varying between metallic and navy blue, which adhered to the main hospital standards, varying shades of blue with white text, and informal laminated a4 sheets (often branded by external foundations, for example a+ Trust and the Starship Foundation). Ad hoc signage appeared to be a continuing issue within the space.

Figure 64. (2015). Starship Outpatient Department childrens artwork examples.

The artwork for children appeared outdated, using pastels and mid-tone colouring. Many were textured with traditional child-friendly content (i.e., clowns, teddy bears, etc.). These were usually quite large in scale and tended to dominate the space.

Figure 65. (2015). Starship Outpatient Department childrens artwork examples.

On pin boards throughout the department corridor, a variety of children's art projects were displayed. This communicated that the space was a child-friendly and focused area. However, it was unclear who had done the art work, the context of the project, and how long it had been on display (for example, any length of time since the day before to 18 months ago). When photographing this area, a staff member commented on what they considered inappropriate use of the notice boards, as these had previously displayed content aimed at clinical staff.

Figure 66. (2015). *Starship Outpatient Department entrance.*

The main entrance to the department has a low-wide archway with dull lighting. On the side of the entranceways are tiers of information pamphlets, rubbish bins behind these, and Reception beyond this, once one has crossed a primary corridor. Within the structure of the space, retrofitting elements are highlighted, as many of the visible main features no longer serve a purpose (i.e., the lockable front doors of the entrance and the gridded, lockable reception). Important information pertaining to the department, e.g., checking in at Reception on arrival at all clinics is displayed on A4 laminated sheets.

Role-play

Prior to an outpatient appointment, a letter is sent to the patient with the date, time, place, and any additional instructions. To simulate the wayfinding journey of a health seeker, an outpatient appointment was set up for me to role-play the appointment process. The appointment letter was sent to my home approximately one week beforehand, with details of the appointment time, etc. (Figure 67). This allowed for a thorough analysis of the document as the first point of contact for the service.[94]

Preparation

Receiving the appointment letter created much uncertainty, as there was little transparency as to when it would arrive. Reading the document as if I were a health seeker in the department, a variety of questions arose alongside analysis of its presentation:

How can I reschedule the appointment; is it flexible?

How do I get to the hospital?

What transport options are available?

94. However, it is important to note that had this not been a role-play, I would not have read the letter nearly as thoroughly. For example, regarding my own outpatient appointments, I merely glance at the date and time before pushing it aside.
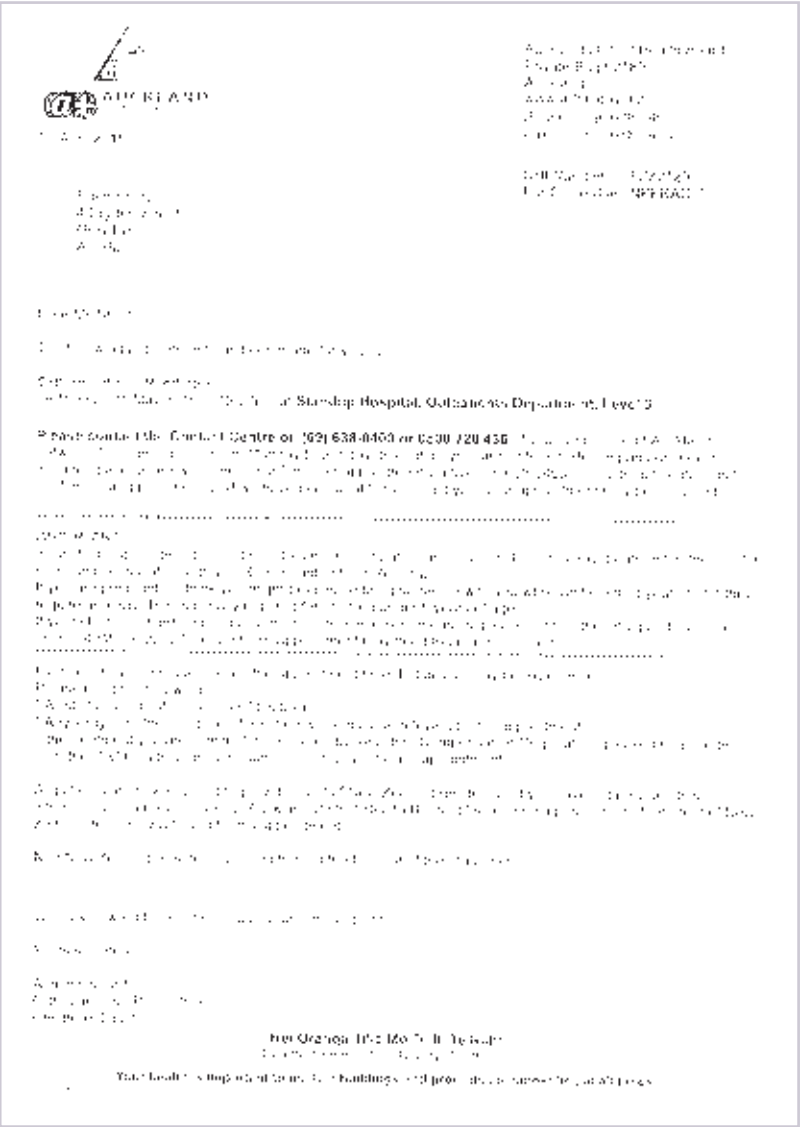
Figure 67. (2015). *Current-state role-play ADHB appointment letter.*

The information presented is dense with little or no sense of hierarchy, using the default typeface and point size. The department presents itself as being defensive, outlying potential delays in the Outpatient process, for example, a waiting period of up to three hours. At the bottom of the document it states, "Your health is important to us", yet it does little to enable participation in the experience, nor does it arguably fulfill its primary role as a wayfinding tool within the hospital and to the health seeker's appointment.

What does parking cost; is it an issue if I bring my car?

How much time do I need to take off from work?

If I bring my other children, is entertainment available for them?

From this analysis, a quick concept of an appointment letter was created (Figure 68). The most relevant information (based on assumptions about tasks in the wayfinding journey) was prioritised, enabling the health seeker to quickly identify it. Using a clear hierarchy, this letter was easily scanable. Engagement with the artefact was encouraged through the use of a checklist.

Appointment

To simulate a typical appointment, I drove to the campus (parking is the biggest stress point for the campus, especially in the case of Starship outpatients).[95] Parking difficulties often caused families to arrive late to appointments, or meant that they did not show up for appointments at all.

95. This is due to the recommended parking building designated to Starship usually being full by late morning, leaving health seekers to use the alternative parking area, which does not have an easy route to Starship, or alternatively, finding a parking space off-campus.
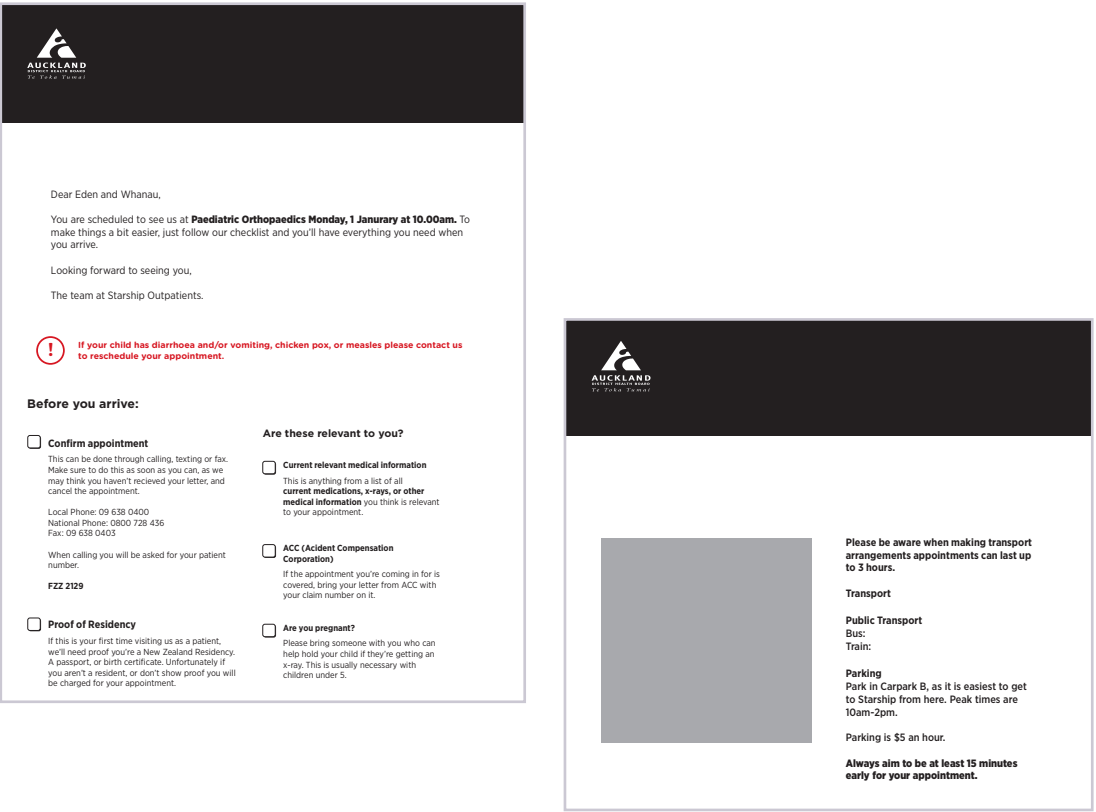
Figure 68. (2015). Appointment letter redesign using ADHB branding.

The copy and information was taken and reworked into a more friendly and accessible tone, stripping out jargon and formal language. The tasks that needed to be completed for the appointment are provided in the form of a checklist, making it easy to identify (especially when multiple supporters are involved) what has been completed, and what still needs to be done. Unlike the original letter, the outpatient team — rather than the scheduler, with whom the family has no contact — signs the letter and travel information is provided on the back, with space for a map. Rudimentary ADHB branding and standard paper sizes were used.

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Despite prior knowledge of the parking challenges and an existing
familiarity with the hospital, I had issues driving in and around
the campus, and often encountered dead ends and staff parking
areas.[96] After circling the campus and parking lots three times,
unable to find a park, I parked off-campus on a nearby street.

Throughout the journey, I experienced some anxiety in terms of getting to
the appointment on time, causing tunnel vision when wayfinding. It was
identified that a visceral state occurred, where judgments were made rapidly
and in a state of narrow focus (Norman, 2002; Figure 13). I became lost on the
way to the department, despite having been there on several occasions, and
consequently found a side entrance to the department that was previously
unknown. By the time I arrived at the reception area, anxiety fell away, as I was
relieved to have reached my destination. To capture the waiting experience
in the department, I informally observed the space. Throughout the wait,
feelings of anxiousness and distraction occurred to me about the cost of
parking, as the simulation was not intended to take as long as it did.[97]

96. For full role-play timeline see Appendix 5 (p. 585).

97. I ended up being an hour late back to the car; it was good fortune that the parking
    warden had not arrived, as I had parked off campus, and would likely not have been
    in the financial position to pay a fine with ease (as was likely the case for a majority
    of the other waiting health seekers).

2. Exploratory probes and analysis

Survey

When placing the survey in the Outpatient Department, it was
assumed that the design decisions for the survey collateral would be
sufficiently visible in the space and promote engagement (Figure 55).[98]
However, while this was achieved in isolation, when implemented,
the survey became part of the visual density within the space.

Once the survey was installed, responses were regularly checked. The
participation rate was very low, despite the large volume of traffic through the
department (seven responses were received over the initial five day period).
Varying from positive to negative, responses were often contradictory and
potentially reflected familiarity (or frequency of visits) to the outpatient
department. For example: "Easy to locate, central outpatients reception" to:

The signs in Starship are a disaster. It's a miracle anyone gets where
they're supposed to be. On level 2, the dashed lines lead you to
lifts where you can't even access the wards without a pass. The
way from the [parking lot] to outpatients is through a dark little
corridor [where] you're not confident you're on the right path.

98. See Appendix 4 for survey (p. 553).

Due to the small sample group, it was difficult to reach accurate conclusions. However, the survey box being moved and replaced by a free toy box may have influenced the low response rate.[99]

It was decided that the survey would be reinstalled in its original place for an additional five-day period. Furthermore, to maximise responses, project managers approached receptionists to prompt families as they checked in at Reception and to inform them of the project, and ask if they would like to participate.

While the numbers increased (n=28),the response rate remained low. Following prompting, respondents came across as "cheerleaders" for the service, rather than providing more critical feedback pertaining to their wayfinding experience, environment and information. For example:

"Keep up the good work"

"Overall excellent (especially the staff)"

"Very friendly doctors, nurses and admin support"

Responses revealed the low expectations of health seekers in the department; for example, compliments were given regarding waiting times for appointments, providing basic needs and entertainment:

"Reasonable appointment time at [three] months. Waited longer in the past."

"Enough seating, television, proximity to rooms and enough toilets."

Wayfinding responses varied from being extremely critical to noting the ad hoc signage, to complimenting how easy it was to find the department (by first time users). This could be a reflection of varying ease, depending on the alternate entrances to the outpatient area and prior knowledge of the hospital.[100] However, when asked to rate signage, artwork for children, artwork by children, accessible health information and current health campaigns, all identified signage was noted as being important. In addition to this, there were conflicting opinions about whether health information and campaigns should be in the space. The majority placed children's art, both for and by, as being the least important. However, these responses about children's art may reflect the priorities of the supporter, and them not being the target viewer.

99. The toy box had previously been in this location while the surveys were being conducted; however, I had asked permission from both the charge nurse and playroom staff for it to be placed back in the playroom until completion of the survey.

100. Asking if the Outpatient Department had been visited before, questions did not ask if health seekers had visited other parts of the hospital campus, buildings or departments on other occasions.

Expert role-play

Designing a solution that focuses on preparedness, to validate the proposed solution evidence had to be collected for the current-state journey, in order to compare it against the prototyped design, thus creating a measure of improvement. Ethical and time restraints meant that health seekers could not be recruited; thus, experts role-played the wayfinding journey.

Designers from a variety of disciplines (graphic, product, spatial and architectural) were invited to participate in the simulated wayfinding role-play from alternating parking lots on campus, to the outpatient department.[101] Due to accessibility and the time constraints of experts, the most stressful part of the journey, arriving at campus, was not a part of the simulation. Experts had limited knowledge of Starship and the research; thus, a fresh perspective was given, identifying points of difficulty experienced in the internal wayfinding journey.

Emerging themes

Throughout the simulated appointment journey involving the outpatient service, it was identified that the clinic was viewed as the destination rather than the department, as most health seekers sought out orthopedics first.

Each expert was given an appointment time to keep and approximately half of them attended their appointments on time. This was as a result of personality factors, e.g., "I always like to be early", being familiar with the hospital, or becoming lost. There was little room for error during the journey, with many blaming themselves for mistakes made rather than the system.[102] Among wayfinding cues, there was a mix of trust given on behalf of the experts; some trusted that cues would lead them to the right place, while others had more of a 'do it yourself' attitude and relied on past information.

Assumptions validated

The themes that emerged from the expert role-play confirmed that there was a lack of hierarchy within the provided information (appointment letter and wayfinding), especially within the separate systems of the hospital, with little consistency existing between these (Figure 69). An idea emerged from discussion that the information should be separated according to level of importance, wayfinding to the appointment, followed by appointment preparation. Experts highlighted the importance of visual references within the appointment letter, (e.g., a map that will help to identify where a wayfinder is in relation to the space they are inhabiting, thus making them more spatially aware of their surroundings).

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101. This current-state role-play only recruited designers from a range of disciplines for examining the current wayfinding system, due to their expertise in visual literacy.

102. However, when a fault occurs, the error falls on the designer for exhibiting a lack of understanding regarding users' needs (Norman, 2002, p. viii).

Figure 69. (2015). Expert role-play current-state letter, analysed.

When discussing the letters impact on the journey, it was identified that the presented information appeared quite dense, but if presented well, this would not be an issue. There is a lack of focus in terms of where to look first, noted as resembling a block of panic, being bleak and intimating. The important section in the letter communicated what was important to staff, but not necessarily what was important to the health seeker. Interestingly, wayfinding within the process of creating the letter was discovered to be a signifier to staff and Bluecoats (hospital volunteers) that help was needed when finding the way to their appointments.

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The information provided (through appointment letter and wayfinding) was either too little or too much at any point in time, and needed to be staggered throughout the journey (Figure 70). One example was not communicating to a first-time user that within the boundaries of the campus, the adult and children's hospital are physically connected, but are professionally separate. By identifying the campus, building, then department, rather than the campus then the outpatient department, health seekers will be less likely to consult the adult directory within the hospital's main entrance.

Many of the experts felt that they were taking the wrong route, or that they were in staff only areas. Wayfinding was ambiguous, as it was unclear when one had left the main hospital and had entered Starship, especially when unfamiliar with the route. The entrance failed to feel like a primary entrance to a hospital, did not communicate that it was a level two (rather than a ground-floor) entrance, or which routes were best for able and non-able bodied persons. Experts highlighted their need for signage giving specific information rather than interpretive cues, for example, clear direction of where you are, where you are going, and what to do next (Figure 71).

As it was unclear what needed to be done when reaching the Outpatient Department, it was stated that there needed to be direction-giving within the space. This is through communicating 'check into the outpatient reception' rather than looking specifically for the orthopedic clinic as stated in the appointment letter. Experts stated the Outpatient Department should be called a reception foremost due to being a portal into the rest of the clinics (e.g., Orthopedics, ENT etc.), as there is not outpatient clinic, rather a variety of clinics work under the umbrella term of outpatients. This further validated the separation of information, framing the outpatient reception the destination, and the clinic as to why you are there.
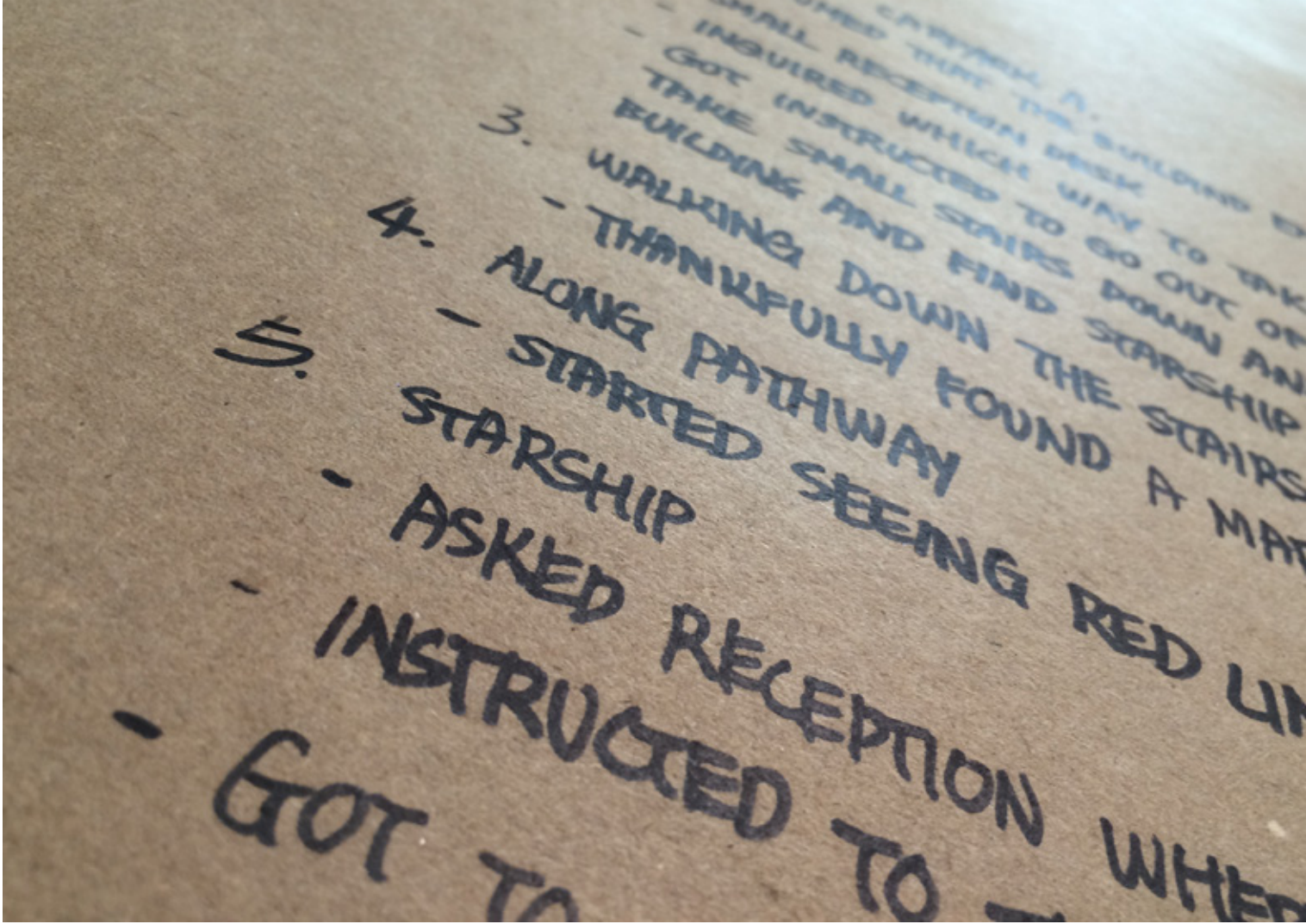
Experts documented their wayfinding journeys. Common errors were found and significant backtracking occurred, as expectations of the space were not met. For example, taking the elevator within the main building to level three, and expecting to enter Starship from there. However, when using this route, one has to go to level two and exit the building to arrive at the Starship entrance. This gave rise to the idea of creating checkpoints of information and integrating explicit signage with intuitive cues.

Wayfinding analysis

Visits off-site were conducted to experience and analyse wayfinding first hand in alternate contexts. Varying between other hospitals and learning and retail environments, each focused on different points of view within a wayfinding project. For example, project management and execution, design analysis and experience, or points of difference compared to the healthcare context. Though this was an ongoing method, all are presented together for the sake of coherency.

Healthcare contexts

Site visits were conducted with the ADHB wayfinding committee to various public hospitals. These were organised with a formal tour and later followed by informal discussion. During visits, there was a focus on how to roll out a new wayfinding system from a project management perspective, maintaining a sustainable outcome, and securing the budget for the initial wayfinding overhaul. The project team for wayfinding was a collaborative effort, with both hospitals' wayfinding being internally managed, but with an external wayfinding consultant included throughout the process. The wayfinding solution was completed over a series of months, either on an existing building, or as part of a new addition.

Cultural awareness

Within the hospitals visited, wayfinding approaches to cultural contexts were taken to varying degrees. This occurred through the naming of buildings after New Zealand individuals of note (Figure 72), or by adopting bi-lingual signage (Maori and English), reflecting the diversity within the community (Figure 73).

Sustainability

Staff acceptance and participation was a major factor in the sustainability of the system, both in the upkeep of wayfinding and in terms of supporting changes being made. From a project management perspective, completion and sustainability of the project was key, as it ensured that the hospital would be able to manage upkeep internally, in the process presumably saving time and cost. In a particular example, the consultant left a comprehensive master plan[103] with all possible solutions provided, so that these may be reproduced as needed. However, in the case of both hospitals, once the wayfinding project had been complete, there was lack of ownership in the upkeep of wayfinding on-site. This may be due to different opinions about where the responsibility for doing so lay internally, i.e., with the facilities or the communications team.[104] Alternatively, low staff capacity and support could also be an underlying factor.

103. This is often a long-term holistic plan, where foreseen changes within a space are anticipated to minimise changes for wayfinding in the future (Calori & Vanden-Eynden, 2015).
104. Within the ADHB the facilities department manages upkeep, as appears to be also the tradition in other sites visited.

Figure 72. (2015). *Hospital, Main directory, map.*

Buildings are identified by name and colour. Examples of naming range from famous New Zealanders, individuals important to particular hospital's history, and building numbers when a name is absent. Naming appears inconsistent between individuals, numbers, or Maori phrases.

Figure 73. (2015). *Hospital, Level 4 directional signage.*

Local iwi have translated English medical terminology to Maori; this was often subjective, as medical words often had no direct translation. In terms of implementation, it was not decided whether bi-lingual signage would be used until the late stages of the project. As a result, the design of the signage in Maori used the same template as for English, each separate, and side-by-side, showing no hierarchy. Signs were difficult to distinguish and it was difficult to establish a focal point. The full wayfinding system was not implemented campus-wide; however, doubling the signage for the two languages raised raise the cost of installation.

When updating wayfinding systems, the naming of certain sections within the hospital were changed to either create consistency or to take advantage of an opportunity (e.g., naming in honour of an individual, etc.). However, at times, staff still referred to the building(s) by their original names, confusing members of the public or new staff. There was recognition of the wayfinding journey beginning from home, beyond the hospital site. Discussing appointment letters briefly as a wayfinding tool, each project team deemed these out of scope due to scale and the difficulty of gaining engagement and acceptance from staff members.[105] However, at times when cohesiveness between wayfinding system and appointment letter was present, it was ad hoc (Figure 74).

Counteracting ad hoc signage was effected via a management directive, where a clean walls policy was enacted and a committee decided on what should be placed on walls within public spaces, and additionally discussing in-space solution alternatives (Figure 75; Figure 76).

Figure 74. (2015). *Hospital, Maternity Entrance.*

A5 coloured pieces of paper were fixed onto a freestanding A2 teal sign matching those found within the letter. Thus, on arrival, the colour found in the posted letter can be matched to the ward destination.

105. Much like the ADHB, departments manage appointment letters internally, meaning the scale of templates and unique demands for each clinic's appointment letters is large.

Figure 75. (2015). *Hospital, poster frames.*

Permanent poster frames were installed in areas where information
and campaigns could be displayed, creating a better visual impact.

Figure 76. (2015). *Hospital, Hand hygiene signage.*

In order to prevent common staff-produced laminated signage,
standardised signage was created for aspects such as washing and
sanitising of hands, which is important in healthcare environments
and the subject of many campaigns throughout the year.

Wayfinding designs

Various approaches were taken on the different sites, often implementing sectional rather than full installments of new wayfinding. This was often due to the significant cost of refreshing the entire site's wayfinding. Simplistic (Figure 77), branded (Figure 78; Figure 79), environmental (Figure 80) and playful approaches were taken (Figure 81). However, these new installments were often at odds with pre-existing wayfinding, a factor that was considered outside the scope of the project, e.g., wards or existing buildings (i.e., utilising a new build to create a new wayfinding system) (Figure 82).

Testing

In both instances, there was a lack in terms of testing the final wayfinding solution (both prior to and following install) for creating a measure of improvement. Responses about the effectiveness of both systems appeared to rely on informal feedback, which emphasised that in order to ensure that the wayfinding system worked, funding was needed to complete the installation for the entire site.

When discussing appointment letters, especially in comparison to building name changes and consistency, this was found to be a large scale and complex problem. This was due to the sheer amount of variances among letter templates and difficulties in terms of getting staff on board regarding changes of information in letters.

Figure 77. (2015). *Overhead wayfinding signage.*

Throughout the project install, emphasis was placed on consistent and constant wayfinding cues. Subtle colour-coding and maps were employed to orientate and direct wayfinders to separate buildings on the site. As this consisted of black type on a white background, the visual impact would potentially be high and textual meaning would come across clearly.

Figure 78. (2015). *Hospital Main building wayfinding style.*

Public space signage in the main building was a metallic grey and employing a dark grey humanist typeface. The signage incorporated its own custom fern pattern motif, unique to this particular wayfinding system, where subtle colouring was used for identifying levels.

Figure 79. (2015). *Hospital, wayfinding branding.*

The logo and branding is intertwined with the wayfinding solution, for example, the typeface, graphic accents and diamonds.

Figure 80. (2015). *Hospital, main building ward reception 4B.*

Within the ward, the integration of architecture and alternative cues had been well-considered. For example, the level wayfinding colour (red) was used to accent the furniture, flooring and signage of the ward. This created an impactful entrance, clearly identifying a differentiation between environments by utilising colour and contrast.

Figure 81. (2015). *Hospital, Rainbow mural.*

The rainbow corridor was intended as a playful and child-friendly wayfinding cue along the main corridor running across several attached buildings. It served as a landmark for when giving directions, i.e., "just follow the rainbow". The rainbow remains consistent (i.e., a full rainbow) from one end of the site to the other.

Figure 82. (2015). Hospital wayfinding styles.

Examples of the variety of wayfinding styles found within the
public spaces of the hospital (new alongside old).

Non-healthcare contexts

Exploration of external wayfinding sites occurred; documentation and analysis of non-healthcare environments that had a wide public audience were completed and were found to have executed wayfinding well. Unlike viewing examples on-screen and in publications, these involved physically visiting the location and experiencing the wayfinding journey as a user first-hand.

Entrances

When entering the non-healthcare wayfinding sites, entrances were clearly marked and at times, majestic (Figure 83; Figure 84). In some cases, when entering the building, there was some confusion about what to do next, due to a lack of instruction within an unfamiliar environment (Figure 85; Figure 86). When checking into Reception, little verbal guidance was given, and where relevant, informational material was either provided upon arrival, or picked up from information stands nearby.[106]

106. The Auckland Art Gallery had a clear, visible information hub upon entering; this was off to the side in an alcove, with optional seating where maps and exhibit information could be found.

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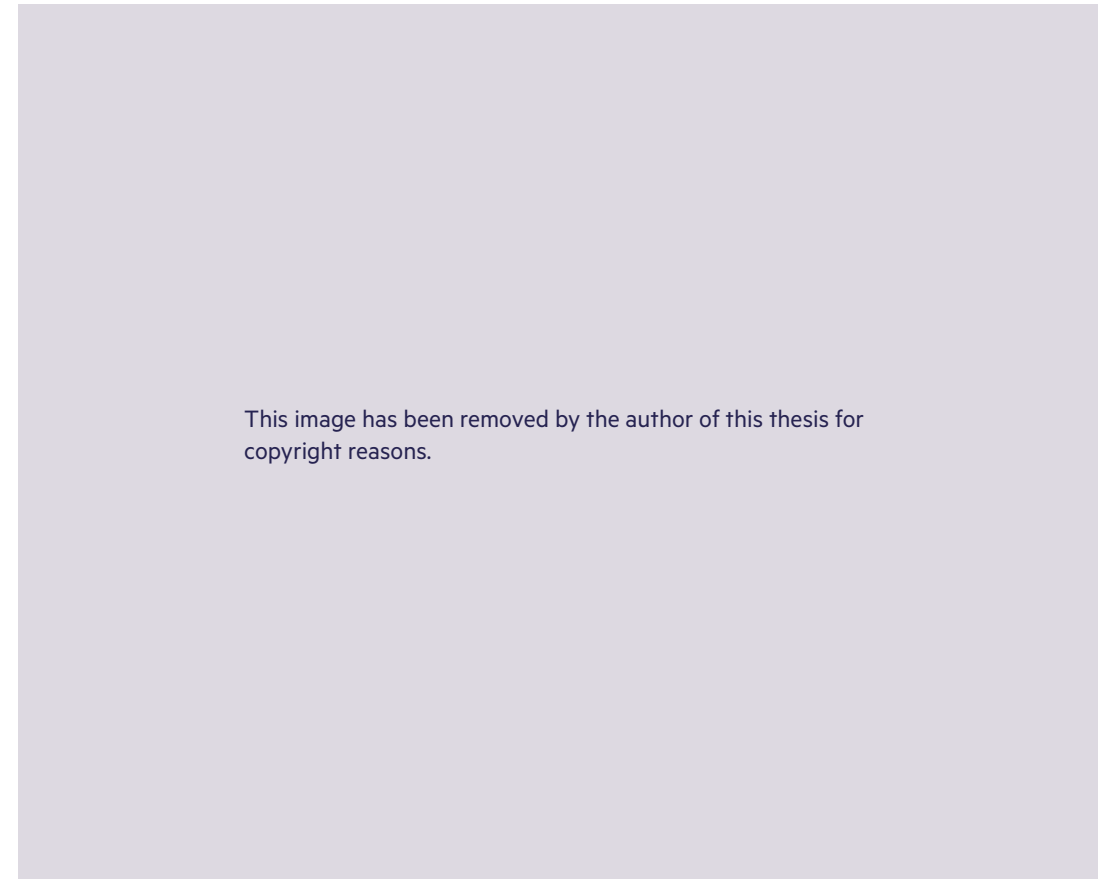
Figure 83. (n.d). *Auckland Art Gallery, main entrance.*

The high ceiling was welcoming and a range of materials created contrast, emphasising the entrance area. The sign outside, 'Free Entry', quickly addressed the question of cost and accessibility to the public.

Figure 84. (2015). *Auckland Museum, main entrance.*

The entrance was impactful due to the building's façade and can be seen from a distance. External wayfinding cues brand the entrance with the Auckland Museum logo and aesthetics. The signage starts orienting wayfinders to the building (directing toward entrances) and identify focal points of interest (exhibition).
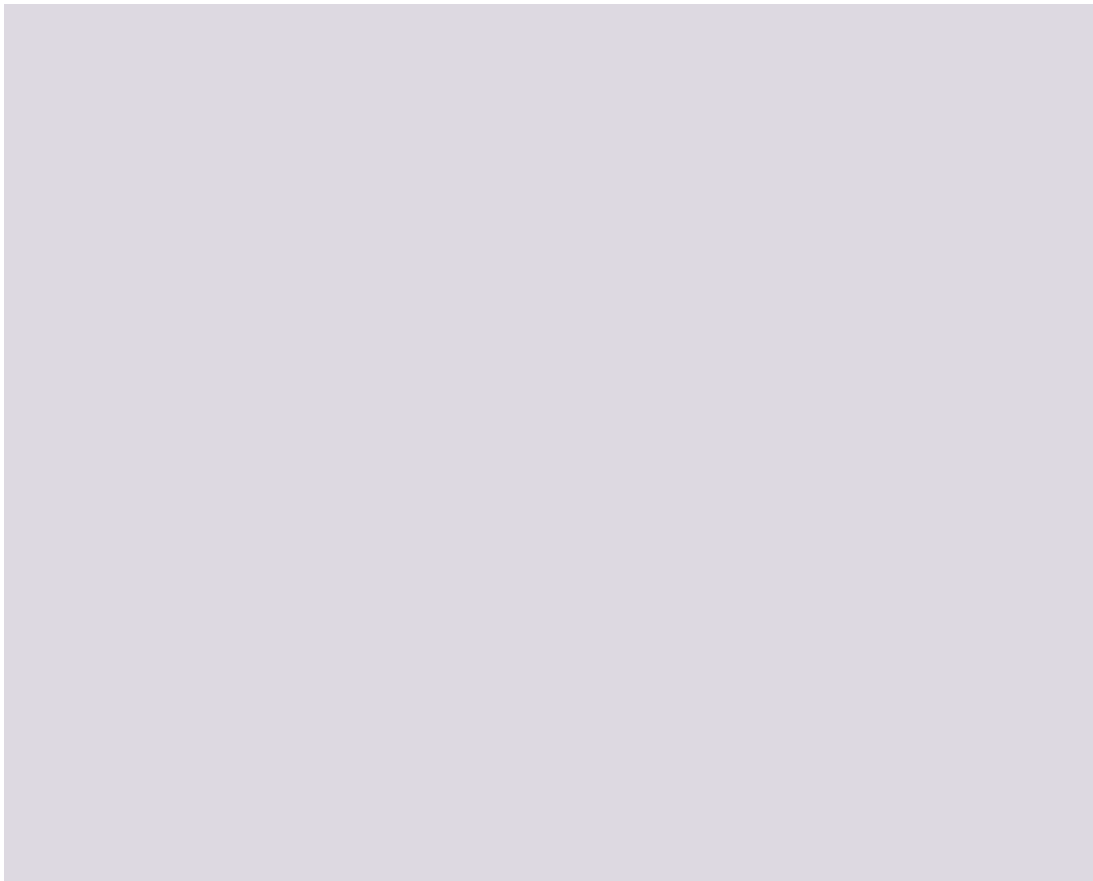
Figure 85. (2012). *Auckland Art Gallery, reception desk.*

While the desk is clearly identified upon entering, there is confusion concerning its role in relation to the art gallery. For example, do you need to check in at Reception, must one pay a fee to view featured exhibits, do bags have to be dropped off, and if so, where must they be handed over?

Figure 86. (2015). *Auckland Airport, entrance 2.*

The entrances and directional cues around the airport left little room for uncertainty. At each point, instructions and further guidance for the next wayfinding step are given. For example, airline check-in, gate, food, etc.
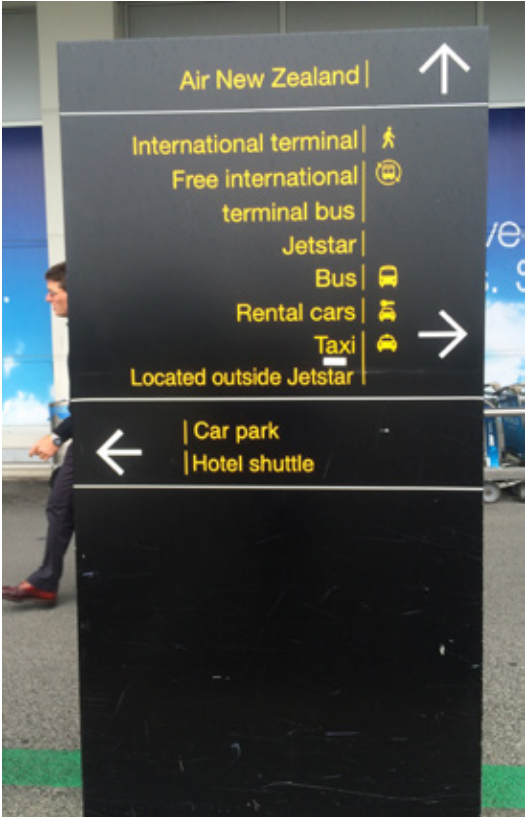
Space

Environmental cues were often utilised in separate spaces to either
maximise the impact when viewing them, or as a wayfinding prompt
(Figure 87; Figure 88). Architecture often reflected the function or
intention of the space by intentionally maximising or minimising the
readability of space (Figure 89; Figure 90). Throughout the experiences
of learning about the environments visited (gallery and museum),
there was an openness to exploration and wayfinding mistakes were
accepted. This was largely due to the lack of time pressure within these
locations, being activities where little scheduling was needed.

Communication

Alternative wayfinding communication was often presented, especially in
places of leisure, in order to disseminate information. Websites in particular
proved useful for identifying places of interest to visit, how to get there and
hours of operation (Figure 91). It was comforting throughout the experience
to know that the information was immediately accessible when and if it
was needed. Information material, if relevant to the location, was generally
divided into a catalogue outlining information relevant to the experience,
and a map showing the space and points of interest as a wayfinding guide
(Figure 92; Figure 93). Consistent placement and hierarchy of environmental
information was vital when navigating an unfamiliar space (Figure 94). Within
the gallery, outside exhibition spaces, televisions were used to promote
points of interest, highlighting the café, gift shop and current exhibitions.
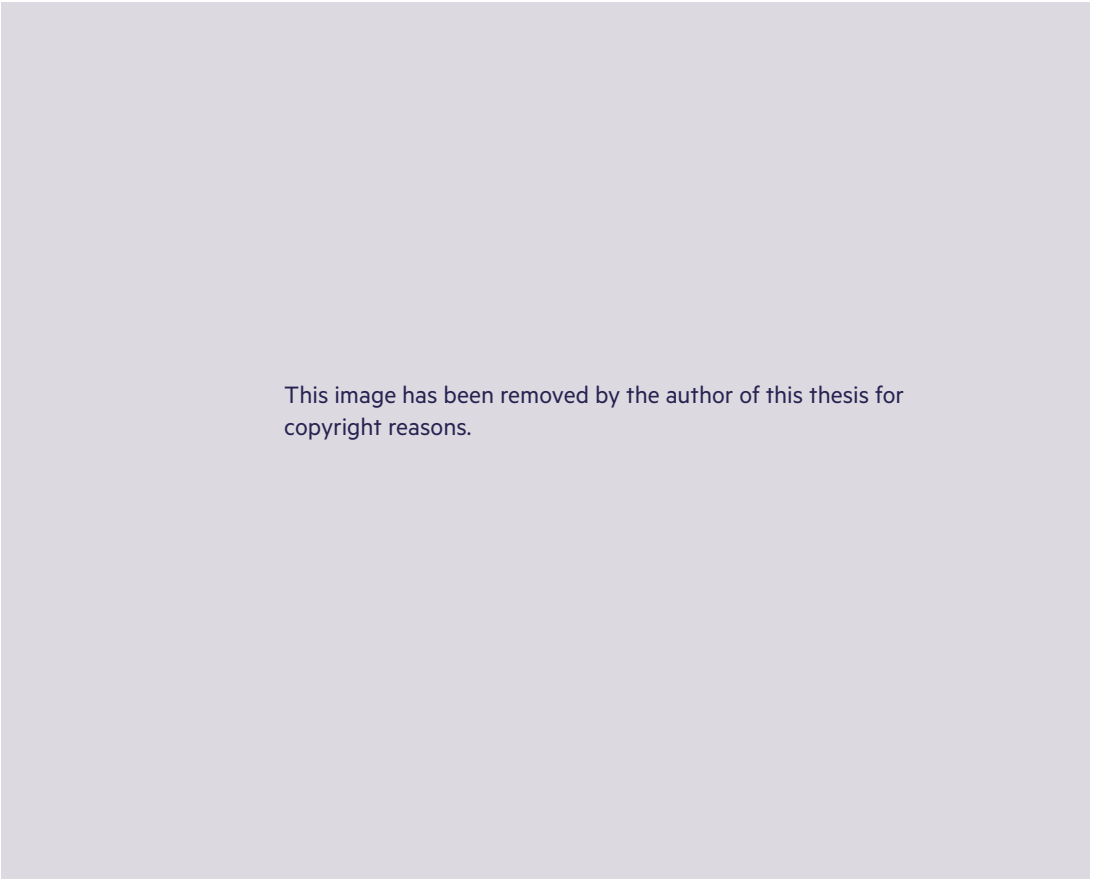
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copyright reasons.

Figure 87. (2012). *Auckland Art Gallery, wayfinding.*

There was a similar core layout on each level before dispersal
into exhibits. This main space on each level, prior to entering
exhibit spaces, was clutter free and the only visuals within
the space were reserved for wayfinding. Thus, when entering an
exhibition space, there was a maximum impact on the part of the
visual experience.

Figure 88. (2015). *Auckland Airport, floor cues.*

Flooring in particular was used to signify bag pick-up zones, keeping wayfinders waiting outside of thoroughfares. Additionally, the white colour maximises the contrast with the dark grey flooring, and can therefore be easily seen from a distance.

Figure 89. (2015). *Auckland Museum, Wild Child exhibit.*

The layout of the exhibition spaces created an inviting and compelling storytelling experience. It appeared to be an immersive environment with low lighting and shallow space; this was most likely an attempt to get viewers "lost in the experience". The exhibit's shallow space was difficult to navigate. Due to a lack of neutral space between exhibits, it was difficult to establish landmarks when navigating.

Figure 90. (2015). *Auckland Airport, main corridor.*

Due to the architecture, the structure of the space was long and narrow. The wayfinding maximised this long distance perspective by using high contrasts in terms of flooring, walls and signage when needed, e.g., dark floors, white walls, dark gray, yellow and white signage.
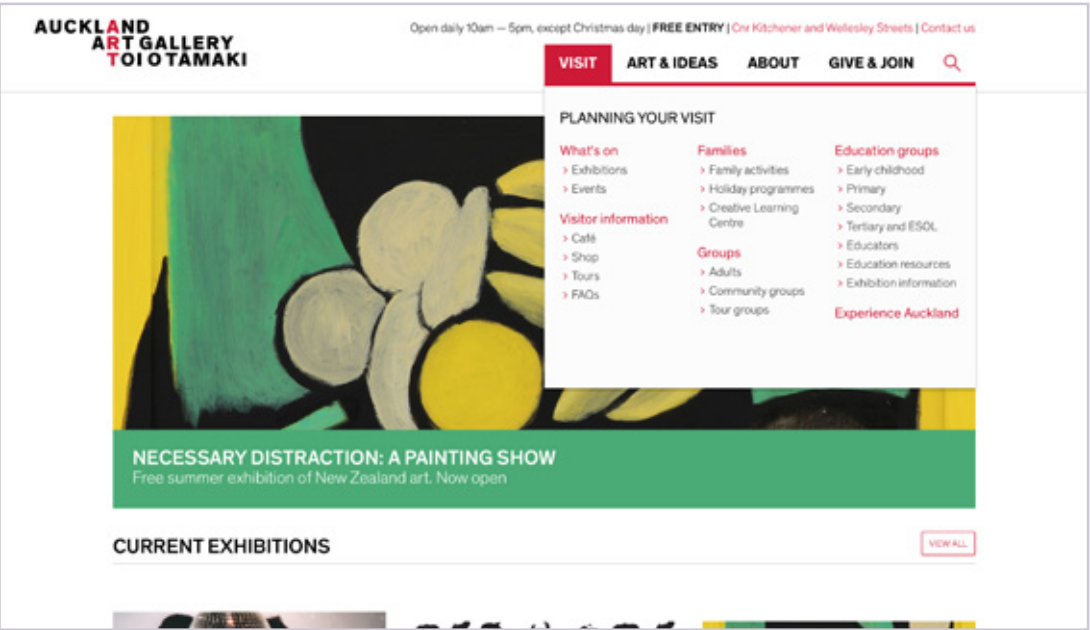
Figure 91. (2016). *Auckland Art Gallery, website screenshot.*

The web page is simple, with the top menu outlining the main purposes of why a user would want to visit the site. Information about what the gallery offers is clear, as is directions for finding additional information.
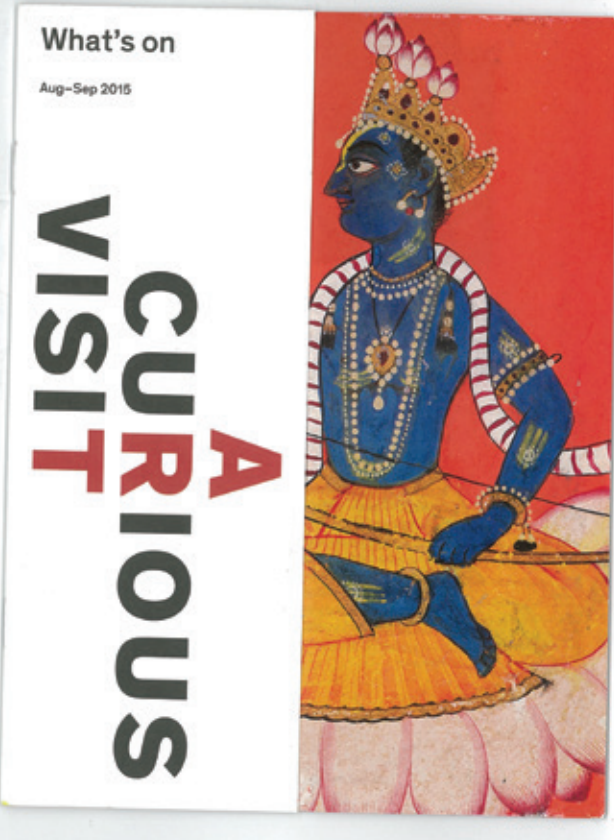
Figure 92 A. (2015). *Auckland Art Gallery, exhibition catalogue*

The catalogue highlights activities, exhibitions and points of interest within the gallery. It clearly prioritises and identifies what is available within the space, as well as potential points of interest such as workshops, the café and gift shop. On the back cover is an easily referenced need-to-know list of information with opening times, what is on offer, tours and contact details.
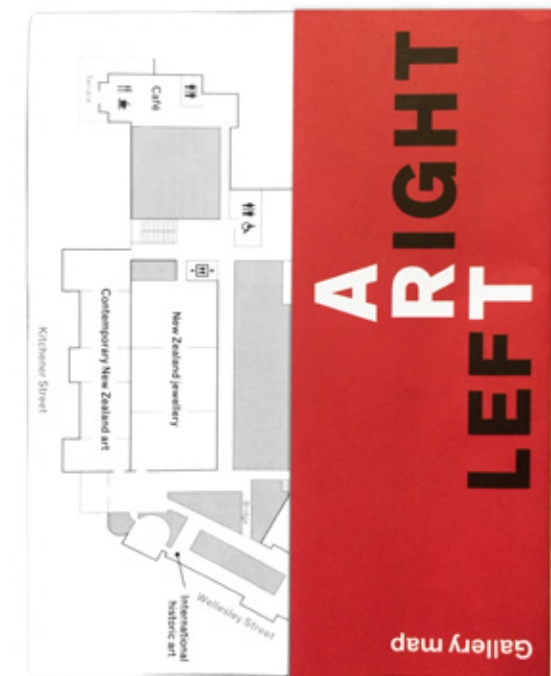
Figure 92 B. (2015). *Auckland Art Gallery, map*

The wayfinding artefact has maps and a clear outline of each floor, and what is available on each. The most important information about wayfinding is barely stylised, as it is simply there to inform using a clear hierarchy of information. The map references landmarks and signage beyond the gallery for orientation, for example, the neighbouring city park and streets.
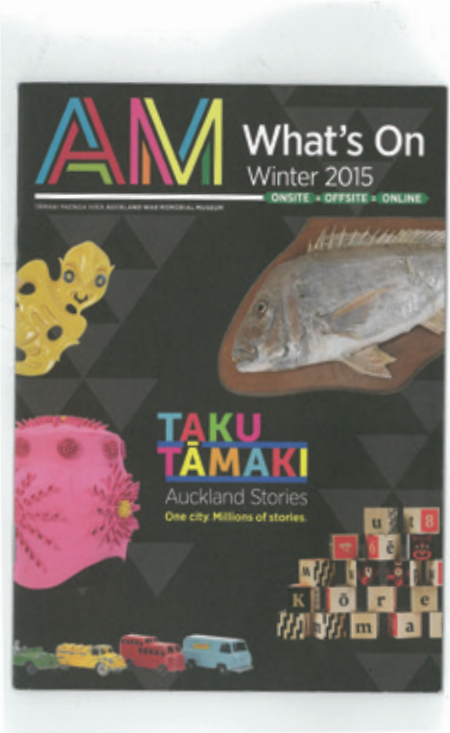
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Figure 93 A, (2015). Auckland Museum exhibition and events catalogue.

The museum catalogue outlines the many events, exhibits and dates of cultural significance for the season. The layout is dense, with little white space and every opportunity for content being maximised. The use of type and branding was consistent; however, the layout made it difficult to scan for key events without having to read each heading on the spread.
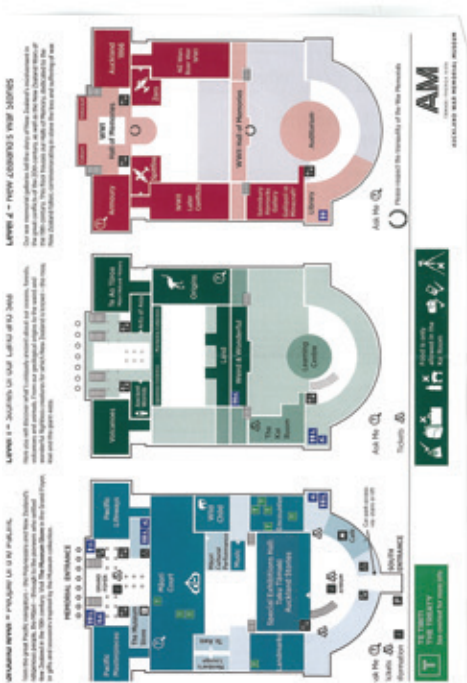
Figure 93 B. (2015). Auckland Museum, map.

Printed daily, this communicated the events that the museum had scheduled, alongside a map of each level in the building. While the map showed only public areas, the information provided is dense. Additionally, as a pairing artefact to the catalogue, the map had to be folded in half to carry around.

Figure 94. (2015). Auckland Airport, upper eye height signage.

Each sign utilises the same height, size and placement of icons and type. A dark grey background is used, with backlit neutral text, white for wayfinding and yellow for points of interest and amenities. This means that at any point in the journey, the cue could be easily identified due to contrast; furthermore, the priority of information made it easier to identify important communication, e.g., gates or terminals.

Consistency

When analysing the information experience of the locations visited, varying scales of cohesiveness and consistency was evident between wayfinding purposes and mediums of communication (environment, artefacts, etc.). A variety of approaches presented the entire experience as cohesively branded (Auckland Art Gallery), while in other instances, wayfinding and branding were kept as separate entities (Auckland Museum and Auckland Airport). In some cases, environmental styles outside these categories were found (Figure 95; Figure 96).

Healthcare relevance

When exploring wayfinding information, the experience was most impactful when the entire encounter with the environment and information was cohesive. Gibson (2009) states:

> The narrative voice of the building and that of its owner, revealing pathways and destinations of the building or space, the rules that govern how to use it, and essential information about activities within. It is the job of the wayfinding designer to weave these voices together into a single eloquent statement as people navigate the space (p. 47).
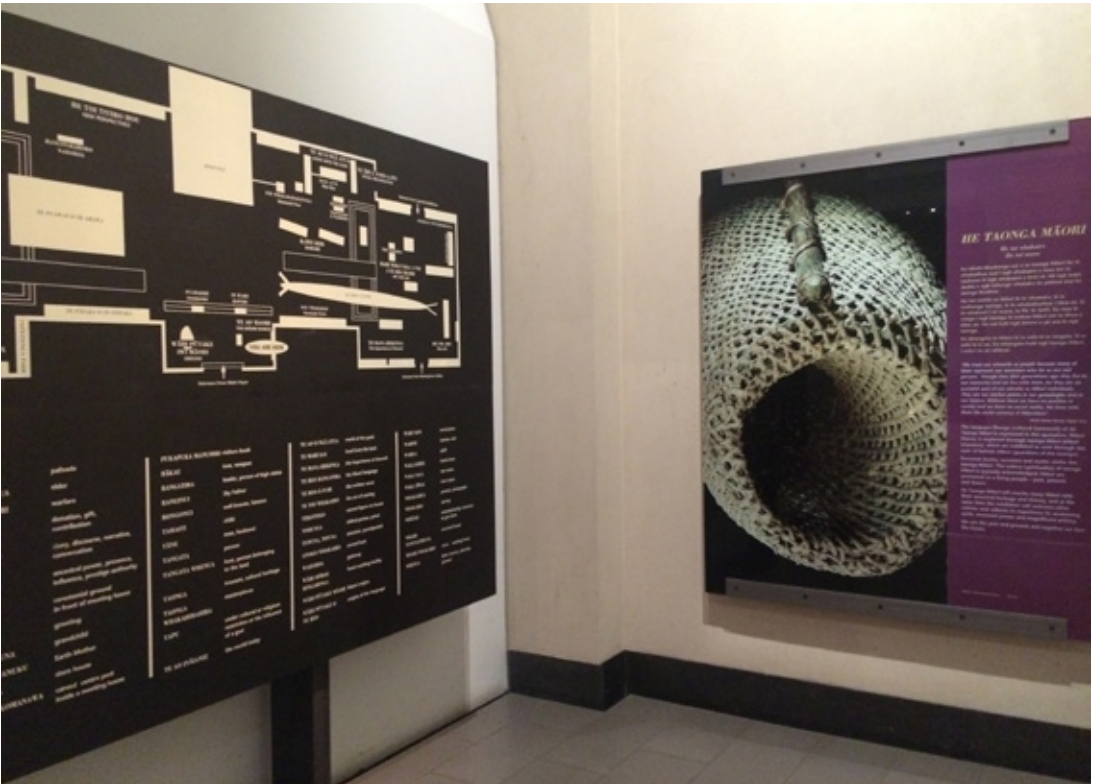
Figure 95. (2015). *Auckland Museum, exhibition information.*

The information presented for images was dark, using white text on a dark background. While other styles were used depending on exhibits, all were separate from the wayfinding and branding styles of the museum.

Figure 96. (2015). *Airport security, Auckland Airport.*

New Zealand customs and security manages this section of the airport. Communication quickly switched from the curated and impactful (Figure 96), to being ad hoc and dense. This branding was separate to previous environment design standards, with conflicting aesthetics and cues.

Thus, in this regard, the narrative is the journey to wellbeing, and the owners are the health seekers. Thus, wayfinding must be integrated into the experience and alongside the space in which it takes place. When comparing behaviours in other locations visited, emotions within these spaces were observed as being more relaxed and open to curiosity and learning.[107]

Analogous environments

The impact of visually busy spaces was explored by analysing retail environments, where sensory overload is intentional (both visually and through loud music). Within these shopping contexts, common themes such as loud music, shallow spaces and brand immersion were consistent (Figure 97).[108] Looking at the consumer-driven market provided conflicting values compared to the healthcare space. For example, a sale or promotional sign is temporary; however, health campaigns and information are always important and relevant, ending only if the fact displayed becomes more specific, or is disproven.

107. See Norman's (2004) behavioural diagram; visceral, behavioural, cognitive (Figure 13).

108. See Appendix 5 for a full analysis of retail environments (p. 597).

Figure 97. (2015). Retail environments.

Each entrance was clear and identified well what was inside, i.e., a retail store selling young women's clothing. Spaces clearly communicated the values of the brand to entice their target market. Temporary signage (sale signs) was at eye level, whereas permanent signage (dressing room) were placed higher.

3. Defining the problem

Gibson (2009, p. 34) discusses the analysis of plans for anticipated flow within new buildings. Within a pre-established environment, this provides a birds-eye view of the various complexities of optional routes. Due to a variety of external entrances into the Auckland City Hospital (which is joined to Starship Children's Hospital), the journeys from entranceways to the outpatient department were mapped (Figure 98). Viewpoints of the entry, Reception, and waiting rooms in the department were roughly drawn in this map format, as I aimed to identify where wayfinding cues could be placed within the current building structure for optimal viewing (Figure 25).

Assumption mapping

Continuing to explore the broader context of the outpatient department, a wide range of users and stakeholders of the service was considered. These were categorised into staff, patients and supporter groups.[109] The assumptions I made regarding different perspectives and needs are documented for each of these groups (Figure 99). This mapping was completed prior to expert interviews in order to capture first impressions and understanding of the Outpatient Department. When identifying the alternate viewpoints within the Outpatient experience, the overarching purpose of each was shown has getting the patient healthy.

109. This categorisation of users was influenced by categories established in the Rosella summer studentship; see Appendix 1 (p. 462)
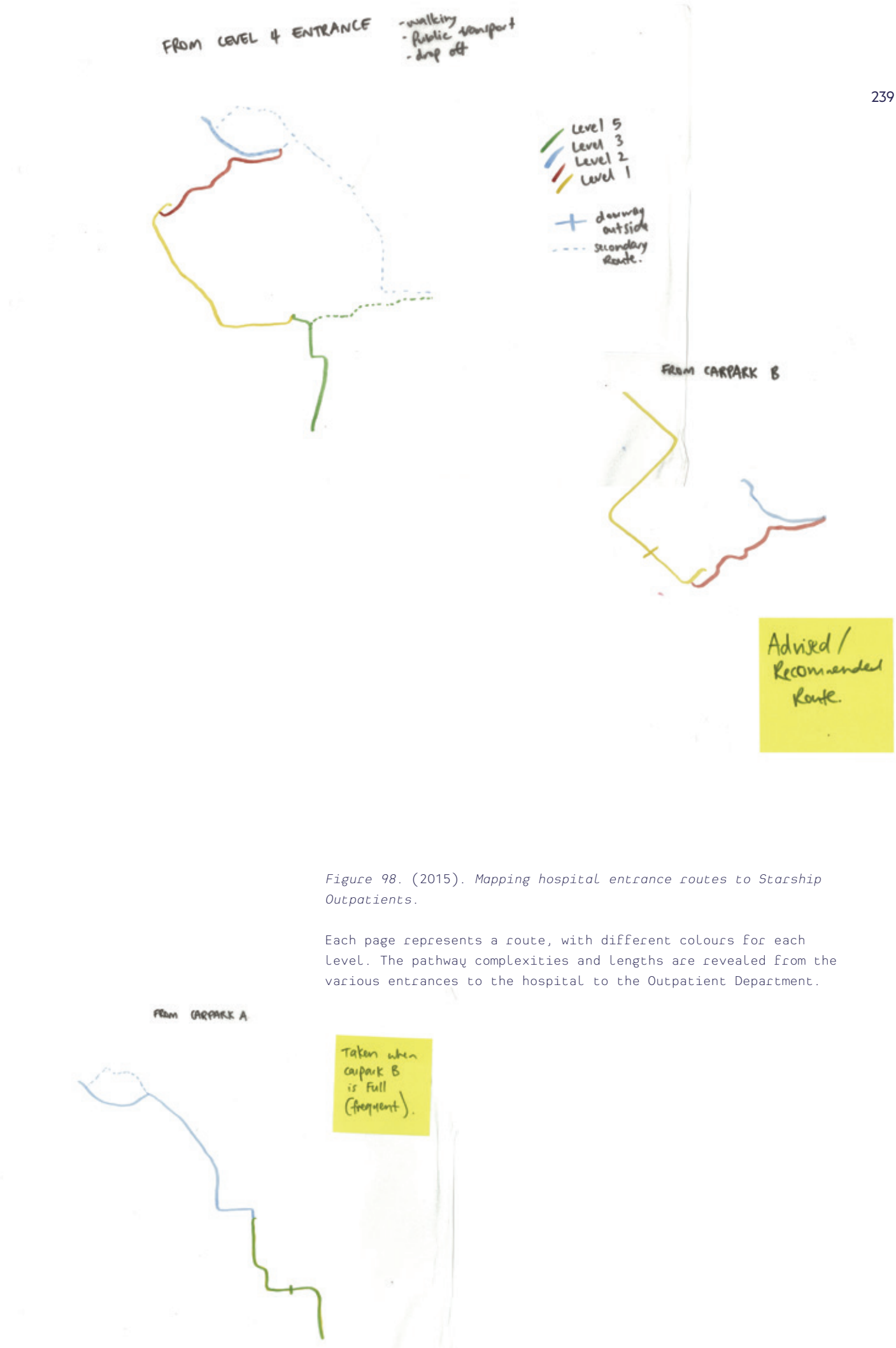
Figure 98. (2015). *Mapping hospital entrance routes to Starship Outpatients.*

Each page represents a route, with different colours for each Level. The pathway complexities and lengths are revealed from the various entrances to the hospital to the Outpatient Department.

	Preparation	*Travel*	
Staff	Health seekers not arriving on time & ill prepared for appointments.	Directing to building/level/ department Dealing with complaints of transport & poor wayfinding.	
Family	Organising travel, other children, & arriving on time.	Getting to the campus & finding the department. Transport reliability, cost, time, becoming lost and missing the appointment.	
Patient	Unsure of what is to come.	Little participation in the journey.	

Figure 99. (2015). *Emotional assumption mapping of user groups.*

Assumptions of concerns were divided into preparation, travel, waiting and consultation categories of the journey. To reflect the diverse nature of these spaces, each user provided a unique perspective of the same points in the experience within the department. For example, staff dealing with complaints about becoming lost, supporters that were anxious and stressed about being late, and patients' lack of participation in the health-seeking journey. It is important to note that the patient assumption map contains the least amount of information, due to the supporter completing the majority of wayfinding tasks, i.e., tasks with the highest levels of anxiety and stress (excluding health-related emotions).

Experience mapping

An experience map of the outpatient journey was constructed to visualise information gained about the health-seeking experience with the service. This was created and refined throughout the first half of the research, to record assumptions and findings, thus aiding in discovering the problem.

Journey decisions were divided into planning and executor segments, i.e., attending the appointment and decisions made in order to arrive at the appointment (Figure 100). The experience documented is the typical outpatient journey, as identified through consultations. Tasks were divided between patient and supporter and focused on patients who had the most dependence on their supporter, for example, a child between the age of 0-4 years, or who has a significant mental or physical impairment.

When exploring how wayfinding may be empathic and supportive to the outpatient department experience, emotions were documented against tasks (Figure 101). This was assumption-based and informed through previous discovery methods (role-play, observation, expert interviews, etc.). Further identifying communication as a possible contributor to difficult navigation,

Figure 100. (2015). *Experience map.*

Documenting the Outpatient Department experience included the first point of contact with the service (GP referral to the hospital) to leaving the building after consultation. By dividing actions into supporter (parent/guardian) and patient (child), it became apparent that all wayfinding activities i.e. driving and preparing for the appointment were (assumed) to be completed by the supporter. When categorising tasks into travel, waiting and purpose of visit, travel was shown to contain the most decision-making and complexity. Variances in the journey are shown, reflecting the different routes into the department, as well as possible appointment-related tasks, i.e., x-rays.

Travel to destination   **Waiting**   **Consultation**

Referal from GP?
Recieve Letter in post
Recieve follow up text message
Confirm appointment
Commute to the hospital
Arrive at the hospital
Find Hospital Entrance
Navigate to Starship
Find Level 3
Locate outpatients
Check in at reception
Find selected waiting area
Give file to nurse
Wait for clincian to call name
Have measurements taken by nurse
Wait for clincian to call name
See clinician
Pick up perscription
Be directed to the family information service
Leave hospital

Be directed to x-ray
First time patient, fill in form
Be re-directed to x-ray
Given check-up
Be diagnosed
Given clean bill of health

Phone
Fax
Text

Drive
Public Transport
Walk

Ask volenteer/ staff member
Follow signs
Remeber way from previous visit

Take folder from reception
Play in play area

Remember verbal directions
Follow signs
Ask/be asked by staff member

Watch Cartoons
Play with provided toys
Read magazine
Read provided pamphlets

Play with toys

Level 4, Main building
Level 5, Support building
Level 1, Main building
Level 2, Starship

Park on campus
Park off campus
Be dropped off
Train
Bus

Potential actions by hospital
Necessary supporter behaviour
Optional supporter behaviour
Optional patient behaviour

	GP Referral	Appointment Letter	Confirmation text	
Uncertain about health				
Unwell				
Relieved				
Stressed & anxious				
Not in control				
Unfamiliar process				

Emotion being felt

information was mapped against wayfinding decisions (Figure 102).[110] This comparison aimed to identify where information was intentional, rather than an unintentional phenomenon, which in turn hindered effective communication.[111] By acknowledging that wayfinding cannot ease the stress related to health (the reason for being at the hospital), the potential of preventing stress and anxiety due to a lack of control and unfamiliar processes was identified.

Figure 101. (2015). Experience map, emotions.

A range of emotional states and concerns were mapped against tasks, such as stress, anxiousness, concern about health, etc. These emotional states were further categorised into patient or supporter roles, each providing context to the reason behind the emotion, and places a further description of the emotion. For example, being anxious about time when navigating to the hospital and while waiting for the clinician to call.

110. "People engage in decision-making when they travel on non-familiar routes. Each behaviour can be associated with a decision and each decision is based on information which can be directly perceived in the environment or which can be obtained from memories of previous experiences, including cognitive maps" (Passini, 1996, p. 322).

111. As noted by Nelson-Schulman (1984), information can have a significant role in reducing stress and anxiety, especially within a healthcare context: "Clear and well-organized information was needed by patients at critical points in the admitting process, beginning with entry into the hospital" (p. 305).

	Preparation	Travel to the campus	
Hospital information that is given	Verbally confirmed referral Appointment letter	Road navigation signs	
Hospital information that is sought	Hospital website	Hospital address and directions	
External information sought		Map and transport website or pamphlet.	

Figure 102. (2015). Experience map, information.

Information the health seeker might or would definitely encounter was mapped against tasks. All information was considered, such as various types of wayfinding, both within and beyond the site, e.g., websites, verbal instructions and health campaigns. Beyond the hospital providing information, external platforms were also considered, e.g., Google Maps, when navigating to the hospital.

Through the exploration of information and communication and its potential implications, a variety of new questions arose that helped to inform the direction taken by the research:

How can a design be persuasive and contribute to an intuitive wayfinding experience?

Wayfinding minimises the amount of conscious decisions a user makes; can conscious decision-making therefore be minimised by reducing information overload and exaggerating visual cues?

How can a design solution through communication be created for a space, rather than using spatial design?

4. Ideation

Potential solutions

With regular observation, I gained more familiarity with the environment. As this occurred, my documentation evolved from recording behaviours to sketching solutions. Concepts were explored, included design interventions that could potentially create environmental information cues within the department (Figure 24; Figure 103). However, these ideas were discarded, due to being singular (one intervention) and without consideration of how separate concepts might complement one another, or work together cohesively within the established space. Furthermore, potential solutions that already existed in other hospitals had been identified, or had been solved through ongoing projects in the DHW Lab.

Wayfinding is a multidisciplinary process; thus, when considering a wayfinding problem, a holistic view was adopted. The outpatient environment and services were studied prior to focusing on communication design solutions. Focusing on supportive design, initial concepts based on the layout of the space, objects and communication were explored, and each ideation was created with the first-time health seeker in mind (Figure 104; Figure 105). While spatial and product interventions were deemed outside the scope of this research, each revolved thematically around the importance of transparency (Figure 106).
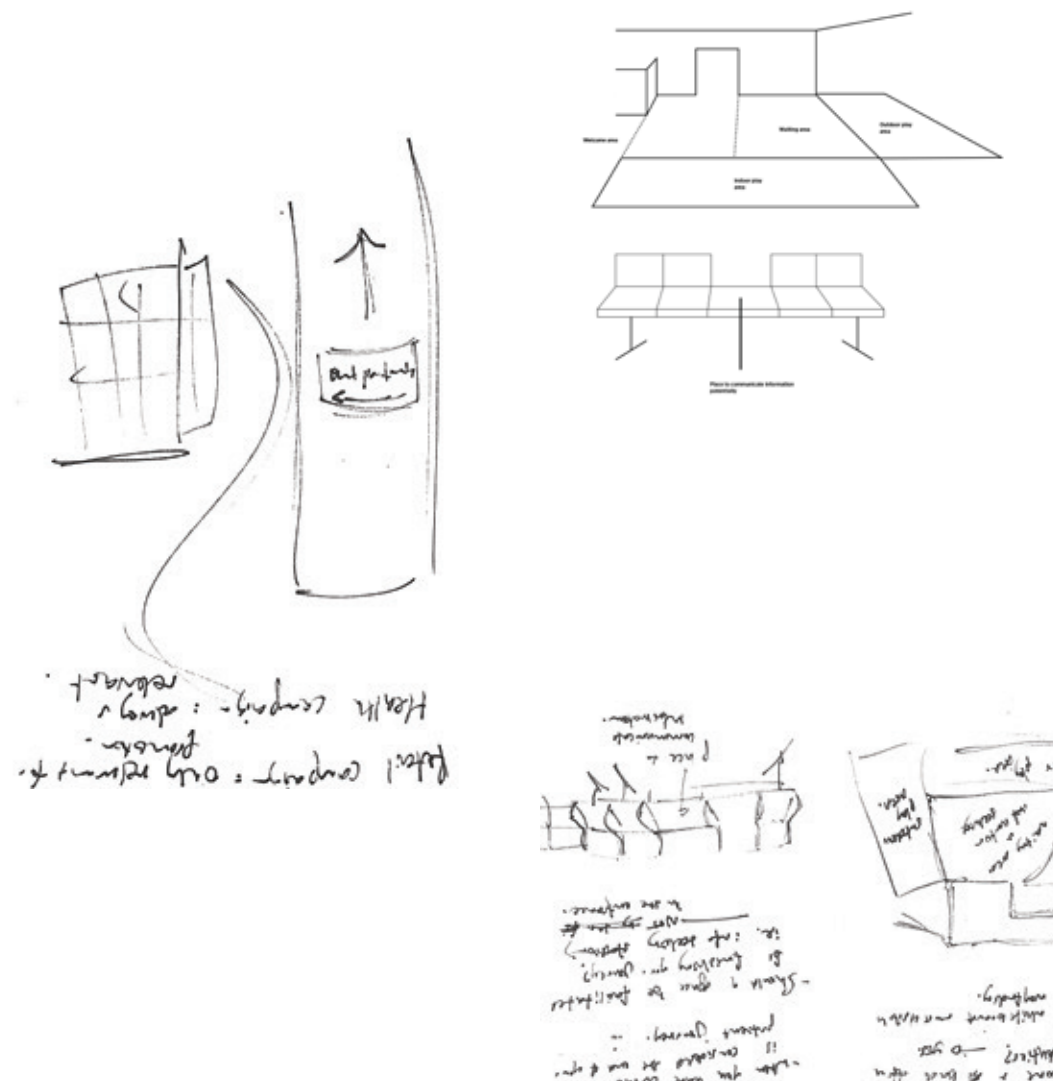
Figure 103. (2015). *Observation to ideation.*

From the place of observation, sketching ensued of the main reception area. Zones were established within the space to maximise flow and there was an exploration of how to make information more engaging. All had the common theme of making information in the space seem purposeful and ensuring a positive impact.
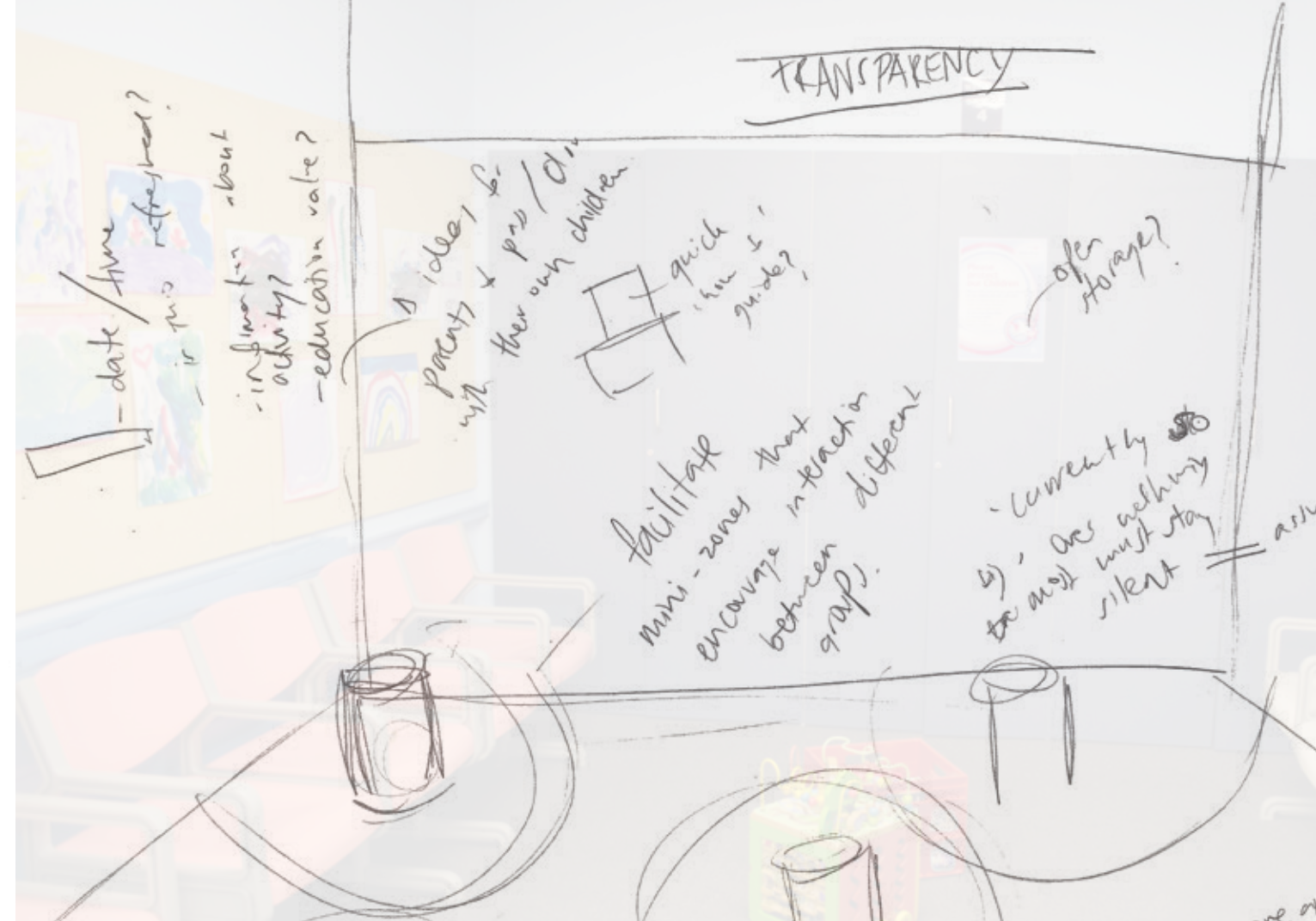
Figure 104. (2015). *A3 Starship Outpatients waiting space trace.*

This concept explored and challenged the current layout of the waiting spaces. It explored the facilitation of community and supporting large groups of health seekers (i.e., families) who accompanied patients. The space focused on transparency and how to enable this within the department. However, this was considered outside the scope of the current research.
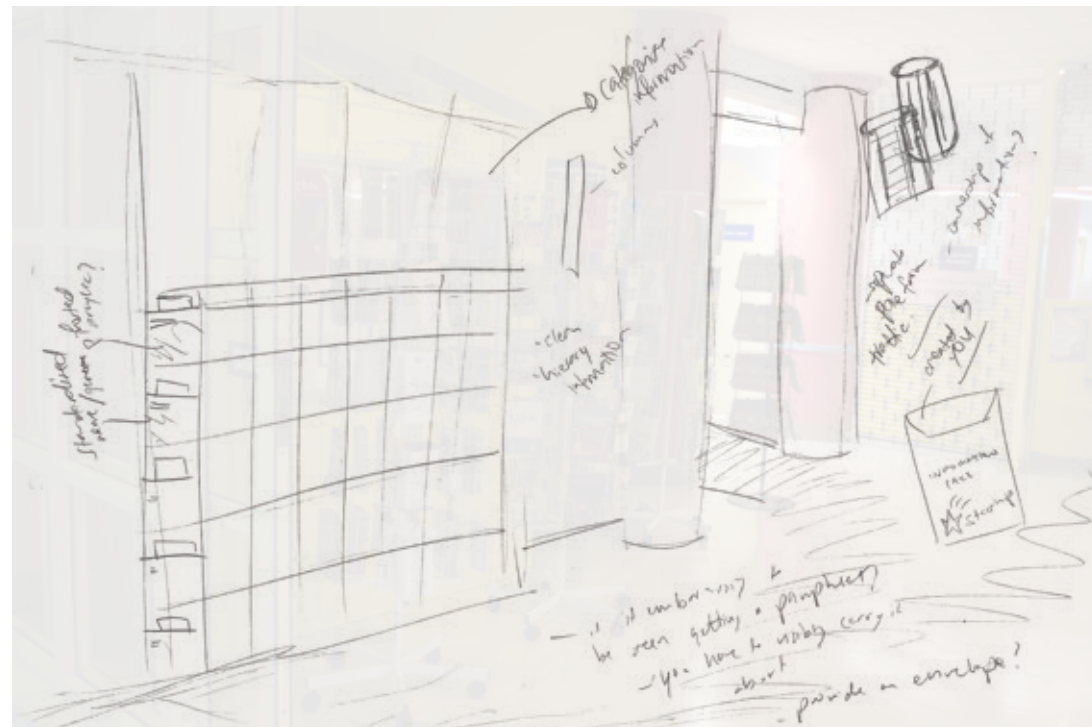
Figure 105. (2015). *A3 Starship Outpatients welcome space trace*.

This was an exploration of how to prioritise and organise
the information already presented in the department using an
object. By examining the emotional and social impacts of where
information was currently placed in the entryway, it was found
to allow little privacy when browsing. In terms of communication
design, an orientation pack was identified. This was where
information could be presented in a more curated and targeted
form.
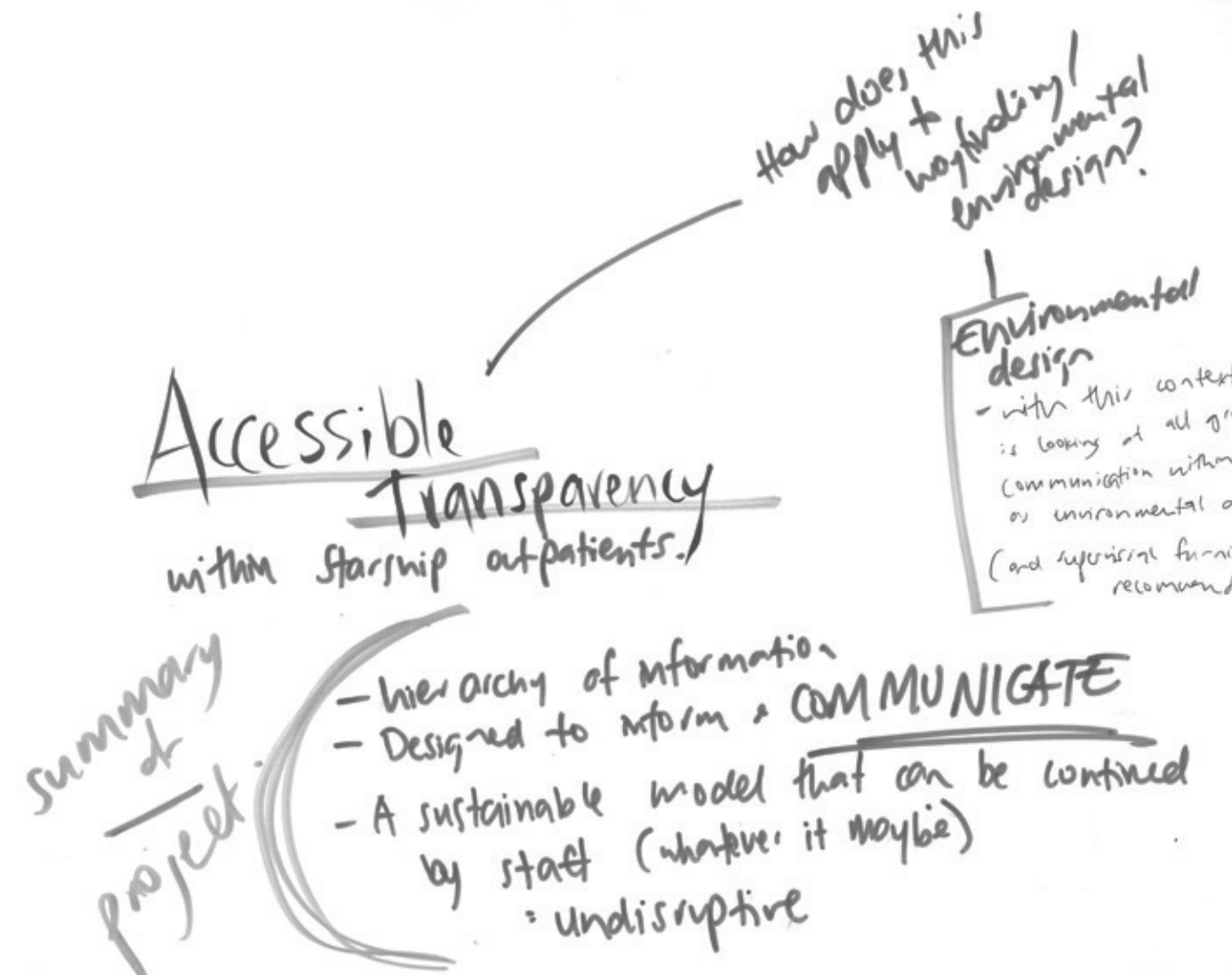
Figure 106. (2015). *Design principle mind map*.

When documenting transparency in relation to communication and
wayfinding design, the following questions arose: how could
transparent processes, accessible information, a clear hierarchy
and information and communication choices be enabled in the
Outpatient Department?

Passini (1996, p. 328) discusses information overload in space as occurring where there is so much dense visual stimulation that it becomes difficult to identify and process information within the environment. Due to the large amount of visual noise in Starship Outpatients, wayfinding concepts could not be explored without considering the impact of the entire environment. Exploration of potential changes within the department occurred, highlighting the visual noise and structure of the space when ideating (Figure 107).[112] Upon further analysing the environment, the physical structure of the outpatient department (main areas and services) was vectorised, thereby simplifying the space.[113] When sketching concepts, changes focused on wayfinding solutions as opposed to my previous broad problem-solving approach (Figure 108). By selecting key areas of the department for analysis, I realised the importance of an inviting entrance, as well as providing wayfinding directions when health seekers arrive for attending their appointments.

112. This took cues from the work completed in the AED by the DHW Lab; see Appendix 2 (p.522).
113. More areas within the department could have been completed; however, there was a specific focus on the layout of services and roles within outpatients.

Figure 107. (2015). *Digital sketching.*

Sketching the environment focused primarily on inter-department navigation, and later on accessible health information. There was an attempt to be welcoming and to direct health seekers into the department, rather than overloading them with alternative information that does not relate to their primary purpose, i.e., knowing where they are, and checking into Reception. However, when ideating, it was still difficult to move past the pre-existing layout and information structures within the space.

Figure 108 A. (2015). *low scale thumbnailing.*

Focused on small, surface level interventions, these
thumbnails were particularly interested in directional signage
and organising information within the space. Information was
separated into wayfinding, permanent and temporary health
information.

Figure 108 B. (2015). *Mid scale thumbnailing.*

Due to the amount of explicit signage within Starship, this
process was an exploration of colour as a wayfinding cue. This
presented a form study pertaining to how colour affected the
presentation and depth of space.

Figure 108 C. (2015). Large scale thumbnailing.

Aligning the placement of services within the department in a
manner that indicates what the health seeker must do within the
space first. A focus began to be built around what the health
seeker needed to do within the space to receive their care. For
example, Reception was moved to the front, while information was
moved to the back.

Prototyping

Wayfinding favours the prepared traveller, which is especially useful in
healthcare, due to the perplexing nature of the systems involved in this field
(Mollerup, 2013). Further exploration of the role of the appointment letter,
rough paper prototyping of a patient package investigated different forms,
sizes, and degrees of support the artefact could provide within the health-
seeking journey (Figure 109). When contrasting the current-state letter with
the prototype, it was discovered that within the prototype there was a focus
on approachability (both through language and presentation), preparedness
and supporting the broader health-seeking journey, the health seeker's
appointment, as well as wayfinding (Figure 68; Figure 110). For example, the
package content begins with a referral to the Outpatient Department by
the GP, as this is where the least amount of information is currently given,
despite it being the first point of contact with the service. The material was
addressed to the entire family, but aimed at the supporter, as tasks needed
for wayfinding – both to and within the campus (such as parking lot issues
and navigation on campus to the department) – were considerably complex.

Throughout all ideas trialled, engagement with the letter was found to
be significant, as it supported a two-way conversation between health
seekers and the clinic, in contrast to the dictatorial nature of the current
letter. Thus, the letter had evolved to become a tool for engaging
with the health seeker, by being transparent in terms of the informing
options available, thereby providing a sense of control to the health
seeker and creating a sense of partnership in seeking health.[114]

114. Acknowledging the importance of partnership between children and their health
    was not within the scope of the project.

Figure 110 A. (2015). *Patient letter folder (back/front).*

Figure 109.(2015). *Paper prototyping of patient letter package,*
iteration three (Folder, appointment letter, referral,
appointment documentation etc.).

Within the patient package, core aspects of the journey that the
letter needed to support were defined, from the GP referral, the
appointment date/time, appointment preparation and the recording
of time spent with the clinician. Once defining how these fit
together as a package and making sure all the information was
visible inside the folder, this was transferred to Illustrator,
and the relevant graphics and copy was added.

Figure 110. (2015). *Patient letter package.*

Each aspect of the collateral had the same visual style.
Hand-drawn headings were used to soften and personalise the
experience, contrasting the previous clinical feel. Each were
custom sized according to information needs and how they fit when
placed together in the envelope.

Figure 110 B. (2015). Patient referral document (front/back).

Figure 110 C. (2015). Patient letter.

Figure 110 D. (2015). Patient appointment documents (front/back).

Figure 111. (2015). A4 patient letter, interaton one.

AUT Strategic Research Fund Presentation

Due to the project aligning with the SRIF project, in order to collaborate on research and findings, I was asked to present this project to a research committee. Tying in the presentation with the paper prototype of the patient package, the majority of the discussion centred on the artefact rather than the research question or current findings. Critiques were provided about creating the patient package more within the restraints of the organisation, rather than it being an aspirational design piece. For example, no custom paper sizes, minimise folding, no folder, etc. to lower cost, as well as to increase the possibility of implementation, as the overall concept was identified as having value for the organisation.

Condensed into an A4 double-sided sheet, the front of the sheet focuses on how to get to the appointment, while the back engages with and supports the health-seeking experience. A custom standard sized envelope would contain the anticipated wayfinding journey inside. However, it was quickly realised during testing that the materials are often ripped when opening the envelope, thus rendering them void. Coloured type was maintained (dark blue for text and red for important health information), as it exhibits heavy contrast, but softens on the page compared to the use of black.
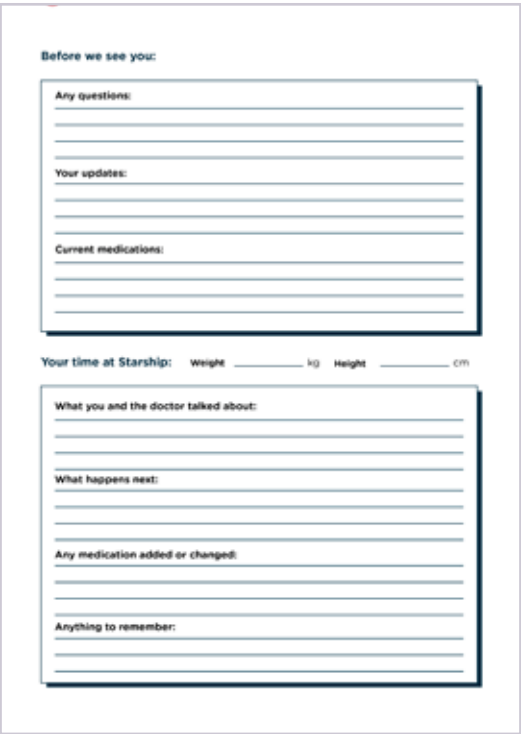
Environmental concepts

Following the holistic and supportive approach to wayfinding communication, ideations became more coherent, as concepts focused on key environmental information in the Outpatient Department (Figure 112). Low scale designs were placed in situ to evaluate how they would work alongside the visual density of the space, thus exploring prototyping possibilities (Figure 113). However, these concepts were discarded due to focusing on top-down wayfinding priorities and being solitary concepts, rather than holistic interventions. Further exploration of wayfinding cues encompassed the entire environment, focusing on intuitive, non-explicit direction drawing from previous colour studies of the department (Figure 114). Though the ideations worked within the present architecture, there was some tension regarding feasibility due to the immersive approach, as well as large scale execution in the environment.
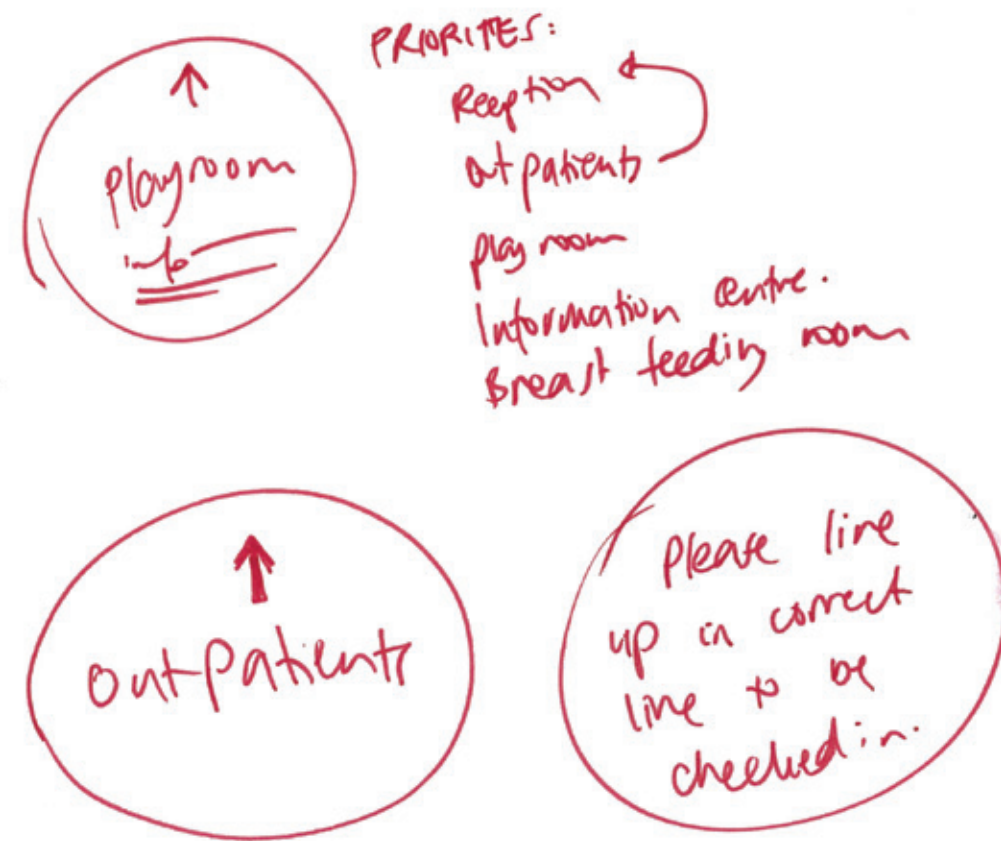
Figure 112 A. (2015). Low scale sketching wayfinding interventions, Starship Outpatients.

There was a focus on identifying the space and its function. For example, the entrance identifies what the space is (Outpatient Department) and what to do once you are there (check in at Reception). These sketches began to reflect the priorities of a health seeker in the department, of reception, the playroom, the information centre and the breastfeeding room.
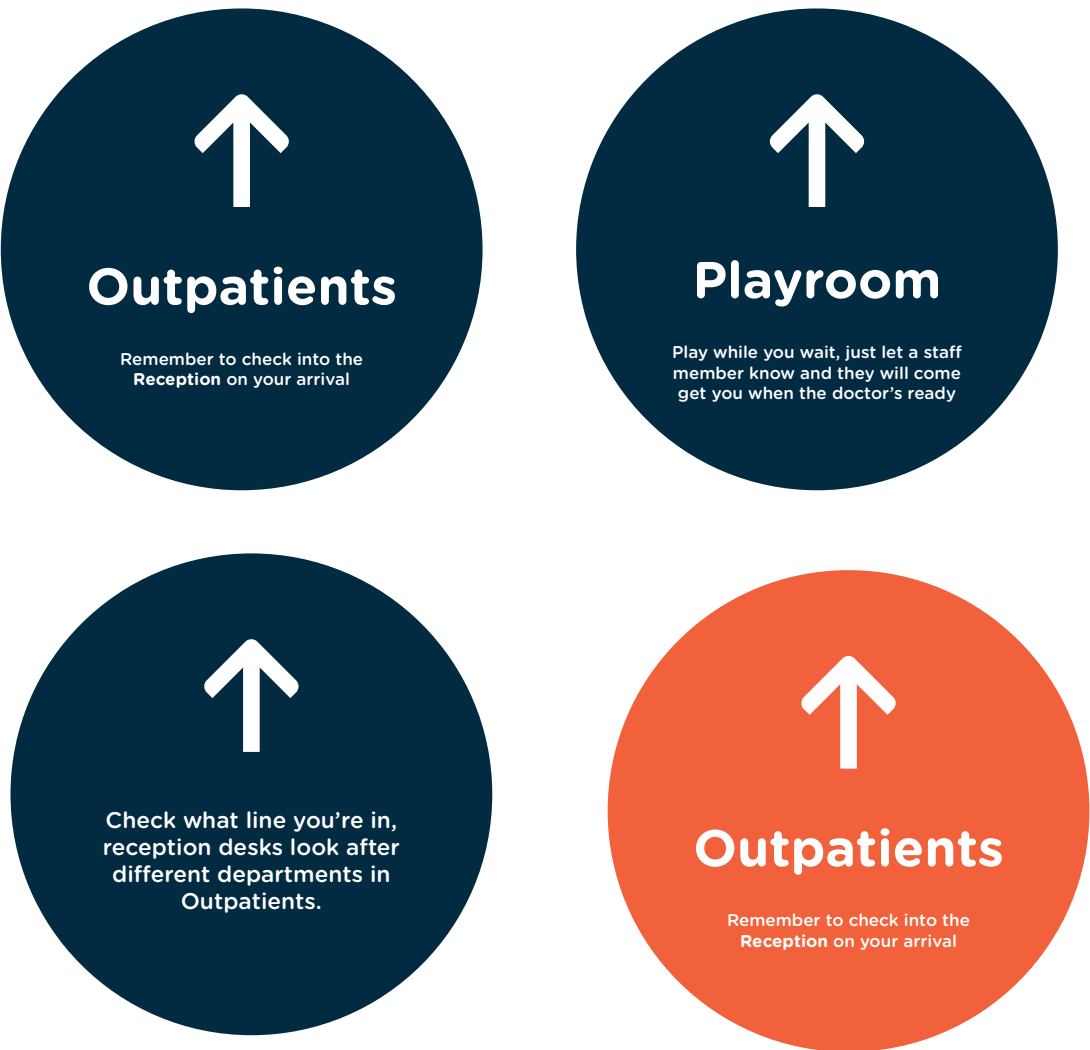
Figure 112 B. (2015). Wayfinding interventions, low scale, vectors.

Designed to be floor graphics, these wayfinding cues aim to direct health seekers through the department, making them aware of the services on offer, and the information required to navigate the destinations and facilities in the space (e.g., the playroom).

Figure 113. (2015). *Wayfinding interventions, Starship Outpatient Department in situ's.*

Due to the dense wall graphics, the floor and roller door side panel were utilised. However, the intervention style approach did not work well with the current environment and did not challenge the status quo of what wayfinding could be within the department.

Figure 114. (2015). *Colour study environment in situ.*

Visual noise was erased and places for potential wayfinding signage were blocked out. There was a focus on placement rather than style, and exploring the readability of the department space. Aiming to move beyond signage, the colours and their placement attempted to explore intuitive wayfinding cues.

Designing the experience

Revisiting the wayfinding journey, consideration was placed on information rather than tasks.[115] When analysing information that health seekers can receive throughout the wayfinding journey, three overarching communication mediums were identified: print, digital and space.[116] Due to the journey taking place over a significant period of time (sometimes up to three months from referral to appointment), no one medium could support the entire journey (Figure 115).

The potentials related to communication mediums were analysed and evaluated against the outpatient experience (Figure 116). Ensuring the staggering of information and a supportive wayfinding journey, the potential interventions for each information medium were documented (Figure 117). An effort was made to ensure that each aspect of the experience was supported through communication design. This was not meant to overload the health seeker with information, but rather to ensure that they had the information for each required point of their journey.[117]

115. Tasks are singular, as we can only complete one at a time; however, information has the ability to be present over the entire or segments of the wayfinding journey.
116. Discussed by Gibson (2009, p. 34) as a wayfinding strategy, this ensures that users' needs are met, information is given and design goals are provided.
117. As noted by Berger (2009), "Effective wayfinding signage is truly an art form that requires a great deal of experience and skill in presenting information, and a real understanding of how information is digested" (p. 72).
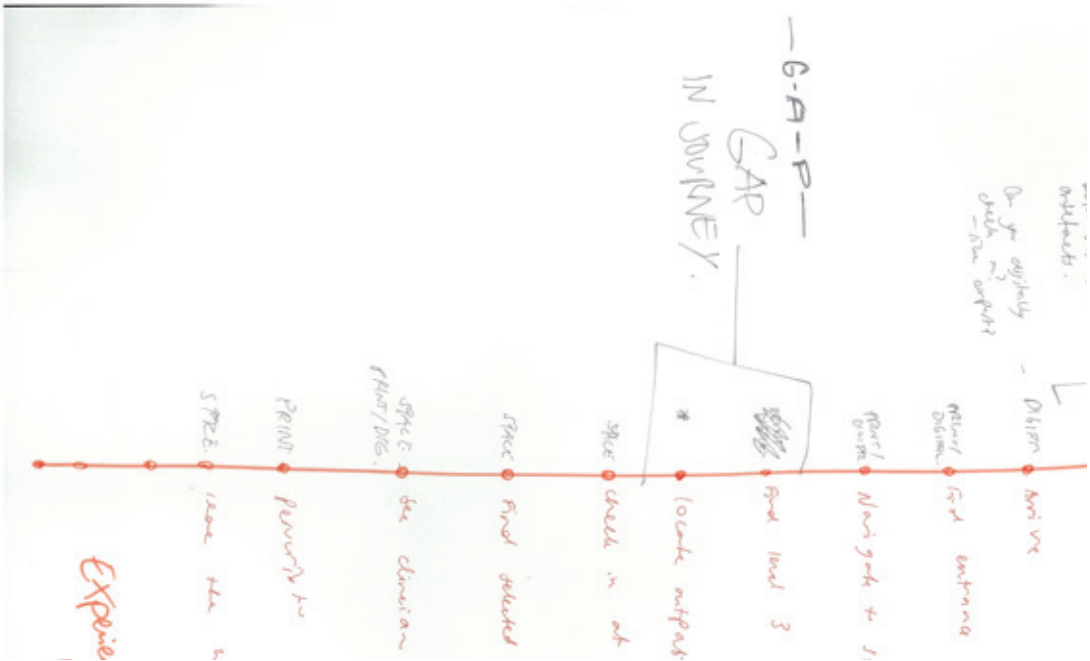
Figure 115. (2015). A3 sketch, Building multi-modal experience.

Rather than defining specific details too early, mediums were matched with points that health seekers' may encounter in their journey. In this way, design possibilities and impacts were observed within the context of the entire journey. For example, a supportive environment would only be valid on the day of the visit, as this environment can do little to address how to arrive to the department, and campus itself. Thus, an exploration occurred of wayfinding as a tool to support health seekers before and during their appointment.

Figure 116. (2015). *Analysing multi-modal experience.*

Through the multi-modal concept, there is an evaluation of the positives and negatives of each medium, alongside their potential for adding value to the health seeker's journey. A general indication of where each medium might function within the overall experience was documented, as were the limitations of each. For example, in the digital medium, the health seeker must have a device that has Internet capabilities and the knowledge to feel comfortable accessing information this way.

Health seeker mapping of information

	Preparation	Travel to the campus	
Print	Overview of journey Appointment letter checklist, transport details, map etc.		
Digital	Check referral status. Appointment reminder Request time/day change	Step-by-step commute directions Checking parking status	
Environment		ADHB signage Exterior directional cues	

	Travel through the campus	Consultation	Leaving
		Notate appointment summary Health brochures and information	Receive follow up from hospital checking in
	Check in Map of campus	Record measurements from height/weight Receive appointment summary	Prescription forms Link to sites and local support groups
	Clear entryways and routes Direct flow to reception first and then through department	Health information whilst waiting	Cues to exit building and campus

Figure 117. (2015). *Applying multi-modal solutions in experience. map.*

Taking the listed potential actions from each information medium, these were placed against the current-state experience map and initial ideas were expanded upon. These were situated to ensure no gaps were present; thus, the journey was fully supported. Differing opacities were employed to indicate the potential impact each intervention might offer. A review identified the possibilities for print and digital mediums to offer support beyond the consultation, which had not been previously considered.

When exploring the possibilities of a supportive health journey, the end of the appointment was not simply about leaving the building, but was viewed as a continuing health-seeking endeavour.

When reflecting on health-seeking and wayfinding priorities, a framework was established for the consistency and hierarchy of information across communication mediums (Figure 118).

Outlining the communication priorities of the design ensured that the health seeker's needs were anticipated and provided greater transparency concerning wayfinding and Outpatient Department processes. While this framework was unique to the department, the principles thereof had the potential for being refined and applied to other services.

The benefits of the digital information medium were evaluated, as were the potential for supporting the entire health-seeking journey, from referral to after the consult (Figure 119). However, when reviewing the limitations of the research (Figure 120) and identifying the digital component as being the optional medium of communication,[118] a digital aspect to the design was deemed outside the scope of this study.

118. The appointment letter and environment are definitely encountered in the case of, for example, the actual appointment.

HEIRARCHY OF INFORMATION

ENVIRONMENT	PRINT	DIGITAL

Where the department is
How do I get to Outpatients?

What the space is
Identifying the area as Outpatients

What is in the space
What is my priority destination in Outpatients?
Do I have everything I need?

Where to go in the space
How do I get to the area I need?

What to do in the space
What is in Outpatients that could meet some of my needs?

Accessible organised information presented
What information can be provided now my higher needs are addressed?

Identify
Who is this from
Who is this to

The message objective
What is the time and place? What is needed for the primary objective?

Actions to achieve the objective
Preparation, what do I need to confirm, organise, and bring? Transport need to knows, and internal wayfinding instructions

Tools to aid the objective
Wayfinding instructions for nice to know, preparations and record of details for future reflection.

Confirm and check

Navigate

Preparation

Past visits

Contact

Identify
Who is this from
Who is this to - multiple patients

The message objective
What is the time and place? What is needed for the primary objective?

Actions to achieve the objective
Preparation, what do I need to confirm, organise and bring? How can I get there and around the campus?

Tools to aid the objective
Record of details for objective reference and future reflection

Figure 118. (2015). *Hierarchy of information iteration one.*

Information that must be communicated for each medium is outlined in order of priority in the journey. Questions underneath information cues are used as prompts to reflect on the (assumed) internal questioning of the health seeker at a given time. While seeking wellbeing was most important to the health seeker, the framework provided information for navigating to the location in which to seek their health, and once this was achieved, the supportive design of the appointment experience was explored. For example, needing to know what space the health seeker was in (Outpatient Department) prior to providing health-related information, as is currently the case.
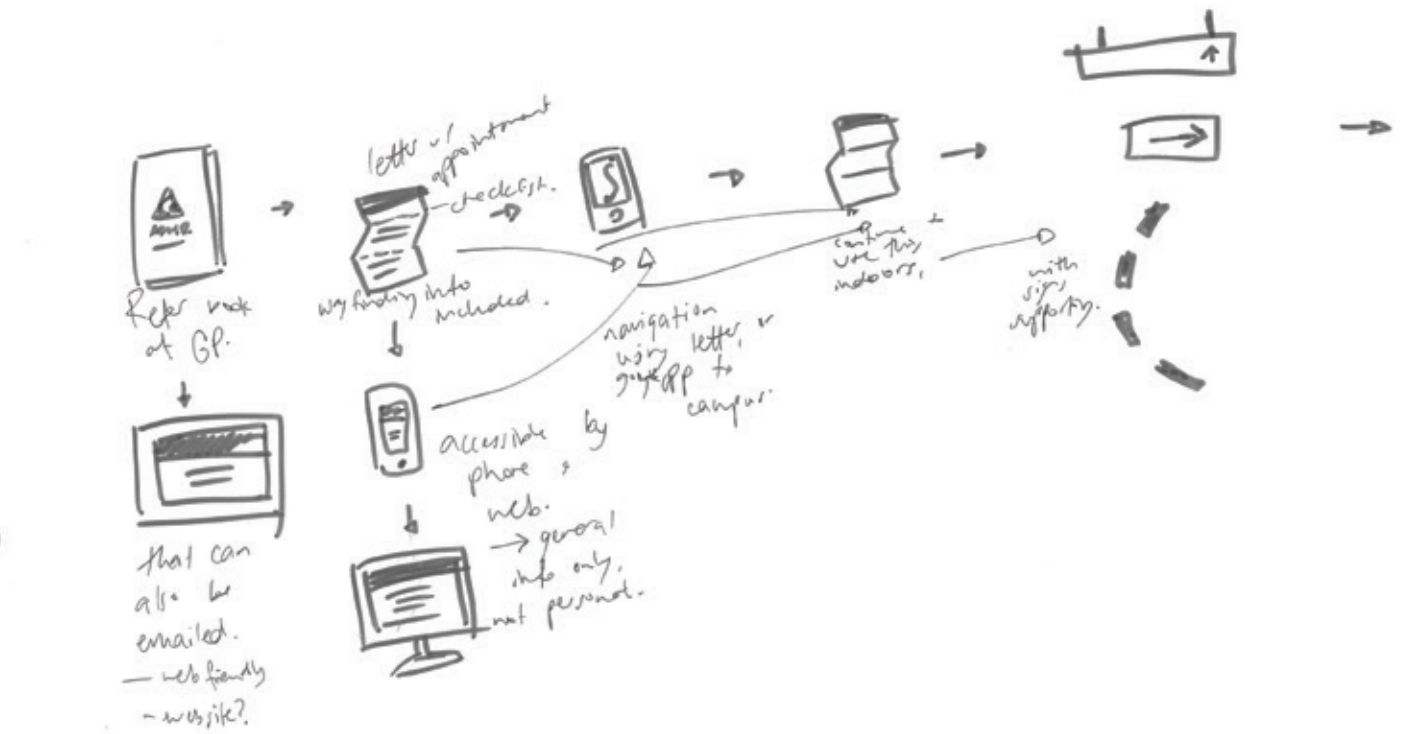
Figure 119. (2015). *Sketch of digital communication experience.*

In planning where the digital aspect was situated within the multi-medium wayfinding journey, I explored how an application or website could enable immediate transparency and visibility through open communication channels, real time notifications and record keeping. There was consideration of how the digital aspect could easily fit into the health seeker's preferred way of consuming information.
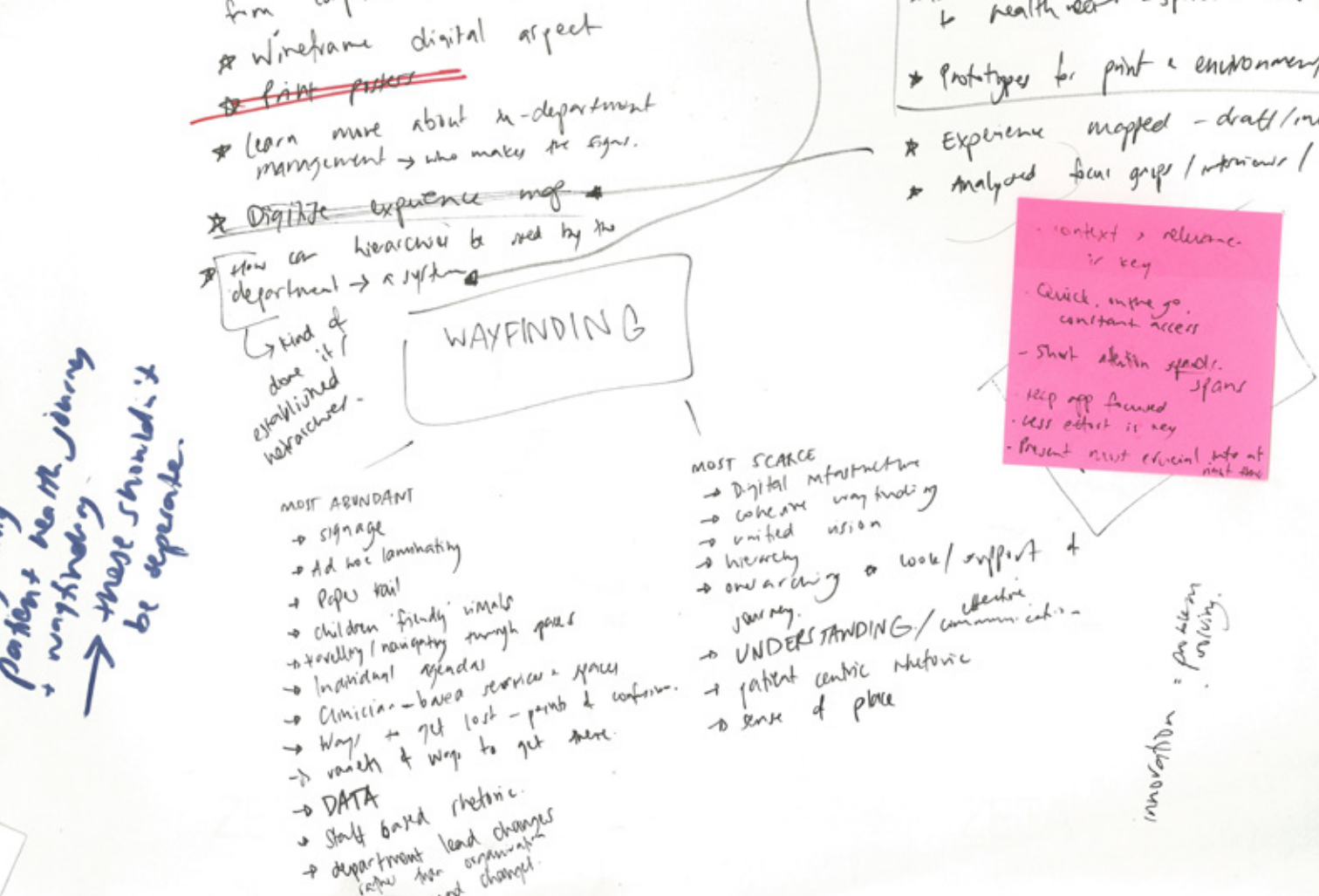
Figure 120. (2015). *List of design restraints.*

When reviewing the most common and scarce phenomena found within the hospital and the Starship Outpatient Department, positive and negative attributes were documented side-by-side. This allowed for a review of what the design needed to overcome (ad hoc signage) or take into consideration (lack of digital infrastructure).

5. Repositioning the project

The focus of the research at this time was how wayfinding design can be empathetic and supportive, addressing the stress and anxiety within the outpatient department. Yet difficulties arise in terms of how to prove that a design is in fact supportive, and that it reduces negative emotions related to wayfinding. Re-evaluation of the knowledge to date occurred, outlining the complexity of the problem and the current understanding of the outpatient department. Opportunities for testing and prototyping were explored by evaluating different approaches (Figure 121). By analysing the current-state wayfinding journey and comparing it to the proposed experience, it was observed that there was a gap in the research regarding internal navigation in terms of getting *to* the Outpatient Department (Figure 122).[119] Thus, if wayfinding was made to reduce stress and anxiety in the department itself the solution was void, as it was highly probable that these emotions had already occurred during the internal navigation, from the parking lot to the department. The design solution emphasised preparedness; however, due to the timeframe of this research it was not within its scope to test pre-visit artefacts with health seekers. Recognising that this was part of an ongoing design process that would extend beyond the year, consideration was given for how this could inform and be part of a hospital wayfinding approach as a whole.

119. For example, in the information hierarchy, the environmental section assumed that health seekers had already arrived at the department, thus contributing to overlooking the internal journey.

Figure 121.(2015). *Large scale mind map, testing and prototyping close up.*

In identifying the objectives of the research, a range of methods for testing designs were analysed, alongside the positives and negatives of rigor and accessibility. Consideration was given to the issues of testing a multi-medium solution that covers the (up to) three month outpatient journey, from GP referral to appointment.

Figure 122. (2015). *Large scale mind map, wayfinding journey close up.*

The gap in the wayfinding journey between the parking lot and the department was overlooked, largely due to the initial scope being contained within the physical department, as well as a focus on transparency around parking issues. As such, the majority of the analysis was focused inside the department, despite it being noted in interviews and the survey how difficult it was to find the department itself.

How a bottom-up environmental wayfinding prototype could be tested was examined, as it had to be isolated to the specific outpatient experience in order to manage the scale and scope of the project. The existing wayfinding and environment within the hospital was considered a restraint and was thus taken into consideration when developing the design solution. It was important that the prototype not be designed within the established systems and styles of the hospital, as this would create wayfinding based on organisational restraints (what is already present). By exploring a bottom-up wayfinding approach, the aim was to establish how this might add value and contribute to the health-seeking experience, and the opportunities that such an approach may present in terms of integration into the top-down system.[120] Thus, there was an exploration of how individual and organisational perspectives can complement one another in terms of human experience and feasibility, thereby being supportive to both the health seeker and the health-provider's needs.

Throughout the re-mapping of the project, there was a focus on what makes wayfinding supportive in healthcare; this was effected by addressing the nature of the physical and emotional wayfinding experience. This is through communicating and supporting navigation to the department. By designing for the healthcare experience alongside wayfinding, the whole person is designed for.

120. This integration to the top-down system is vital for a large organisation such as a hospital, as it allows for revealing the overall strategy in the wayfinding execution and experience.

Through this repositioning of the project, new questions arose for exploration:

What does a bottom-up approach to wayfinding in hospitals entail?

How can multiple mediums of communication support a health seeker's journey?

How can wayfinding be emotionally supportive for hospitals?

How is wayfinding in healthcare unique?

Route

Different paths and entrance points to the outpatient department were evaluated for potential wayfinding solutions (Figure 123). The route selected to outpatients for the prototype was the recommended journey found in the current-state appointment letter (Figure 124).

Sketching cues began on the identified wayfinding points and interventions and immersive spatial cues were explored (Figure 125). While environmental concepts aligned with the print medium through consistency and the staggering of information, the medium's visual cues did not align stylistically and therefore, did not signify to the viewer their relationship and interdependence.
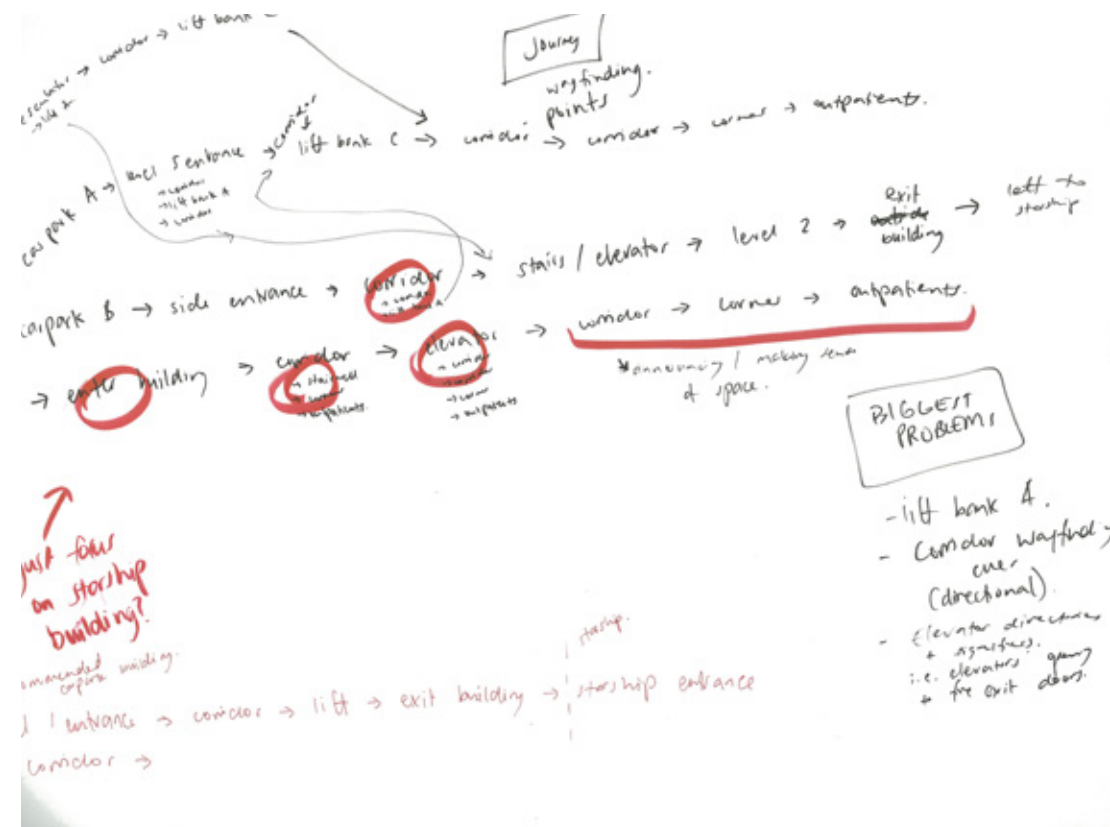
Figure 123. (2015). *Analysing points of difficulty in wayfinding journey to Starship Outpatients.*

Different routes to the department were analysed to highlight points of difficulty and confusion. Particular attention was paid to correct wayfinding decisions that contrasted intuition, or a point in the path with multiple options.

Figure 124. (2015). Car park B to Starship Outpatient prototype route.

The route stretched from parking lot B, main building, Level 1, Level 2, outdoor path, Starship Level 2, Level 3, and then to the Outpatient Department's main entrance. While this journey was complex and at times went against intuition, it corresponded with current wayfinding aspects such as standard ADHB signage and dashed floor lines leading to Starship, an existing wayfinding prototype (see DHW Lab appendix), as well as known information about the department. For example, using parking lot B, main building Level 1, x-ray elevator to Level 3, further enforced the thoroughfare in the corridor of outpatients, which had previously been identified as an issue of concern.

Figure 125 A. (2015). *Ideation on wayfinding points, Starship entrance.*

The focus of concepts was concerned with architectural restraints and guiding wayfinders through the space. When analysing the environment, placement for wayfinding cues was considered. Rather than explicit labelling, these were identified according to their function: directional, identification and orientational.

Figure 125 B. (2015). *Ideation on wayfinding points, Starship Outpatient entrance.*

Due to the curved architecture, the environment was visually shallow, which made it difficult to know what destinations were close by, yet hidden. These corners and other architecture elements that obscured the visibly of space (e.g., columns) were considered complex shapes, and had a large impact on the wayfinding journey. Due to the lack of directness and visibility of the entrance, a sense of destination or place was needed. To counteract the blocked entrance, which only becomes fully visible when standing directly within the archway, there was an exploration of large scale cues in order to highlight it from afar.

Making sense of place

Unlike other departments in Starship Children's Hospital, the Outpatient Department has the highest health seeker traffic (visitors), yet the least wayfinding support, as current navigation in Starship favours inpatients.[121] Starship Outpatients needs to be a defined location in order to highlight it as a high traffic destination. Establishing wayfinding principles that can be broadly applied across various mediums would ensure consistent and clear wayfinding to the destination.

By building a branded experience alongside a wayfinding solution, a more holistic experience can occur; this is broadly defined as environmental placemaking (Gibson, 2009, p. 70). In terms of the research's exploration of Starship's history, an investigation of form and the meanings behind current design decisions within the environment took place (Figure 126).[122] By connecting broad explorations back to the outpatient environment, shapes and arrangements began to reveal the beginnings of a flexible style (Figure 127). Design principles and the placement of cues were developed jointly and by focusing on immersive wayfinding cues (Figure 128).

121. This is despite four out of five visitors seeking outpatient treatment; in 2014, Starship treated 120,000 outpatients, compared to 20,000 inpatients (Teague, 2014).

122. Furthermore, the Auckland City campus was explored in relation to place; see Appendix 5 (p. 591).

Figure 126. (2015). *Mark marking, Land.*

Being mindful of SCH history, mark making was used to explore different expressions of line. The meaning of colours in the original design represent aspects of wellbeing and nature: aqua (pacific ocean), orange (land), blue (sky), yellow (sunshine) and pink (health) (Teague, 2014). A variety of patterns and shapes were explored for each to draw from original design meanings and establish a consistent visual language for wayfinding within Starship. In this way, communication mediums of prototyped designs were visually connected.
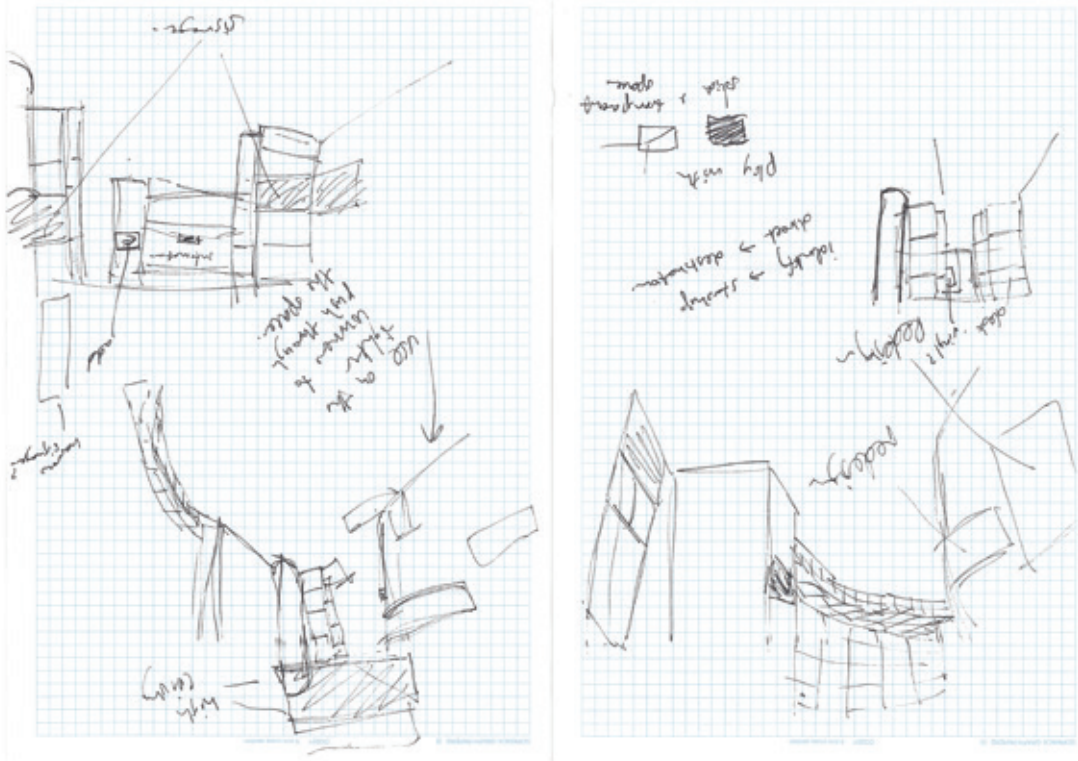
Figure 127. (2015). *In-space sketching*.

Sketching points of the wayfinding journey to the Starship
Outpatient Department revealed common patterns within the spaces,
e.g., squares and grid structures were repeated throughout the
building (inside and out), on the floor and walls.

Figure 128 A. (2015). *Starship Outpatient journey using vector
tetris forms*.

Tetris shapes were applied to the environment in a bid to explore
form and potential wayfinding cues. The same shapes were used
in a bid to deliver a sense of consistency within the space.
Alongside this, the large nature of the grids aimed to counteract
the visual noise with the solid colour, and to effect consistency
throughout the journey.

Figure 128 B. (2015). *Standard wayfinding signage concepts.*

Standardisation of wayfinding cues and signage was explored using the pixel-like squares. The various forms were immersive, focusing on how they could work three-dimensionally, folding on angles in the space.
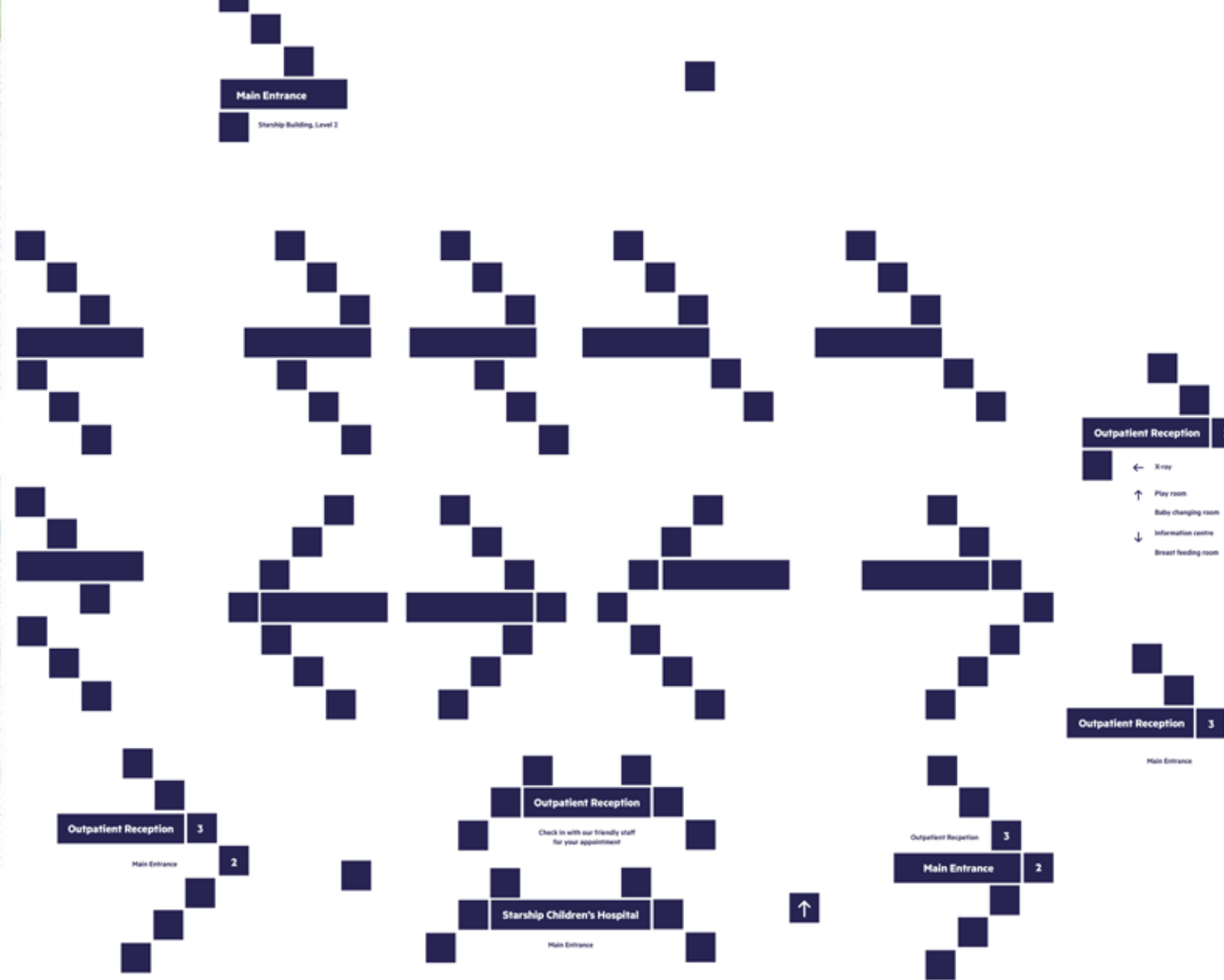
Figure 128 C. (2015). *Standard wayfinding signage vector concepts.*

Forms remained within the pixel-like aesthetic and general shapes began to emerge that could be used in a flexible manner. For example, signage, large scale cues, etc.

Using wayfinding and branding approaches found in the Auckland Art Gallery and Auckland Museum, a catalogue was created for Starship outpatients as a low-fidelity solution. Information cues were taken from the collected wayfinding artefacts; the design hierarchy was disseminated and principles were reapplied to the Outpatient Department context (Figure 129). Compared to a digital or pre-visit artefact, the catalogue would be easier to implement and test, as it could be picked up at the entrance to the hospital or within the department. Upon evaluating the concept, there was uncertainty about whether the catalogue would be of value as a wayfinding artefact within the highly demanding context of a hospital; it was therefore discarded as a potential solution. However, through the focus on visual and verbal communication within the booklet, the established symbols could be re-purposed for the referral and patient letter artefacts, thus ensuring consistency (Figure 130; Figure 131).

Figure 128 D. (2015). *Wayfinding concept, in situ, black and white.*

Pixel forms were placed in situ to test how they could be integrated with the environment. A large scale pixel arrow on the windows was employed to direct and push people through the space, especially where little of the space ahead was visible. Photos were kept in black and white in order to focus on the prototype's impact against the form and structure of the building.

Figure 129. (2015). Starship Outpatient experience catalogue concept.

When exploring how this format might communicate information, public and staff audiences were taken into consideration in terms of communicating transparency regarding what was new in Starship, children's art projects, recent events, and current health information. However, wayfinding and health-seeking information took priority, and this was indicated by it being featured at the start of the booklet. Exploring the use of colour was used to distinguish between sections of information: purple: wayfinding through space and health experience; orange: facilities available in the department; teal: optional information about the department. Images were used as wayfinding cues in sections, providing context to the environment. However, photographs had to be duo-toned due to poor lighting, and the competing visuals and colours within the environment conflicted with the overall composition.

Figure 130. (2015). Pixel icon set.

Symbols representing appointments, location, direction, health, the playroom, etc., were created following a strict grid system. The aim of this was to bring together different aspects of the collateral through consistent visual language. As noted by Gibson (2009, p. 98), "Symbols can also establish a sense of place while functioning as wayfinding tools".

Figure 131 A. (2015). A4 Appointment letter, portrait.

Pixel icons were added to the appointment letter package, using accents of the pixel aesthetic in the check list and journey map. Colours on the map were modified to be cohesive with the overall palette.

Figure 131 B. (2015). A4 Wayfinding information, portrait.

After your appointment your GP will write a letter to the hospital requesting an appointment on your behalf. The hospital then asseses your situation based upon what your GP has told them. Within 2-12 weeks, depending on the urgency, your letter will arrive.

If you have any queries, just contact Auckland Hospital at contact@adhb.govt.nz

This is a generalised view of a patient journey, and some departments and conditions require different steps.

Your Referal

Doctors referal   Recieve Letter in post   Confirm appointment

Arrive at hospital   Recieve follow up text message

See the doctor

Potential tests   Evaluate next steps
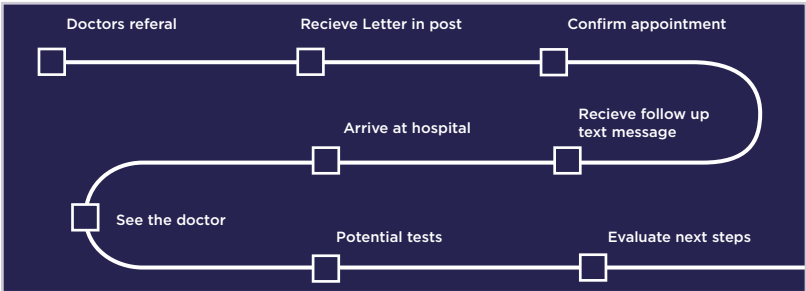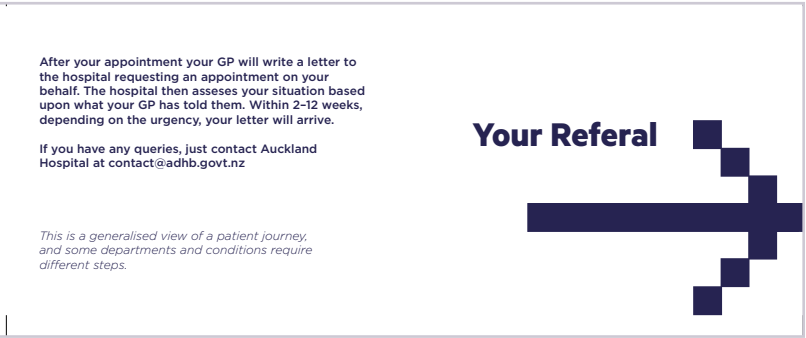
Figure 131 C. (2015). Starship Outpatient Referral.

A pixel arrow was added to direct the journey to the Outpatient Department. Squares on the journey map follow cues from the appointment letter, thus ensuring consistency.

6. Building artefacts

Prototyping

Wayfinding designs were placed into increasingly refined in situs, thus exploring integration of the prototype concept in the Starship environment (Figure 132). By changing aspects of the wayfinding prototype due to restraints presented by the pre-established environment, accompanying artefacts were reiterated to ensure cohesiveness (Figure 133).

When designing the pre-visit artefacts, emphasis was placed on interaction and how it might fit within the home life of a health seeker, for example the appointment letter once received in the post (Figure 134). There was an exploration of the letter as a self-documented record of patients' health-seeking journey, and was especially relevant when spanning multiple appointments over a length of time, and a way to monitor progress (Figure 135). Due to the increase of information compared to the current-state letter, more space for content was needed, but without increasing the number of artefacts and potentially causing confusion, or being easily misplaced.

Figure 132. (2015). *Starship Outpatient wayfinding in situ.*

This concept was large scale and immersive and utilised a variety of available angles and surfaces. Using full colour in situs, the colour of the prototype had to be changed, as the dark purple chosen clashed with the busy colour palette of the building. This was revised to a lighter blue, similar to the sky-blue Starship colour. Floor accents in the prototype were not included due to health and safety restricts in the hospital, i.e. floor vinyl being a slip hazard.
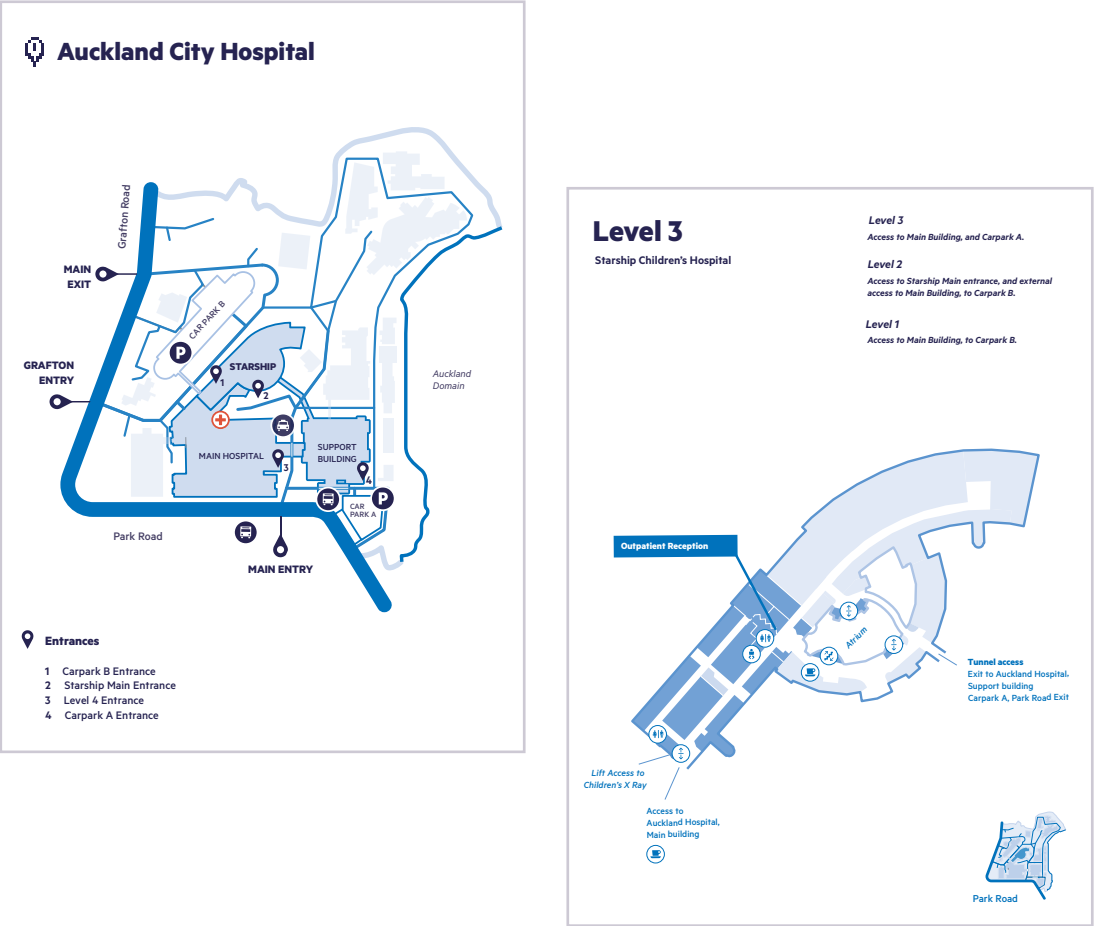
Figure 133 A. (2015). A5 Patient letter maps.

When changing all text to the lighter blue colour, this was found to be too light in the body copy; thus, the light blue was applied for highlighting wayfinding information while the dark blue was retained for text and icons, ensuring maximum contrast. This allowed for a better relationship between spatial representation in the maps and the colours used in the environmental design.

After your appointment your doctor will write a letter to Starship Children's Hospital requesting an appointment on your behalf. Starship then asseses your situation based upon what we know from your doctor. Within 2–6 weeks, depending on the urgency, your appointment letter will arrive.

If you have any queries, just contact us.

Starship Children's Hospital
0800 728 436
ssfis@adhb.govt.nz
www.starship.org

This is a generalised view of a journey through Starship, so some departments and conditions require different steps than the ones outlined here.

Your journey through Starship

Referal to the Outpatient Department

You get refered by your doctor — Recieve appointment letter in post — Confirm you can make the appointment

You arrive at hospital — You receive a follow up text message

You see the doctor — Potential tests — You evaluate next steps
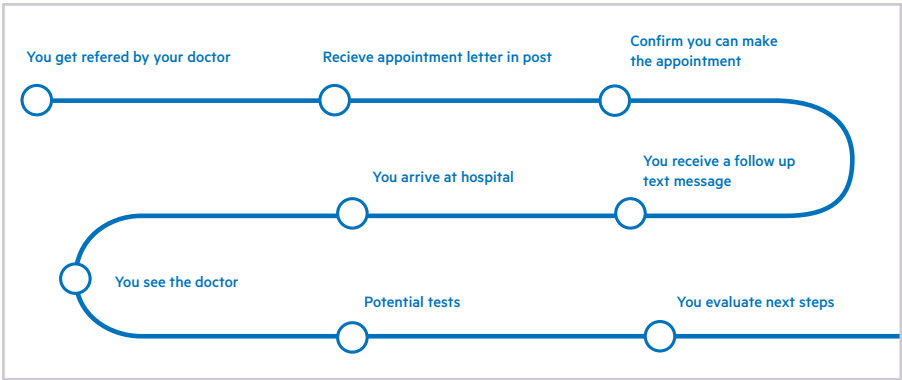
Figure 133 B. (2015). *Starship Outpatient referral (front/back).*

Since the referral focused on wayfinding through experience, the lighter blue was more of an embellishment in order to ensure cohesiveness with other elements of the wayfinding solution.
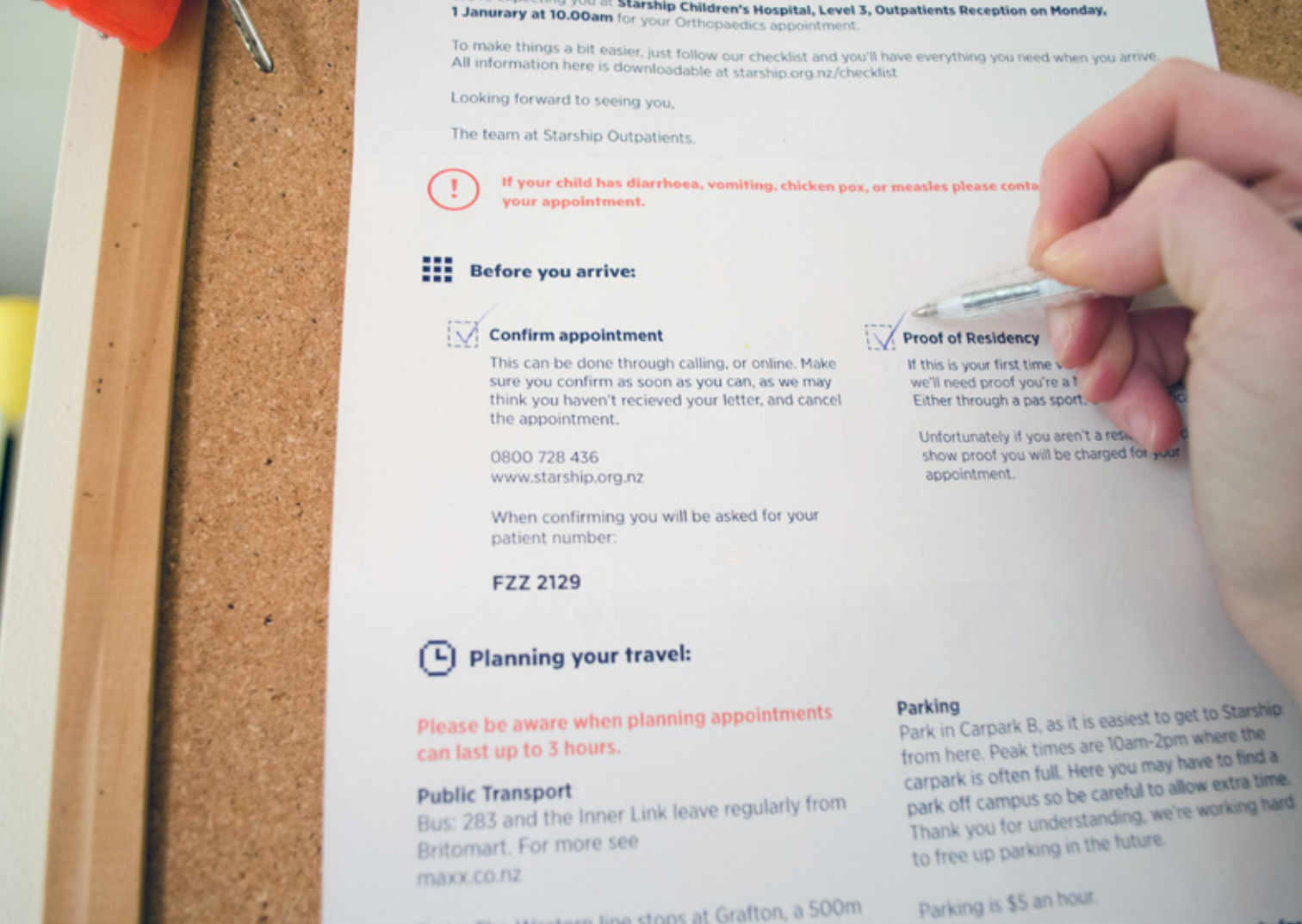
Figure 134. (2015). *Appointment letter, A4 prototype in situ.*

Use of the prototyped letter was simulated, where it was pinned up in the living space and written on. Its visibility was considered important, as it was a reminder of the appointment and allowed for transparency of tasks to be completed. It was considered to be especially useful for multiple supporters. However, having information regarding appointment preparation on the back limited the visibility of this information.

Figure 135. (2015). *Appointment letter preperation A4 prototype in situ.*

When trialling the appointment preparation aspects, there was limited room for more detailed prompts and areas in which to write (if needed, more detail than is noted in the above image). Some aspects of the interaction, for example, ticking off points of the health-seeking journey were not explicit in terms of how it was intended to be used. Additionally, the three-part appointment package, i.e., recording the appointment, as well as campus maps, did not sit alongside the appointment details aspect of the letter, thus increasing the likelihood of being forgotten, being misplaced, or not being used.

Alternative presentation of content was explored with a focus on cohesion in bringing the three-piece package together. Many options were not appropriate due to an excess amount of work that would be required by administration staff if implemented, for example, printing on A3-sized paper, perforating edges, custom folding, etc. Thus, an A4 landscape pamphlet was trialled, as this was a familiar format within the department and often used to present information (Figure 136). Being a two-piece package, the separate roles of each (wayfinding to the appointment, and supporting the appointment experience) and their similar size meant that they fit together well and were distinguishable from one another.

Prototype approval

Once the design refinements were complete, the wayfinding in situs were provided to Starship project managers for approval (Figure 137). Vinyl was the material of choice for wayfinding prototyping due to being cost effective, easy to remove and quick to prototype with an appearance of high quality. This meant that when discussing with Starship how the wayfinding would be installed, the prototype was of lower risk of rejection, due to its easy removal and temporary nature. Due to the prototype being larger than expected (by myself and Starship), formal approval was sought from and given by the general manager of Starship. Despite my expectations of compromise due to the prototype being so large, the concept was approved for installation over a one-week period. To communicate the wayfinding install procedures to Starship staff, an email was drawn up and distributed by Starship project managers.

Figure 136. (2015). *Pamphlet appointment letter, iteration one.*

This format provided a natural separation of sections through
folded columns and more opportunities for employing hierarchy
within the document. Rather than separation of the appointment
preparation, during appointment information, the documents were
separated into wayfinding through space (how to get there), and
wayfinding through experience (how to prepare and record what
happened during the consult). Using this format, the simple cover
had space for the health seekers name and address, thus fitting
within the current standard envelope being used.

Figure 137. (2015). Starship Outpatient wayfinding in situ for approval, one.

By gaining critiques from colleagues prior to meeting with Starship project managers for approval, the wayfinding concept was identified as being too heavy within the denoted space, blocking the natural light in the windows where, beyond the entrance, poor lighting was an issue. A smaller pixel arrow was placed within the larger grid in an attempt to] utilise the natural light, especially in terms of the wayfinding placed on windows. This was utilised to create contrast and emphasis for the direction in which the health seeker was being guided.

Initially, it was planned to complete a three-cycle phase comprising install, test and reiteration of feedback; however, this was not possible due to the timeframe of the research. It was not anticipated that the wayfinding prototype would be as large in scale, but rather a series of smaller interventions. As such, project managers agreed that changes could be made on an iterative basis once installed. Changes were agreed upon via email for efficiency and approval was always prompt.

The DHW Lab had a vinyl cutter on hand; this meant that small tests could be iterated quickly in terms of the placement, size, colour and transparency of material, effecting an efficient process. As a result, the larger sizes of the wayfinding prototype had to fit within the restraints of the vinyl cutter on hand. When measuring the space and preparing the files, the larger aspects of the wayfinding install (e.g., columns and front windows) were found to not be plausible due to being too large for the equipment, as well as the cost of large quantities of material.

Prototype install

By revising the design, some compromises were made, taking into consideration feasibility in a do-it-yourself install, height placement and size (Figure 138). Assessing the cost of semi-translucent vinyl was weighed against the importance of allowing natural light through windows in entranceways and the consistency of materials; compromise ensued with semi-translucent vinyl on windows, and a slightly darker shade of standard vinyl for use inside the building.

Constructing and installing the prototype was staggered over a series of days due to scale. The façade of the building was completed first; however, when beginning the install, unforeseen issues arose that had not been observed within in situ photographs (Figure 139). What had worked for the in situ install did not translate to the environment as expected. Decreasing the size of the prototype prior to the install resulted in unforeseen consequences regarding wayfinding impact (Figure 140).

Due to scale and the desire for more extensive evaluation, the install was approved for two and a half weeks. In order to capture the environmental wayfinding and pre-visit artefacts working together in the outpatient experience, a short film of the prototypes was produced (Figure 141).

Figure 138. (2015). *Starship Outpatient wayfinding in situ, two.*

The number of arrows on the façade of the building was halved and columns were excluded. High arrows on the facade were removed due to difficulty installing..

Figure 139 A. (2015). Starship Outpatient wayfinding install, three.

It became apparent that the directional arrow to the right of
the building might be perceived as directing people externally
up the stairs to the right of Starship, rather than inside the
building corridor (proposed-top, solution-bottom). Thus, the
arrow was moved to the left side (as per iteration one) and small
directional arrows were placed to the right of the door.

Figure 139 B. (2015). *Starship Outpatient wayfinding install, three.*

The blue text placed directly onto the glass had little contrast and low visibility (installed-left, correction-right). This was replaced with blue vinyl and over-laid with white text, ensuring maximum contrast.

*Figure 140. (2015). Starship Outpatient wayfinding install, level
3 iteration.*

The directional lift signage was only visible from the left
elevator, rather than from both elevators when exiting Level
3 and being directed toward the Outpatient Department. This
was moved further to the right, in closer proximity to the
direction of the department and visible from the doorways of both
elevators.

Figure 141. (2015). *Starship Outpatient wayfinding install, four.*

By eliminating columns from the wayfinding prototype, there was
little to indicate that the Outpatient Department was just
ahead once out of the elevators on level 3. To counteract this,
alongside the curving and shallow visibility of the space, a long
line was placed, continuing from the outpatient entrance and
visible a couple of meters once exiting from the elevator.

7. Testing designs

Survey

An anonymous survey for health seekers to evaluate the wayfinding prototype was installed in the Outpatient Department (previous Figure).[123] As with the previous survey, the feedback rate was low (n=26). This survey was installed for two weeks.

The survey questions assumed a general understanding of where the main entrances to Starship and the Outpatient Department were located. However, participants revealed the many alternative ways in which they entered the building, for example, through the x-ray elevators, the main building, the tunnel or stairs. Despite the prototypes focusing on identifying entrances, participants nonetheless asked, "Where is the main entrance?" Four out of five of those who participated in the survey had been to the outpatient area before, and therefore had a pre-established route that they took, or know their way so well that they barely looked at wayfinding cues. The following comments about the prototypes were helpful:

"Not [used] at all, as we have been coming [to the hospital] for years."
"We know the way so [we do not] look at signs."

123. See Appendix 4 for survey (p. 557).

The entrance to Starship being rated positive, neutral or negative was inconclusive due to contradictory results; half of those who completed the survey indicated that they did not use this entrance. Most identified the main entrance of the Outpatient Department as providing a positive first impression. In instances where the health seeker entered through the prototype path and followed the wayfinding signs, this did little to create a better impression. In survey responses, there appeared to be some indifference to wayfinding among regular health seekers in the Outpatient Department:

As we are frequent visitors, I tend not to notice [signs] anymore. I did see and like the wall graphics at the Starship entrance. I generally find it very confusing, navigating Starship as [I] always [become] lost.

The staggering of information across the journey was identified as helpful. The floor levels and staggering of wayfinding points were identified in particular: "The signage downstairs [stating that the Outpatient Department] was on level three was helpful, as I didn't recall the floor level." While the survey participants did not review the consistent information journey to the space noted in the appointment letter, there were comments on the importance of preparation. Examples include positive feedback in terms of signage matching the appointment letter, or what had been explained to them over the phone.

Aspects such as floor markings and alternative routes were not covered in the prototype, due to the limited scope of this study. However, feedback from participants highlighted the importance of floor graphics for children, with adults stating: "My child likes to follow the blue dotted lines [on the

ground] from the back [parking lot] up to Starship." Additionally, the following comments were also provided: "Change in colour. Update style. Line system on the ground is great." These comments were most likely due to the lower eye height of children, and reading skills not being necessary to understand these ground-based wayfinding cues. There were multiple suggestions for rendering the prototype at a larger scale, e.g., "More of it, or perhaps floor markings", "colours, size", "more [wayfinding cues] and larger signage" and "bigger signs"; however, these suggestions may have been given in context to wayfinding aspects that had not been part of the prototype being evaluated.

The installed prototype was inconsistent with existing hospital wayfinding elements (which could not be removed). The amount of established visual noise in Starship appeared to have overwhelmed the prototype (including ad hoc signage, artwork and pre-established wayfinding styles). This included inconsistencies with the prototype in the main hospital (main building, level 1), with a participant noting the changes in Starship colours from pink to blue being confusing. Despite attempting to design around the visual noise by using block shapes, it became apparent that the visual noise would need to be removed in order to more effectively evaluate the wayfinding prototypes or interventions.

Consistent visual language was used throughout the prototype by applying the same graphics to the prototype and evaluation material. It was assumed that participants would understand what elements belonged to the wayfinding prototype. Many misinterpreted these elements, discussing the standard metallic signage or A4 pieces of paper with arrows instead,

or simply did not notice the prototype at all. The use of the term 'signage' rather than 'wayfinding' may have been a factor in this misinterpretation of what the prototype was.[124] In hindsight, the relationship between the prototype and the survey material could have been reinforced more explicitly by using the same blue as the prototype in the survey design, and having reference images to better explain what was being evaluated.

Quantitative data collection

A quantitative data collection method (happy or not survey tool) was used to measure responses to the wayfinding prototype. As this survey tool was free standing, the 'happy or not' stand was placed beside the prototype, directly referencing it for a period of 10 days. Over this period, 262 participants responded. The first survey prompt was, 'What do you think of the blue wall graphics in this entrance'. This was used for one day,[125] but was changed to 'The blue graphics helped me to know that I'm at the Starship outpatient department', as this focused more on functionality rather than opinions about aesthetics.

Responses were collected at hourly intervals and collated via an online database (Figure 142).

124. The term 'wayfinding' was deemed ambiguous, being an uncommon everyday term and taking into consideration the primary users of Starship, i.e., individuals with low literacy levels, who speak English as second language, etc.
125. Following a prompt by a previous wayfinding prototype using the same system.

Weekday distribution

Distribution

100%
75%
50%
25%
0%

58% 39% 74% 46% 41% 58% 80%
15% 26%   20% 27% 14%
23% 13% 22% 15% 9%   7%   20%
     22%   19% 23% 21%
          22%

Mon Tue Wed Thu Fri Sat Sun

Weekday

What did you think of the blue wall graphics in the entrance?

49%
127 resp.

22%
58 resp.

10%
26 resp.

19%
51 resp.

Hourly distribution

Distribution

100%
75%
50%
25%
0%

100% 100% 86% 33% 36% 64% 66% 43% 67% 38% 38% 42% 33% 100% 100% 67% 100% 8%
                29%   31% 31% 25% 25%   33%   67%
                25% 25% 25%

12am 1am 6am 7am 8am 9am 10am 11am 12am 1pm 2pm 3pm 4pm 5pm 6pm 7pm 8pm 11pm

Time
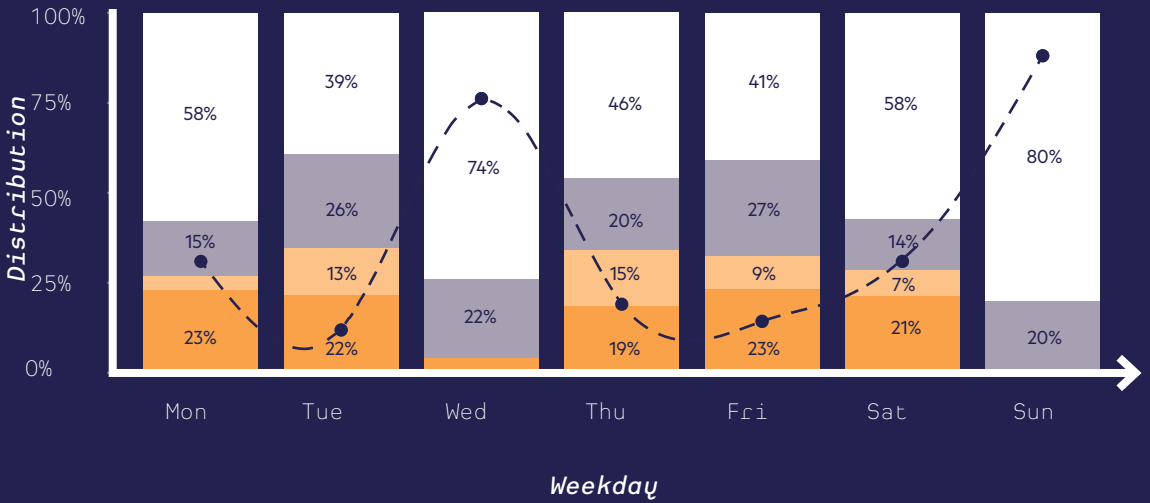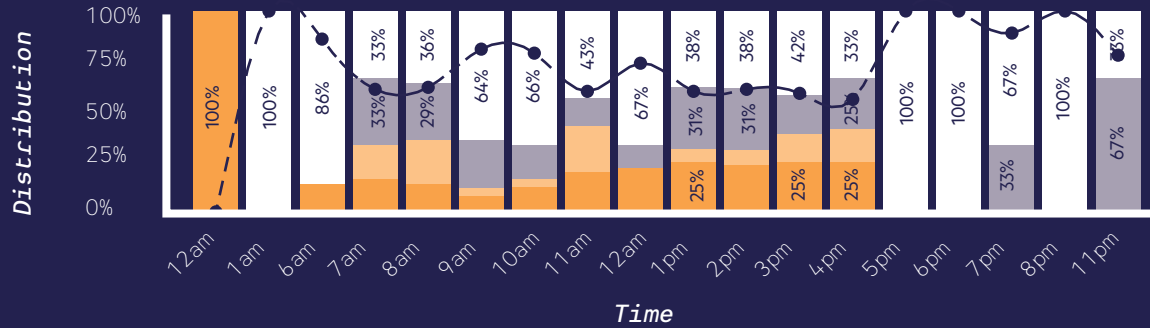
Figure 142. (2015). Happy or not data.

The majority of respondents (61%) found the wayfinding prototype helpful or somewhat helpful in terms of helping them to know they were in the Outpatient Department. Responses were low in the morning (excluding times outside 8.30-17:00, Monday to Friday outpatient hours). Most responses were recorded during 11:00 to 16:00 on weekdays; however, this was also the period when the most negative feedback was given. This may have been associated with peak clinic times, when the most difficultly would have been experienced in terms of finding parking.

No insights were found into the decision-making process behind feedback, as the data is unable to reveal when buttons were pushed with little consideration for the question. This was especially evident for responses given late in the evening, or early in the morning, e.g. 1:00, which were assumed to have been made by late night staff.

Staff feedback

By adapting questions of the health seeker survey, the staff survey was initially based on the ADHB internal survey system. However, due to not being user friendly and a lack of support in terms of images, a more human-centred survey platform was used.[126] The questions were modified through consultation with a colleague of the ADHB well-versed in gathering data. These questions became more direct and concise, and on reflection, questions were found to be well-tailored to the research focus.

126. https://www.typeform.com; see Appendix 4 for survey (p. 561).

Starship project managers emailed the online survey to Starship outpatient staff. Receiving 10 responses and only fifteen site visits, staff engagement was found to be extremely low. This may have been due to busy schedules.[127]

Staff responses to the prototype were negative, with many offering critiques. Rated first impressions were average and included polarising answers. Comments elaborated on reasoning, as many did not view the prototype as providing a good first impression of entranceways or being helpful to families arriving in the Outpatient Department. There were conflicting results regarding style, e.g., it being too corporate and inappropriate for a children's hospital, while others viewed it as being professional.

> [You would need] to already essentially be [in the Outpatient Department] to see [the prototype]. [There is some] departure from [the] traditional Starship colours, [it's] rather dull and more adult than child-friendly. [There are] no logos, no stars, no pictures [an it is difficult] to read the (?) pixelated arrows. The shade of blue and blue/white pixilation makes me think...of a police station.

127. However, a factor of low responses may have been default browser (Internet Explorer) incompatibility.

Did you notice the prototype signage at the main entrance to the Outpatient Department?

Yes

No

Rate your first impression of the Starship Outpatient Department.

Average: 4.22

1	2	3	4	5	6	7	8	9	10

I really dislike it   *I really love it*

Rate your first impression of the signage at the Starship Main Entrance.

Average: 4.00

1	2	3	4	5	6	7	8	9	10
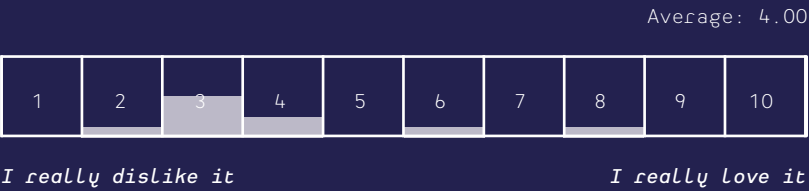
I really dislike it   *I really love it*

How do you think this signage would be useful for patients and visitors (including or especially first timers) to the Starship Outpatients Department?

Average: 4.89

1	2	3	4	5	6	7	8	9	10

Not helpful at all   *Very helpful*
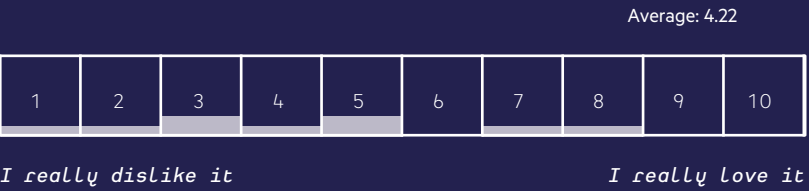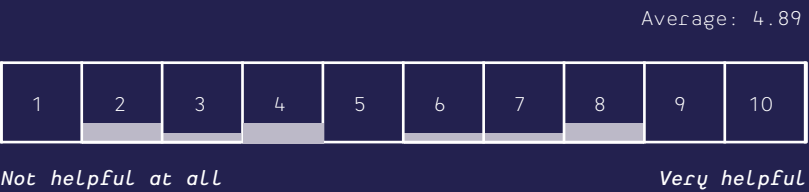
Figure 143. (2015). *Staff survey data.*

1. I like the concept of Starship having a designated main entrance, though this point will not be [the] patient/family's first experience with the hospital, given [that it is not] adjacent to parking. 2. [The picture provided in the survey] shows relatively small signage for Starship. 3. [I] don't 'mind' the blue [colour] but it [is very different] from Starship 'colours'…rather dull [and aimed rather at adults than children's imaginations, I think]."

Responses correlated with the health seeker prototype evaluation, with responses to the Outpatient Department entrance stating, "It's not [overtly] obvious. But the main entrance to Starship is hard to find anyway and not intuitive." Further comments continued in this manner, i.e., that the prototype was not visible enough, needed changes in terms of typeface size and brighter colours. Positive comments included staff liking the idea of a designated entrance and better communication to health seekers that they needed to check in at Reception on arrival to the Outpatient Department.

Due to the low survey response, it was difficult to conclude that all staff felt that the prototype had failed to be appropriate for Starship, with a lack of adherence to established branding or wayfinding styles. Additionally, it was uncertain whether staff respondents had experienced the entire environmental prototype , aspects of it, or whether they were evaluating it based on images provided in the survey. This was due to comments regarding the small nature of the interventions.

Informal

In contrast to the formal survey and follow-up meetings with Starship project managers, it was reported that there had been positive feedback regarding the wayfinding prototype from staff. When directing health seekers, staff mentioned using the blue graphics as a landmark for providing direction to outpatients upon noticing someone appear lost inside the building. When discussing the prototype with research assistants conducting another survey (in a nearby location), the following feedback was given in a staff focus group:

> "[There] was…blue signage [stating] 'Welcome to Starship Outpatients'… I thought [this] was really positive… [It's a shame] to see that [it is no longer there because many people] don't [realise] when [they are already in the] outpatient [department]… I thought [it was really helpful]."

> "The [blue signage] in the glass? Yeah that [signage] was great, it was really effective."

> "[The signage] was such a great concept"

High-level management in the hospital identified that communication of the prototype could have been conducted better; while emails were sent out regarding the prototype, this did not necessarily mean that they had been read or engaged with by staff. Those in management thought the prototype and approach was worthwhile; that is, they realised the value of design-led research projects such as this one.

Expert role-play

Conducted over two sessions, members of the DHW Lab and of the ADHB staff were invited to participate in an expert role-play to evaluate the complete wayfinding system (referral document, appointment letter and wayfinding install), with the aim of maximising the possibility of engagement from busy staff. Groups ranged from three to four participants, with a balance between designers and management from the ADHB (three from ADHB and four from the DHW Lab).[128] This exercise followed the same structure as the current-state role-play in terms of received material, route followed and discussion and critique after the fact. Unlike the previous session, all experts left from parking lot B, staggered at three-minute intervals.

It was universally agreed by experts that the pre-visit artefacts looked too similar to each other, and needed better hierarchy and differentiation (Figure 144). The importance of remembering the appointment letter when visiting was highlighted and questions arose from design experts regarding how to communicate and encourage health seekers to remember bringing them (Figure 145).

All experts identified the environmental prototype in Starship (while large) as fading into the existing visual noise. For the prototype to be effective, it was agreed that it had to be developed on an even larger scale, alongside the

128. A Starship project manager, psychiatrist, improvement specialist, an architect and communication and product designers were participants.
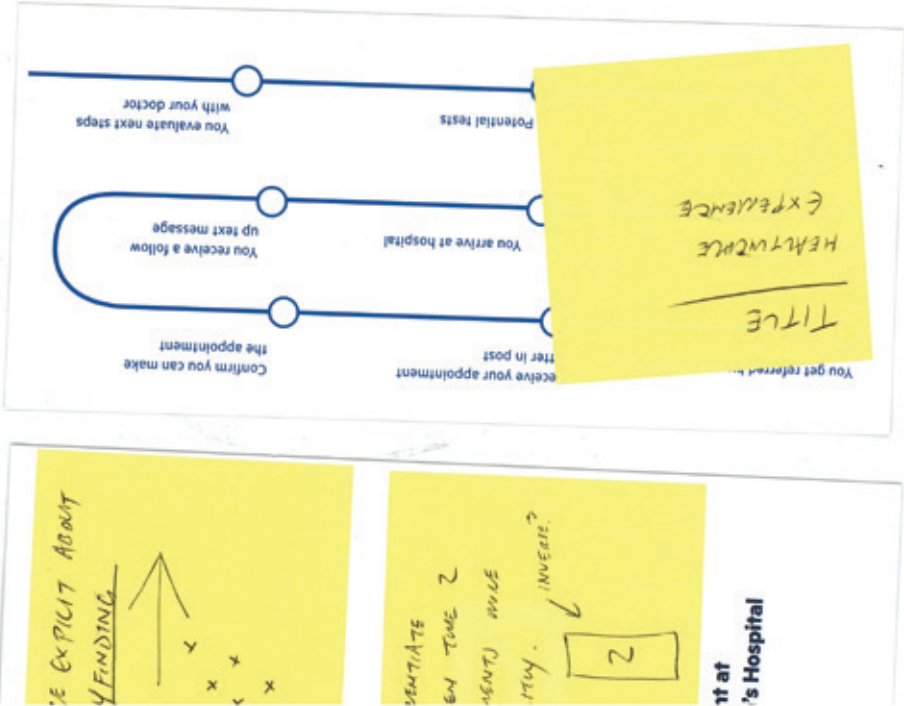
Figure 144. (2015). Expert role play artefact notes.

Critiquing the appointment letter and health preparation document revealed separate uses (navigating to the appointment and navigating the health seeking experience). Yet, it was unclear which document needed to be used first, or whether they needed to be used simultaneously.

Figure 145. (2015). Expert role play artefact notes.

Making the appointment letter artefacts complimentary to one another was explored in a package using complex folds and graphic cues that indicated the pair of documents (design expert). In particular, specifically stating "bring me with you" was added to the document, because failing to do so rendered the purpose of the artefact void.

removal of inconsistent signage and unnecessary visual clutter (i.e., posters, art at key wayfinding points, etc). With regards to the wayfinding journey, experts discussed the relationship between the letter and space in terms of the pixel-like style used. Reading of the visual relationship between the two mediums was successful, however, for maximum impact, they need to be more explicit (psychiatrist and designer experts). For example, using the same symbol on the appointment letter that is in the physical space, rather than using the same style; a suggestion was made to use the pixel arrow on the appointment letter to indicate this relationship more explicitly.

Colloquial language, intended for a more approachable feel, created ambiguity of how some of the documents and sections are intended for use (Figure 146). It was recommended by an expert (psychiatrist) that language be as clear and explicit as possible, leaving little room for confusion (Figure 147). Another expert (Starship project manager) further emphasised this, noting the large number of outpatient health seekers who speak English as a second language and up to 40% of children seen being from Asian descent. Therefore, the more clear the English language used, the better.

By separating and prioritising information within the appointment letter, the majority of the document came across clearly; however, some refinements were nonetheless needed. The appointment place and time needed to be the focal point of the document, as this was the most important piece of information therein. However, both ADHB staff and design experts noted that the separation of information into one practical document and one addressing healthcare tended to work well.

Figure 146 artefact

Your journey through Starship:

You arrive at hospital

You check in at Outpatients reception

Your nurse takes your child's height & weight

You see the doctor

Potential tests

Evaluate next steps with your doctor

[handwritten: what we want to know from you]

Before we see you:

[handwritten: what we want to know about you before your appointment.]

Date — The clinic/specialty you're visiting

Your family name — Your child's first name

What medications is your child taking at the moment?

Has anything new been happening that we should know about?

Have you got any questions? *[handwritten: what you want to know from us.]*

Notes:

Figure 147 artefact

What, where & when:

Dear Richard and Whanau,

We're expecting you for your Orthopedics appointment with Dr. John Smith on:

Tuesday, 10 November at 1.20 pm
Starship Children's Hospital, Level 3,
Outpatient Reception

To make things a bit easier, just follow our checklist and you'll have everything you need when you arrive.

If you need some more information visit **www.starship.org**, or can't make the appointment give us a call on **0800 728 436** and we'll sort you out.

Looking forward to seeing you,

The team at Starship Outpatients.

! If your child has diarrhea, vomiting, chicken pox, or measles please contact us to reschedule your appointment.

CHECKLIST

Before you arrive:

We can make this appointment
If for any reason you can't make your appointment, please give us a call as soon as you know. From here we can reschedule the appointment to a later date.

Proof of Residency
If this is your first time visiting us as a patient, we'll need proof you're a New Zealand Resident. Either through a passport, or birth certificate.

Unfortunately if you aren't a resident, or don't show proof you will be charged for your appointment.

Feel free to write add your own checklist here

Planning your travel:

Please be aware when planning appointments can last up to 3 hours, and always try to be at least 15 minutes early for your appointment.

Public Transport

Bus 283 and the Inner Link leave regularly from Britomart. For more see **maxx.co.nz**

Train The Western line stops at Grafton, a 500m walk to the hospital or buses outside the station go via the hospital regularly.

Driving

Drop off The Starship zone for drop offs are found straight through the main entrance on the left, see the map for more information.

Parking Coming from Car park B is the best way to get to Starship. Peak times are 10am-2pm where the car park is often full. Here you may have to find a park off campus so be careful to allow extra time. Thank you for understanding, we're working hard to free up parking in the future.

Parking on campus is $5 an hour.

Taxi Stand If you need a taxi, we have a free phone in the Park Road entrance to the Main Hospital building, just after the escalator. You'll find the Taxi Stand just outside this entrance, see the map for further details.

Figure 146. (2015). *Expert role play artefact notes.*

Each heading was advised to be direct and concise and to explain how the document is intended to be used rather than alluding to it.

Figure 147. (2015). *Expert role play artefact notes.*

Being clear and direct extended to the interaction elements of the artefact, as there was confusion around the use of the checklist (some did not realise it was a checklist, for example). Adding suggestions for tasks in the checklist was recommended (psychologist), as this provides health seekers with instruction on how it is meant to be used, and serves as a prompt for future planning.

Using the dark and light blue colours in the environment install and appointment letter elicited conflicting responses from experts (staff and designers). Some were confused by the different colours – dark used primarily in pre-visit artefacts, while light blue was applied for the wayfinding prototype; others were able to recognise the relationship between the two.

Despite designing within the restraints of the official route to the Outpatient Department, the wayfinding journey was still found to be overly complex. Corridors and entranceways continued to have a backdoor feel, despite the brightening of entranceways with environmental graphics. Within the environmental prototype, identifiers on each floor proved helpful, especially when entering the Starship main entrance. The psychiatrist and designers found that the campus map on the appointment letter proved helpful in having spatial awareness of hospital buildings, especially when a person did not approach the building from the recommended entrance (Figure 148). Designing wayfinding around a shallow space and line of sight proved effective, as it drew experts around corners toward the destination.

Experts from the ADHB noted that while the prototyped letter redesign was better than what is currently available, it did not accommodate for patients who have more than one appointment in a given day. Additionally, discussions around the cost of such a design was estimated to be expensive and highly unlikely, due to the tradition within public health – doing more with less – and in particular, a reluctance to pamper health seekers.

Figure 148. (2015). Expert role play artefact notes.

When coming from the recommended parking lot, the orientation of the map was found to be confusing, as it was north facing, meaning it had to be rotated. Further, the hierarchy and type size of the map needed improvement for immediate reading.

8. Final design evaluation and reflection

Pre-visit artefacts

The referral document is custom-sized, due to standardised information that needs to be mass-produced for Outpatient Department. The nature of this document focused on reassuring health seekers and easing potential anxiety at the beginning of their journey with the Starship Outpatient Department, especially if they have had little contact with the health system and as such, have little knowledge of its processes. The success of this artefact depends on participation and engagement from GPs; however, this was not explored nor within the scope of the project, due to focusing on health seekers. The document provides transparency in the referral process and a timeframe for letter arrival, with a point of contact for any queries. This opens up a dialogue between the health seeker and the hospital, as this is the point in the service where the most uncertainty exists regarding what happens next (excluding health-related outcomes).

The appointment letter is presented in two parts: essential information pertaining to wayfinding to the appointment and information and prompts related to consultation preparation and recording is included. A standardised A4 design is used, following the familiar pamphlet style used for health information presented in the Outpatient Department. The health seeker's name and address are on the front of the first document, fitted within the currently used windowed envelopes. This proposed format does not fit the current systems in place for the rest of the hospital, and

is specialised to outpatient department requirements, e.g., to include information about recommended parking, patient journey for accessing the service, etc. Instructions are clear and explicit in both documents and describe how checklists and information in different sections can be used, with prompts where these have been deemed helpful.
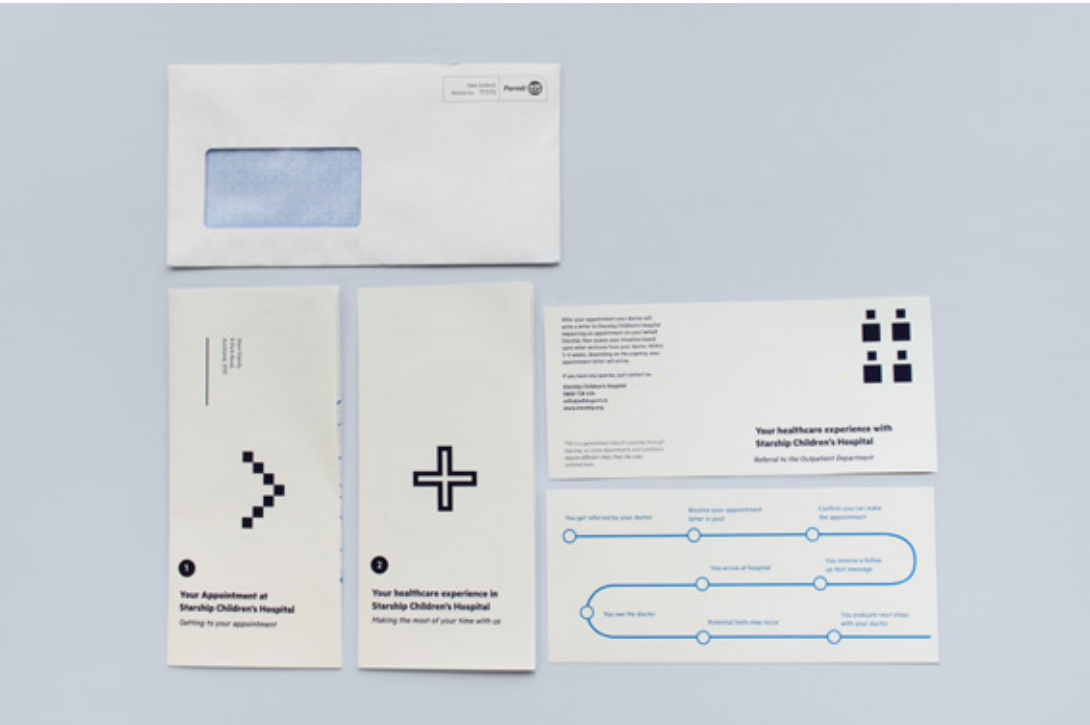
Figure 149. (2016). *Referral document, final.*

The colour palette is simple and consistent with the established visual style. Rather than the previous arrow, a people icon was used relating to the fact this was a guiding through experience artefact, rather than navigating through space. The document explicitly states what it is to be used for, "Your healthcare experience with Starship Children's Hospital: Referral to the Outpatient Department".

Figure 150. (2016). Appointment package, final.

The pamphlet format is a familiar way to present information. The columns this format creates allows for clear separation of information cues, allowing efficient readability. Key information for visiting health seekers, such as poor health prior to the appointment and maximum waiting times are highlighted in red to emphasise their importance. The separate appointment documents, wayfinding through space and wayfinding through the health experience, are numbered, communicating which one to use first, i.e., you must reach the hospital first in order to receive care.

The arrow on the appointment letter relates to spatial cue one in Starship. The site map is oriented to face the building once coming from the recommended parking lot, yet still provides context to the site as a whole due to labelling if approaching from another entrance.

The appointment document clearly states when and where it should be completed. It is not mandatory, but rather suggestive, i.e., "Making the most of your time with us". The written instructions for what is to follow after the appointment, i.e., directions to the pharmacy or Starship Information Service, support the immediate aftermath of the experience.

The Environment

Wayfinding ranges from including large, immersive cues to explicit explanatory signage. Taking advantage of a range of surfaces, e.g., windows, walls and floors, this was designed within the restraints and complexities of the architecture of the space. The cues direct only to the Outpatient Department, as this is a high traffic destination within Starship. Visual noise and non-wayfinding cues were stripped out along the journey to ensure a larger impact, and the environment reflected the needs of health seekers in the particular context, directing them toward receiving care. Only one route was highlighted to enforce the entrance landmark via a large scale concept. The various uses of material and forms were not fully explored due to prototyping restraints, as well as a preferred focus on how information is communicated as opposed to how communication is impacted on by materials and the prototype install.

The design solutions did not include Starship or ADHB branding due to the emphasis on a bottom-up approach. The aesthetic approach of the prototypes presented were used to test and exemplify the importance of a consistent holistic visual system, a system that, due to current-state documents and wayfinding taking a top-down systems approach, was not present. The purpose of this exploration and testing was to establish the benefits of a bottom-up wayfinding solution and to later explore its feasibility and integration within a campus-wide system.

Calori and Vanden-Eynden (2015) discuss approaches to integrating wayfinding into the environment using harmonious or imposition strategies, where the established environment is complimented, creating a seamless transition or a separate and independent identity.

As wayfinding guidelines for the ADHB were not drafted until the prototype had been installed in Starship, it was not consistent with the typeface, colour, signage or alternative cues proposed in the document.

Figure 151. (2016). Environmental wayfinding, final.

The simplified arrow was employed large scale and repetitively placed to guide wayfinders through the recommended path. Taking cues off the gridded windows, wall tiles, and floor, the shape was repeated in alternate places throughout the journey. The arrow shape relates to the pre-visit artefact's, yet the pixel icons created are not employed for wayfindng, due to their limited readability as a wayfinding, rather than placemaking element.

Presenting the final in situs, the images are considerably edited to ensure maximum impact of the prototype. The final wayfinding images are not for prototype approval, rather displaying the impact of cohesive information and a 'future state' as a point of reference. For example, removing ad hoc signage, making flooring consistent, and increasing lighting. Managing scale of the wayfinding solution was discarded as this concept would not be implemented.

The presentation of clear, clean environments communicates how impactful large scale wayfinding has the potential to be, when environmental designs are not competing with other dominant visual elements.

Wayfinding guide

The wayfinding guide ensures the knowledge gained from prototype testing could be of value in future projects within the ADHB, and other healthcare organisations. This was not a brand guide, rather a series of prompts to engage the viewer into thinking about wayfinding, health seeking, and outpatient services through the lens of the user. Outlining the overarching approach, the guide steadily gets more specific, discussing core principles and themes behind the design solutions, and using these as examples. The examples given discuss the overarching decision-making behind designs, and aim to stimulate thinking of what the hospital staff member or design could apply to their own work. For example, considering the importance of presenting information in hierarchies using spacing, paragraphs etc., and creating an information framework for the service to ensure consistency.

Once summarising themes, the guide ends with achievable actions for an outpatient department, as a prompt and starting point for bettering their service in terms of communication and information. The guide was designed just under A5, to allow for full bleed imagery and trim. This was due to later being on display in the DHW Lab, where others may browse it (during the tours of the studio that occur regularly). However, when designing consideration for on-screen viewing was considered, thus the spreads create a landscape view for this purpose.

Figure 152. (2016). Wayfinding guide mock up.

Using the same visual style as the wayfinding solution, the guide compliments the examples within it. With the information presented, paragraphs are kept concise, with call outs to draw the viewer in when scanning through the document. Thus, the viewer may read only what is relevant to their needs and interests. Infographics are employed to display abstract information, such as principles, journeys and information frameworks. To signify the chapter is ending, distinct section markers are employed, for quick scanning of the document and highlighting key themes with the naming of each.

Figure 153. (2015). *Starship Outpatient prototype film, whole wayfinding solution*.

https://vimeo.com/145315050

As the environmental prototype was installed for a short period of time, the entire wayfinding journey using all design solutions was documented. This film communicates how they compliment each other, and work from start to finish (or in this case, ending at the department entrance) in the health seeking journey.

However, the focus of the film is to demonstrate the extent of the environmental prototype and experience map of the design solutions, rather than communicate final outputs.

Discussion

Wayfinding & health seeking

Within a hospital setting, a huge variety of cultures, classes and emotional states come together and as such, the environment must support all those who enter it. Healthcare has a strong bias toward the use of quantitative data for measurements of success (Jones, 2013). In contrast, design favours a more open, explorative and generative approach to the collection and use of data, and focuses on the qualities of the human experience (Swann, 2002; IDEO, 2015). Within design and health there exists a disciplinary gap, as health professionals often lack the appropriate skills for executing an impactful design solution, or designers lack knowledge about the complicated and high demands of the health context. Acknowledging the complexities of healthcare, Norman (2002) states: "This is what makes design such a challenging and rewarding discipline: it grapples with the need to accommodate apparently conflicting requirements" (p. xiii).

While wayfinding is a multi-disciplinary field, a communication design approach is taken in this study, with particular attention being paid to preparation for the health seeking journey. This contrasts with traditional wayfinding approaches, where the environment is generally the focal point of the output (Berger, 2012; Mollerup, 2013). The majority of supportive design literature focuses on the inpatient rather than outpatient experience, where a significant portion of the encounter with healthcare takes place beyond the campus site. Due to an aging population and growing pressure on healthcare resources, clinics are increasingly turning to outpatient treatment (Panozzo, 2016).

Furthermore, as instances of chronic conditions are on the rise, research indicates that health seekers who receive quality care, self-management support and regular check-ups have improved wellbeing (WHO, 2002).

Clear and direct communication can ease stress and anxiety, and create trust (Kidd, 2015; Nelson-Schulman, 1984). As communication design is non-medium specific, a holistic multi-faceted outcome was created via the present design-led research, offering support prior to, during and following the outpatient experience. Through this practice-led research project, a better understanding of the physical and emotional aspects of the wayfinding and health seeking journey was necessary in order to better support the experience through design. The aim of designs was to enable health seeker empowerment through transparency of choices, both in terms of navigation and the health seeking experience. However, testing and implementing the holistic solution with health seekers will be a future aim beyond the scope of this project.

Wayfinding within healthcare goes beyond simply navigating through an environment. This is due to the historical bias for designing systems, processes and environments around the efficiency of staff, with the result being that the hospital is both structurally and mentally difficult to navigate (Carr, 2011; Jones, 2013; Rooke, Tzortzopoulos, Koskela & Rooke, 2009). Viewing the whole person beyond a diagnosis is a rising trend; patient-centred care is beginning to change healthcare's approaches to services, environments and experiences (Golembiewski, 2015). A holistic approach considers external factors of health and wellbeing, for example, the stress and anxiety of navigating the complexities inherent in the healthcare system.

Thus, when designing communication that practices empathy, it must encompass the breadth of health seeker experiences, from an initial introduction to the healthcare system, to leaving the consultation and beyond. Such communication reflects the health-seeking journey and the tasks therein; for example, this may be an abstract goal (achieving wellbeing), or a more detailed one (advising about peak times within the parking building).

Acknowledging that seeking health is an ongoing journey, health seekers should be prepared and guided through the hospital encounter and beyond, with the intent to encourage engagement and to support learning about one's health. Within this research, an opportunity was identified within the appointment letter for dialogue between outpatients and health seekers. Rather than dictatorial instructions, the letter provides points of contact and information at each stage of the health seeking wayfinding journey (e.g., travel options, campus map), as well as prompts for active participation in care (questions and updates concerning health). By focusing on preparation and anticipating the needs of the health seeker, the artefacts intend to place these individuals at an advantage for experiencing the full benefits of the clinician's time and the health resources on offer by Starship Children's Health.

When seeking care, it is common for young and old individuals to bring supporters to appointments with them. The appointment letter that was designed in this research attempted to foster a more effective patient-supporter role and relationship, as wellbeing affects the entire family. Due to ethical and time constraints, the patients (children) in this case were not participants in the research. The group comprising

20-40-year-olds is often overlooked in the context of environments that support this type of relationship (DiNardo, 2015). In this regard, the current study provided further areas for research to explore, and potentially adds additional value to this area of research.

Being transparent about processes and journeys was found to be vital to the wayfinding experience, with studies proving that clear communication eases emotional and physical manifestations of stress and anxiety within healthcare contexts (Nelson-Schulman, 1984). Being open in terms of choices, system complexities and shortcomings included in the experience and journey means that health seekers have the ability to become more autonomous within this process. Advanced knowledge empowers and prepares, and as such, can result in less demands being placed on staff time.[129] This study found that these inadequacies were often observed among staff and visitors to the Outpatient Department. Furthermore, regular visits (in the context of, e.g., finding parking) were a source of stress, frustration and anger among newcomers to the department.

Within healthcare, cost is a considerable factor, which traditionally means doing more with less, thus it is difficult for the system to change due to the cost and risk involved (Gressel & Hilands, 2008; Jones, 2013). However, good first impressions during an experience often encourage forgiveness for later shortcomings and higher perceptions of quality in terms of care (Arneill & Devlin, 2002). Health seekers have more

129. As noted by Nelson-Schulman (1984), when provided with information about experiences, patients made less demands on staff time, and proved to be more self-sufficient.

opportunities for independence in their wayfinding journey through effective and relevant communication, which means fewer demands are made on staff time (Nelson-Schulman, 1984; Mollerup, 2013). Due to a lack of information regarding parking difficulties at the Grafton campus, little engagement with the appointment letter and poor wayfinding support for finding the high-in-demand Outpatient Department, it was found that considerable time was being wasted through missed, late and rescheduled appointments. Thus, through improved wayfinding costs could be saved.

Clear and direct communication has connotations of trust; however, if communication is unclear when the need for understanding is imperative to a specific context, it can have negative consequences (Kidd, 2015). Focus on communication and understanding means that the principles behind decision-making are removed from the designer and relegated to those most impacted by the outcome, i.e., the end-user. The actions, emotions and information provided to health seekers were documented throughout the experience; these elements guided the priorities of the designed outcomes. Thus, during times of uncertainty, information was staggered across points in the journey and overviews of the entire experience assisted in providing direction through the health-seeking experience (e.g., referral, waiting before an appointment).

Placemaking using environmental graphic design provides an opportunity for communicating a sense of location, identity and consistency in relation to the space and service (SEGD, 2015; Figure 154). Consistent communication provides similar cues, making it efficient at recognising relationships across different platforms and indicating what is relevant to the viewer (IAI, 2013).
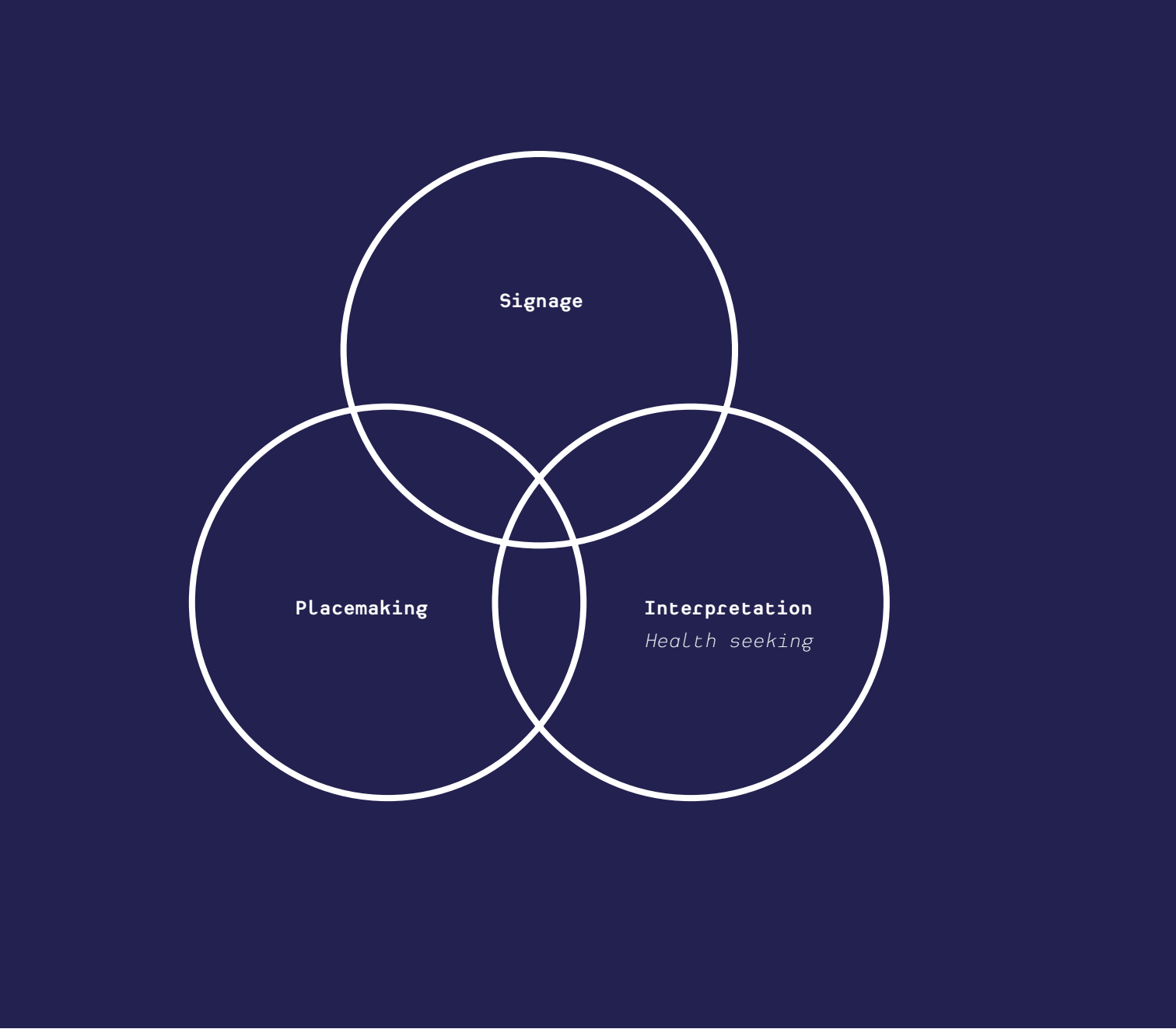
Figure 154. Calori & Vanden-Eynden, *The three main components of EGD & how they can overlap (edited).*

Due to the complexities and broad emotional spectrum of healthcare, the interpretation aspect in more than a subtle or clever nod to healthcare. Rather, health seeking is an integral part of the experience and sense of place within the hospital.

In situations where various mediums of communication occur across a significant amount of time (i.e., up to three months), cohesive information and design cues across solutions are vital. Due to multiple ad hoc visual cues, and lack of an established, flexible wayfinding system, a visual system was created for this project. Whilst it was not implementable, it served as an exemplar of a consistent communication system of various mediums. However, this consistency was difficult to test, due to it being an isolated prototype within a visually domineering pre-established environment.

What looks good generally makes us feel good; aesthetically pleasing designs connect with emotions, thus aiding the decision-making processes (Norman, 2004). The importance of aesthetically pleasing solutions is emphasised, for example, by utilising white space, colour, placement, hierarchy and stylised icons. Whilst a large amount of content is managed, the refinement and iteration of the design and information structure should be built in tandem at later stages. This ensures each aspect (presentation and information) communicate in cohesion.

The success of a wayfinding project is measured in its sustainability, both financially and visually (i.e., as the building changes, wayfinding adapts) (Calori & Vandeen-Eynden, 2015; Gibson 2012). For ensuring a sustainable wayfinding system that will be consistent beyond implementation, a master plan or guide is used as a proactive measure (Calori & Vandeen-Eynden, 2015). To reapply the approach from this bottom-up process to outpatient wayfinding in this research, a concise wayfinding guide was designed. Aimed at both designers and health professionals, its intent was to demonstrate the value of collaboration between both parties, as well as the intricacies of the outpatient journey in healthcare.

Design & healthcare

Acknowledging the above intricacies within healthcare innovation, the human-centred design process embraces users, complexity and empathy, as restraints within the process are adhered to. This approach favours working from the ground up, from establishing the problem to building a solution, and continually questioning assumed understandings (Laurel 2003; Swann, 2002). When reflecting on the outpatient department student research projects, Starship's general manager stated:

> [Our] work with…students [has] made me really reflect on how much healthcare speak and medical-speak we use. It's been…good having students ask [very] practical and sensible questions. The 'well, why do you do it this way?' or 'why would you send a letter like that to a patient?' [types of questions made me really think about]how we communicate…a permanent artefact, [that is], as something that has meaning beyond [attending] an appointment. These things seem really simple now, but haven't necessarily been part of our thinking previously" (Maddren, 2015 December 10).

Boyer and Cook (2010) further state:

> Healthcare is one of the most challenging areas [in which to] innovate; this is due to assuming [that] the status quo is a deliberate decision rather than a series of contingency plans that have become standard practice. [While some] areas of health are extensively researched, others have barely [seen any changes] for decades" (p. 5).

Exploring different states of design feasibility was vital to creating an understanding of the outpatient department context and for exploring the enthusiasm for solutions on the part of staff working in and with these areas. This staff engagement contributed to understanding the external influences of wayfinding and where a communication design solution may contribute positively to an environment. Many problems identified through the research stemmed from the path to the Outpatient Department being complex, and situated within a busy un-curated visual environment. Establishing an ideal scenario within external parameters, for example, working within the given structure, route and visual noise, concepts could later be iterated in order to create a more feasible solution. However, it was later found that despite considering the visual noise in the wayfinding solution, it nonetheless remained too domineering within the space.

As this was the beginning of collaboration with an organisation that were unfamiliar with the potentials of design, the design solutions from this research began as *provoking*, however grew to *engaging* (Figure 155). Due to the constraints of working within a traditional, hierarchal organisation, it was not possible to apply a participatory design approach without first gaining the trust and partnership of staff and decision-makers within the hospital. This was especially challenging, as it was the first collaboration of this nature with Starship Children's Hospital.

Silvis (June, 2013) notes the role stakeholders have within wayfinding projects, and states that wayfinding should begin with staff, as they are a significant component in the roll-out of a system, and therefore need
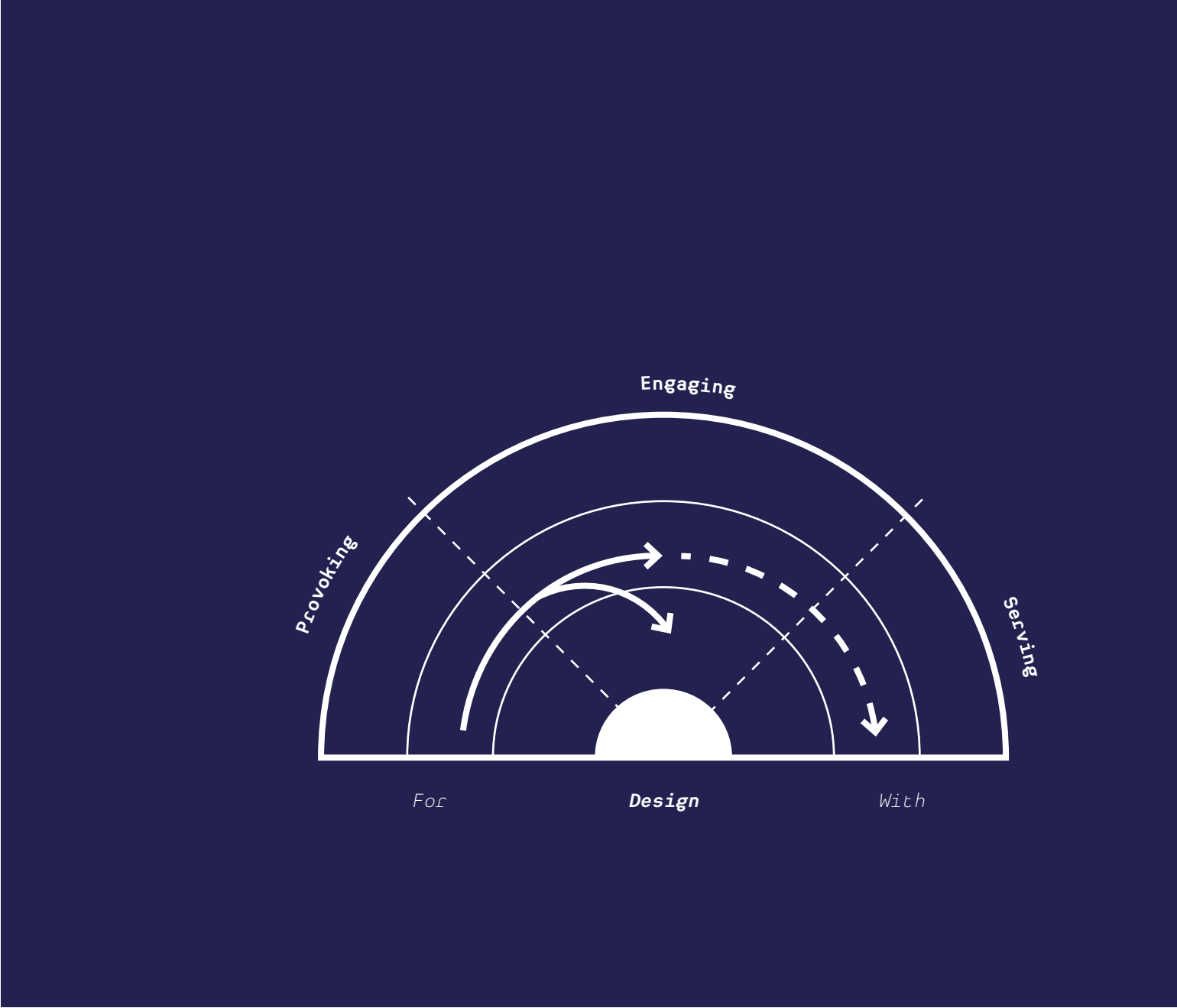
Figure 155. Sanders & Stappers (2014) *movements of design across time scales (edited).*

to understand it fully. Furthermore, those who are most familiar with a problem often do not have the time to fix it (Boyer & Cook, 2010). Due to the emerging relationship between Starship and the DHW Lab, the engagement in this research was mostly expert-driven (Figure 156).

In an external action research project, the researcher can provide an alternative point of view to an organisation that may be difficult to observe from within (Gray, 2009). However, when working alongside an organisation, the extent and nature of collaboration can vary (Gray, 2009). The current collaboration explored the desire for design-led solutions via the feasibility and restraints of a design project within a hospital environment. The more collaborative aspects with stakeholders did not emerge until the later stages of the project, as it took time for relationships and trust to be built and developed.

In this project, the majority of research was conducted from an external action researcher's perspective; however, elements of the internal researcher perspective also occurred. This was due to the partnership of the project with the Auckland DHB and by working part-time within the DHW Lab.[130]

130. While the DHW Lab is within Auckland City Hospital, it is external to the organisation in terms of process. The lab is internally located, inside the main building.
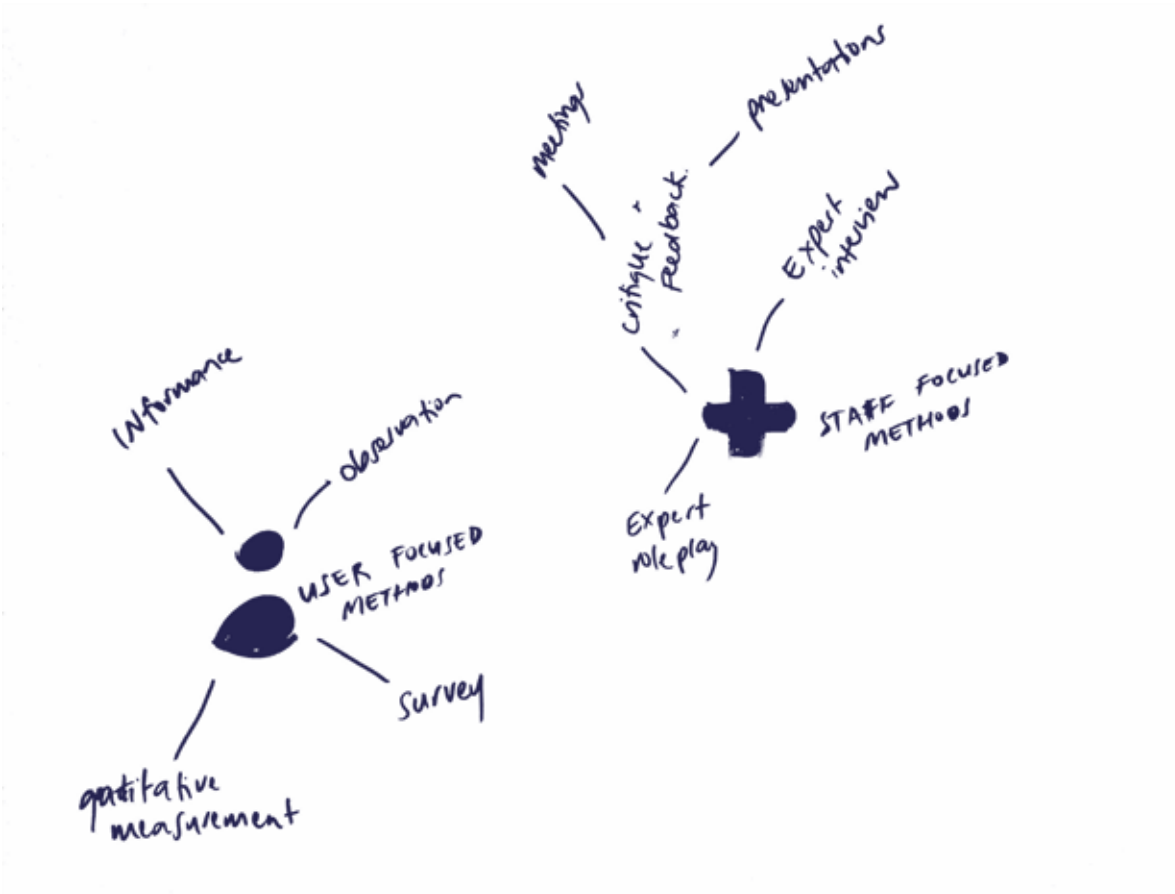
Figure 156. (2015). *Health seeker and staff-based engagement.*

Due to a limited time frame and establishing a rapport with Starship, there was a mixture of health seeker and staff based engagement. In order to gain data and evaluation on designs, multiple methods were employed, as due to restraints a singular method could give an accurate picture. Through this approach a wider picture gained, further enhanced by users in opposite roles (i.e. patients, the receivers of care, and staff, the providers).

Consequently, research and design consultation roles often overlapped, allowing for informal observation of the organisation, for relationships to be created, and for approaches that aligned within various projects.[131]

Gray (2009) notes that while having intimate knowledge of an organisation, the internal researcher may nonetheless experience difficulties moving beyond the known sphere of involved contacts and their own role. In this research, regular discussions of informal critiques with colleagues and formal presentations to ADHB stakeholders meant that this was not a significant issue. Furthermore, this also prevented reworking areas such as the existing wayfinding prototype from parking lot B to the Starship entrance, which was installed midway through this research. However, difficulties were experienced in terms of gaining access to the participation of day-to-day staff in the Outpatient Department, as the majority of contacts were employed in managerial and non-clinical roles.

Prototyping & wayfinding

There is a currently a gap within education and industry in the context of environmental graphic design, and an increasing demand for graduates in this area (Berger, cited in Gibson, 2009, p. 29). This often occurs due to a lack of undergraduate education in the field, as wayfinding projects are complex in terms of the variety of problems they present, as well as their cross-disciplinary nature (Calori & Vanden-Eynden, 2015; Figure 157). A further contribution to this gap in knowledge may be due to the large-scale nature of many wayfinding projects, the difficulty of extending beyond conceptual designs to a physical installation in the environment alongside barriers such as time, cost and collaboration across disciplines, and external stakeholders open to public evaluation in terms of testing concepts.

Prototyping and testing design solutions ensures that design problems are solved as intended and without unintended consequences (Bierut, 2015). The prototype is used to measure the impact on experience, thus validating the design before it is implemented within the world (IDEO, 2015, p. 11).[132] When researching wayfinding, experiencing navigation in the space was crucial to building an understanding of the context, as visiting and evaluating a live environment imparts knowledge of wayfinding

131. Examples include universal translator cards incorporating the importance of information hierarchy and informing about ongoing wayfinding projects and campus guidelines; see DHW Lab in Appendix 2 (p. 524).

132. Due to working within a measurement-inclined organisation, there is a high risk of backlash if taxpayer money is spent, which can cause unforeseen negative effects, or if prototyping fails to effectively address the problem in terms of having a meaningful impact.

The client team

The City

| Starship Children's Hospital | ADHB | DHW Lab |

The building design team

| The architect |

The wayfinding, signage & implementation team

| Researcher |

| *Direct contact* | | *No contact* |

Figure 157. (2015). *Wayfinding team for this research.*

Taking cues from Gibson (2009, p. 26) project structure, this is adapted to communicate the roles of this research project. Whilst this is a small scale project in terms of wayfinding, the team shown above is the large scale diagram. This is due to being real world research, as the work was not completed in isolation, and always intended to feed and inform the larger wayfinding picture within the ADHB.

that photographs are unable to convey. Thus, prototyping wayfinding in projects such as the current research is vital, as in situ and conceptual designs are often unable to account for the full complexity or unknown phenomena outside of the camera frame.[133] However, limitations such as existing wayfinding and visual noise can render testing the effectiveness of a design difficult if not removed during the feedback period (Figure 158).

Due to the time and scope of the research, the selected methods were re-evaluated to render them more efficient, or discarded. Due to the dense visual noise in the outpatient department, I concluded that a more effective use of time was to remove visual noise through images (e.g., editing photographs and creating vectors of the space), rather than in the live environment. This simplification of the environment helped to better understand the structure of the space, and thereby informing concepts more clearly. In hindsight, more observation could have occurred in the later stages of the project as its scope expanded, and when the environmental prototype was installed. However, when using data for designs, it is often found the initial experience is the most beneifical to informing outcomes (Koskinen, et al., 2011).

Prototypes provided form to a concept that did not previously exist (Standers & Stappers, 2014) and therefore served as a communication tool from designer to stakeholder, and stakeholder to staff, whereby the tangible object could easily be talked about without the designer

133. The majority of environmental information we gain is collected by physically experiencing it (Golledge, 1992).

Message   **Channel**   Message
                Context

Information source   Transmitter   Receiver   Destination

Designer   *Artefact*   *Health seeker*   *Behaviour*
                                                              change

Noise source

Visual noise
Stress & anxiety

Figure 158. (n.d.). *Shannon-weaver model of communication (edited).*

Adapting the communication model to the spatial environment of this research, it demonstrates the disruption of visually dense spaces, and external factors such as negative emotions. Aiming to change behavior is beyond the health seeker actions in the broad spectrum of this research approach, but beginning to change behaviors and traditional mindsets of staff providing the communication itself.

being present (paper-based rather than environmental prototypes). In this way, the different approach to problem-solving and outcomes that the research employed can be exposed to others, thus helping to prompt staff consider information beyond what they already knew.

Serving multiples purposes, probes can be used to inspire designs, gain data, participation and dialogue (Atkinson et al., 2014). Surveys (both health seeker and staff directed) were found to be an ineffective method for gaining data to validate designs, due to low participation and lacking insight into decision-making. Intercept interviews may prove a better alternative, due to being anonymous and having less demand on health seekers' time. Due to the timeframe and ethical restraints of the research, the use of expert role-plays was a helpful method for interim evaluation of designs, as well as for gaining staff engagement. However, future testing with health seekers simulating the up to three-month Starship Outpatient journey with proposed designs will provide deeper insights into their experience, the usability of design solutions and further possibilities.

Phases of the research often worked in tandem, iterating past processes as the problem was revisited (Swann, 2002). Koskinen et al. (2011, p. 76) discuss analysis as concept generation for designers, where data is used to inform design opportunities rather than theoretical concepts. Within this research, continual analysis, generation of ideas, evaluation and iteration developed deeper understanding of the context, and informed more critical design solutions.

Jones (2013) notes that the healthcare institution has a strong historical bias toward statistical evidence, but in spite of this, "The human half of the picture is the underlying foundation for creativity" (Young, 2015, p. 4). Due to the extreme emotional spectrum's found when encountering healthcare, a more considered, and empathetic approach must be taken. Design solutions should not only address the physical need, such as wayfinding to the department, but the stress, anxiety and concerns that arise when seeking wellbeing.

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Appendix 1
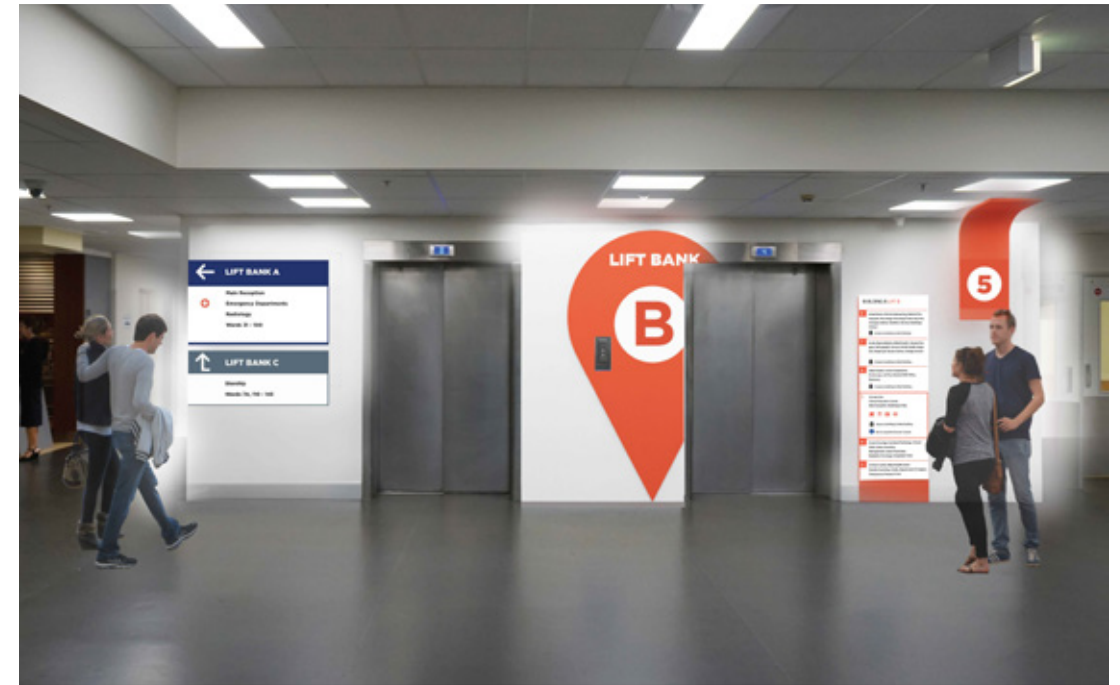
Figure 159. DHW Lab. (2015). Rosella wayfinding solution.

The proposal focused on the Level 5 entrance to emergency and Starship, identified as one of the more difficult yet regularly made routes. Using large graphics, and colour coding buildings were created as 'zones', making it clear when a wayfinder is exiting one space and entering another. Information is staggered, only giving enough information to reach the next point, i.e. lift bank, level number, direction to the department.

Wayfinding

An exploration into the Auckland City Hospital wayfinding system to create an intuitive and accessible wayfinding experience.

Contents

People will always need to know how to reach their destination, where they are, what is happening there, and how to exit. Great wayfinding systems employ explicit signs and information as well as implicit symbols and landmarks that together communicate with accuracy and immediacy.

16.12.2014
Berger, C. M. (2009). Wayfinding: designing and implementing graphic
navigational systems. pp. 86.

Developing a health-care wayfinding program often looks more like planning and research project rather than a design project.

Scope

Defining the brief, and analysing what
wayfinding is currently within the space.
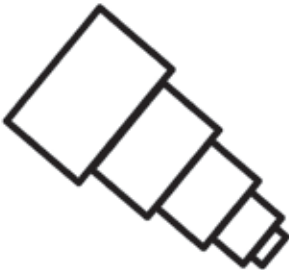
Being able to identify what I need from way-finding quickly to meet my specific needs as a member of staff, the public or as a patient.

The Brief

To create a standardised visual wayfinding system and maps for Auckland City Hospital. Using a human centered design approach, it hopes to accurately address the needs of staff, patients and visitors within the space.

Not a lot.

Whats working

There are a form of signs in place.

A strict branding guideline is followed

The space & its design is uninviting, static, overly formal, sterile and dull.

Whats not working

Hierarchy—
Everything has a visual 'sameness' for such a large space with a mass variety of needs. E.g. in type, colour, placement and categories.

Different spaces will need different hierarchies according to needs and who primarily frequents the space. E.g. Staff spaces vs. Public spaces.

There is no definite main entrance – this can be signified through being the hub of wayfinding.

Type—
Perhaps a bolder sans-serif, and a mix of serif and sans – this will aid in character, feeling and personality contrasting what is now a sterile and unwelcoming aesthetic.

Perhaps using a New Zealand typeface e.g. Chris Sausbury?

Colour—
A dark metallic grey and navy blue are used currently. This offers little contrast and difficult readability under harsh lights as they glare on the surface.

More vibrant and approachable contrast is needed, to create a welcoming impression to viewers. Rather than metal, reference the hospitals culture, identity and heritage.

Perhaps using colour, a visual signifier for each floor could be formed?

Image—
Currently verbal language takes large priority and icons are there to weakly support the text. There needs to be an even balance between strong and concise verbal and visual language.

A more visual approach caters to the mentally disabled, children, and aids intuition when wayfinding.

Language—
The language used in wayfinding is either overly vague e.g. way-out – what specific way out? Or jargon/overly formal e.g. lift bank, transition lounge.

A very numerical approach is taken in identifying levels and wards – when trying to find a place it makes it difficult and stressful to remember exactly what floor/ward to go. A visual signifier for each floor would aid this in reaffirming being in the correct place, and remembering where to go e.g. the red floor.

The User—
The wayfinding that is currently in place is for able-bodied people. The signs are high on the ceiling making it difficult for those of short stature, in a wheel chair, elderly etc to have ease of visibility to the signage.

In the main entrance there is a visual hierarchy for new life e.g. maternity in an aging population.

Hospital Culture

Health reform priority—
Around the hospital there is more emphasis upon quitting smoking for example, than helping one find their way. This reflects the concerns of staff for encouraging healthy habits in patients and visitors.

Maori heritage in the land—
There is a unrecognised, or very much under-regonised Maori culture within the hospital e.g. Maori stone in the level 5 over bridge hidden within the corner. More emphasis on this could further develop a welcoming atmosphere and promote the hospital's unique culture, embracing the concept of the hospital as a mini-city.

Owning it—
Developing the hospitals culture, treating it as a city within itself rather than an institution, hotel, airport and mall could create an environment that has a more welcoming and genuine atmosphere rather than the current sterile utilitarian feel. Therefore helping those coming through the doors feel at ease during a stressful time.
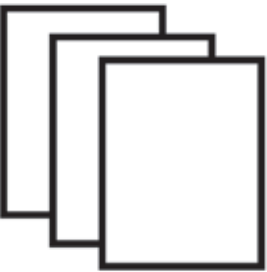
Research

Gaining insight into alternative wayfinding, and what others are using to solve navigation within interiors.

No matter where you are, you can find the right information to find your way, or the right tools to access it.

Accessible Information

Identifiable spaces—

Landmarks—

Visual signifiers—

Digital and/or print—

Artefact and/or built in—

Wayfinding Communication

Orientation—

'You are here' maps. Situating where you are in relation to the surrounding environment. Shows priority facilities.

Directional—

Shows clear routes to clinical areas on the floor, toilets, lifts, exits, cafe etc. The signage gives signifier to the main route on the level.

Identification—

Entry/exit of each building or level, an identification clearly of what is there.

Sign types—

This gets broken into orientation (directories), and directional.

Paths

Move along whilst traveling.

Edges

Edges of the space e.g. walls, doorways, entrances.

Districts

Sections with identifying characteristics.

Nodes

A point of extra focus, strategic focus or a concentration of features.

Landmarks

Physical objects that can be used as a reference point.

Plan of Attack

Audit existing wayfinding system—
Conduct a survey, interview or feedback box to gain insight from staff, visitors and patients.

Identify wayfinding problems—
Go through findings, and pin point main problem areas. What are the areas of most distress and concern?

Produce wayfinding business case—
Compile current insights, information and design sketches.

Contact appropriate people and companies—
Collaborate with others from varying disciplines, and select members of staff/ public.

Develop strategy for improving wayfinding system—
Identify core values, and principles for the system to adhere to.

Discuss problems and develop solutions—
Find the issues, 'break the grid'.

Implement solutions—
Warm the public a change in wayfinding is coming.

Evaluate and refine solutions—
Refine where needed after consulting with users, and other specialists.

Maintain wayfinding solutions—
Provide branding guidelines for the system, and regular maintenance. Make sure all is consistent.

Estates, N. (2005). Wayfinding: Effective Wayfinding and Signing Systems; Guidance for Healthcare Facilities: Stationery Office.

Gibson, D. (2012). The wayfinding handbook: information design for public places. pp. 118-9.

Kiosks represent an exciting opportunity to communicate with diverse communities in multiple languages by providing tailored wayfinding instructions.

'When it comes to signage and wayfinding,' says Martin Burri, 'sustainability in the long term is more important than the system in its initial iteration. The life-cycle cost of the system should be built into its initial purchase.'

Assumptions

A collection of assumptions, and
capturing the beginners way faring
perspective and experience.

A test within level 5:

Entrance to main reception

Spacial Visual Signifiers

ENTRANCE

Paths—
Very wide traveling berth, tiled.

Edges—
Large windows to the left, beige walls to the right and lino wood walls ahead. Wall to the right lined with seating.

Districts—
Reception area, waiting area, traveling area, elevator area. Volunteer area, staff area and public area.

Nodes—
Reception desk, elevator bank and chairs

Landmarks—
Plant boxes to the left, large windows, massive pillar in the center of the path, the reception desk.

FOOD AREA

Paths—
Still wide yet narrows slightly from the entrance. There is constant traffic, with 90° corners. Wood-like vinyl on floors.

Edges—
Retail and food outlets

Districts—
Convenience stores, gift wares and food and beverage. Also a 'main road' of sorts.

Nodes—
The specific stores e.g. Planet Express,
Take Note, Muffin Break, Subway etc.
MAIN RECEPTION AREA

Paths—
Very wide berth, carpeted.

Edges—
Large windows and lined with seating

Districts—
Reception and waiting lounge

Nodes—
Reception, waiting area, the cashier,
way out to level 4 exit

Landmarks—
The view, very bright, information wall

A beginners outlook:
I found I was constantly
questioning, am I in the
right place?

Finding A+E

Wayfinding queues—
Slightly disorientating, and at times
very unsure if I was on the right route.
The atmosphere of the hospital is very
rushed, and within the unfamiliar
environment, found to be stressful and
anxious.

Illogical, and dull signs on the lifts had
me pressing the wrong buttons (twice
before I realised it was incorrect).

The sound cues on the lift were very fast
and short with doors closing quickly.
For a slow moving persons, e.g. elderly,
disabled, vision impaired and the sick it
would be quite intimidating and perhaps
take more than 1 lift try to get into it, i.e.
having to push the button again as did
not move fast enough.

Coming from inside the building it was
not made clear what the blue line lead
to – I assumed it was A+E and followed
it, however I found upon reaching the
end, it was for Starship.

The signs that stated 'way out' were not
specific to what exit, and where the exit
was in context to outside the hospital
e.g. car-parks, streets etc.

The long corridors and jumping from
level 5 to 1 to 2 seemed maze-like. The
repetitive signs reaffirmed I was heading
in the right direction yet did little to put
me at ease (there was a lack of trust).

Reassurance—
Throughout the experience at no time did I have the confidence to help another to direct their way. If the wayfinding is strong, it could ease the staffs role by making the public feel comfortable leading for example, an elderly person who is vision impaired through the space to where they need to go.

Throughout the journey I felt like a cog in the machine, and out of place in a very utilitarian environment.

Looking the part—
Throughout the hospital there were many shabby A4 or A3 printouts, long ago laminated, stuck on the doors with cello-tape aiming to communicate what they are, and who is allowed in the space. By creating a standardised, official, eye catching way it exudes confidence in the design and in the space.

Thoughts misc—
There is an emphasis on starship, rather than A+E coming internally in the building.

Helvetica is used as the standard typeface within the hospital – static, unfeeling.

Perhaps a separate typeface, or style to be used for Maori translations, giving it a bit more distinction.

Volunteer help desks – need to be more eye catching and in more prominent places?

Very dull lighting, especially on level 1.

There is a semblance of color-coding each level, however it is dull and under-utilised.

Where to now—
Ask receptionists and volunteers the most common queries relating to wayfinding.

Explore floors – where I can to familiarise myself with the space. Perhaps aim to find my way to a different location per day.

Situate self in as a wayfinding helper within a high traffic environment to experience public needs first hand.
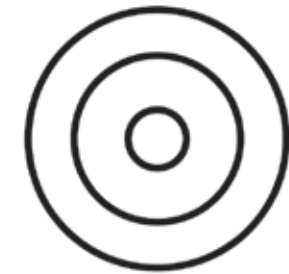
Principles

Compiling research and assumptions,
then applying these to form core design
guidelines.

To be able to walk into a space & immediately identify where you are, where you need to go and how to get there as applicable to your specific needs.

The User

Identify what is relevant to each groups needs, and what is most important to them.

Staff

New staff

—Finding way around easily

—Knowing and identifying where staff can go – clear identified separate staff areas

—Knowing where I currently am and how to reach my next destination

—Staff only places e.g. parking, cafes, cafeterias, public-free areas.

Senior staff

—Making it different yet familiar – not too much change else I may get confused.

—Accessible to someone who already knows their way around

—Maybe enlighten something I would not have previously known?

Patient

Short-term

—Accessible, straightforward and able to easily identify key areas relevant to me.

—In & out scenario

—Able to clearly identify where I am and communicate this clearly to others e.g. a visitor

—Knowledge of short term parking, taxi-stands, public transport, 24hr things, food and beverage.

Long-term

—Built upon short-term patient

—Identify where key areas are different for a long-term patient

—There is most likely a higher chance of disability – how can this be incorporated into the design?

—Second home scenario

Visitor

Short-term

—Accessible, straightforward and able to easily identify key areas relevant to me.

—Able to clearly identify where I am and communicate this clearly to others e.g. a patient or other visitor

—In & out scenario

—Waiting visitor – where can I go around the hospital/within it? How far away is it e.g. food, gifts, coffee, books.

Long-term

—Built upon short-term visitor

—Identify what key areas are different from a short term visitor

—Include the scope around the hospital in context to the city e.g. the domain, museum, motels, food, supermarket, public transport guide - how long it takes to get to places.

Initial contact

Everyone has this experience when entering the hospital.

Extended contact

This occurs when someone stays for a long duration of time e.g. other than a few visits. It applies to staff, long term patients and visitors.

This is built upon Initial contact.

Intertwined visual language of maps and wayfinding
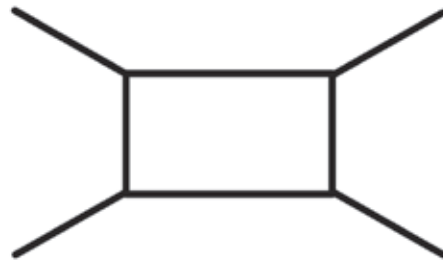
Space hierarchy distributed evenly yet effectively
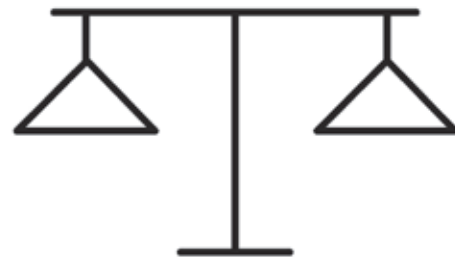
Balance of a strong, accessible visual & verbal language

Experience

Proves the part

Being able to provide the best possible experience within the hospital by providing ease and continuity in finding ones way.

Confidence

Looks the part

Finding confidence within the new space, and that you can find your way with ease. This involves trusting the space and the direction it leads you.

Stability

Stays the part

By making the space still seem familiar and understandable to those who already know their way around.

Gibson, D. (2012). The wayfinding handbook: information design for public places. pp. 118-9.

As people come to rely on the web more and more for trip planning, it is important to connect the web-based information graphics and wayfinding terminology to the actual signage on sight. This way, visitors will have a consistent experience of a place from the planning stage to arrival at the destination. As the web and on-site experiences merge and overlap, the roles of information architects and wayfinding designers blur and overlap.

Berger, C. M. (2009). Wayfinding: designing and implementing graphic navigational systems. pp. 92.

- Set appointment with doctor/ department

- Letter received by patient

- Travel to campus

- Arrive at hospital

- Follow signs to parking

- Enter parking area

- Find space

- Find elevator

- Travel to main lobby

- Receive welcome and information

- Follow information to hospital lobby

- Present destination card to help desk

- Get information or refer to information kiosk

- Follow signs to destination or to elevator and access another floor

- Walk to first destination, identified by name or number

- Receive service or treatment

- If second destination required, receive directions from receptionist

- Receive services or treatment

- Get directions back to lobby/zone of entry

- Locate exit to parking

- Walk to parking

- Travel stairs/elevator to floor

- Find car

- Follow signs to exit campus

Ideations

Using design principles and applying
these to create ideations and concepts.

Multi-Modal Approaches

DIGITAL

App—
A downloadable framework to aid in finding ones way around the hospital and key surrounding areas – most appropriate to those with Extended Contact and visual impairment.

Installation—
Accessible to the majority, installed in main entrances and high traffic crossroads. A point of reference of where one is currently at, and where to next. Digital aspects could include verbal affirmation of location, interactive (e.g. touch point a - b), or act as a tool to access more information.

This could also be in a smaller form at the entry point of each floor to give context to the environment.

Mostly aimed for Initial Contact, with opportunity to place Extended Contact information when seeking.

PRINT

Artefact—
A take-away printed document perhaps in 2 forms, one for the Initial Contact to hold on to as a point of reference when navigating about the space. The Extended Contact to add culture, heritage and need-to-know aspects of the hospital and the things that surround it. This would be especially helpful for

Installed maps showcased within main entrance points. These merge the patient & visitor maps with initial contact priority.

those who are not from Auckland and are here for an extended period of time.

Installation—
A static print-based installation in main entrances and crossroads. Differing from the digital installation it is more accessible and approachable especially to those not comfortable with digital technology.

This could also be in a smaller form at the entry point of each floor to give context to the environment.

Mostly aimed for Initial Contact, with opportunity to place Extended Contact information when seeking.

Platforms of
Communication

Texture

Sound bites

Print based
artefact

Mobile
technology

Digital kiosk

Installed visual
cues

People

User groups—

Staff   Patient   Visitor

Sensory Wayfinding

Average persons eye-line

Wheelchair/child's eye-line

Elderly persons eye-line
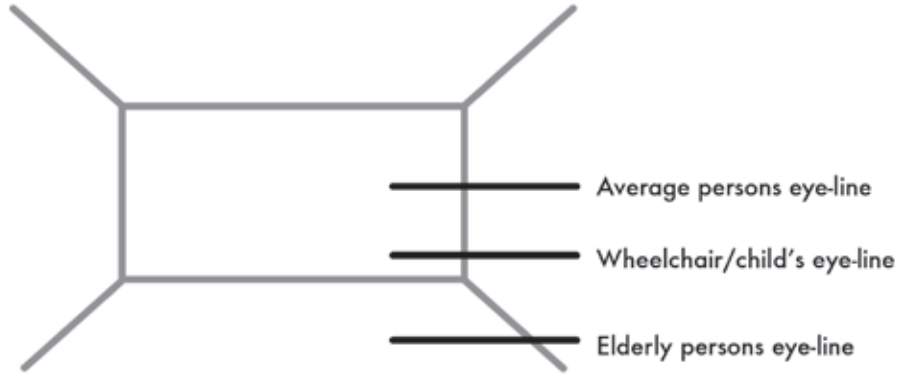
Sight—
The primary component of way-finding is the visual. This is done through print or interactive maps, signs, visual directors and use of the visual language/conforming style appropriate to the space.

Using only a sight-based approach does not inform those who are visual impaired. A balance of visual and verbal needs to be used for those who cannot/have little reading ability, or struggle with the English language. A factor essential in the approach due to Auckland's large population of migrants.

Touch—
This may be incorporated in print using perhaps an overprint in a printed artefact or raised surface in an installation. This provides another avenue of communication in the wayfinding experience.

Using touch allows those who are visually impaired an easier way of finding their way about, allowing more independence and understanding of the space in an unfamiliar environment.

—This will require some testing to ensure it works appropriately.

Maybe texture on the ground - can feel the roughness on your shoe and hear the sound it makes.

Smell—
An organic way-finding aspect e.g. the cafeteria and the wards have a separate smell due to what occurs within them. Other way-finding can blend with this to confirm where the person is.

Hear—
A verbal recounting of the space, or a journey to be taken within the hospital. As well as sound signifiers to proceed, e.g. an elevator ding, or the tapping when allowed to cross the road at a set of traffic lights.

Using sound it can add a further signifier of where/when to go within the way-finding and aiding those who are visually impaired. This is currently done informally through hospital staff, verbally recounting to a member of the public when they are seeking help. This could be taken further through an installation of a map, that is interactive and verbally recounts where the viewer is and where to go, or a downloadable app.

Problems with an app is it is slightly unaccessible due to the technology, and those who may be intimidated by newer emerging tech.

Dividing the Space

To make the space, and map easier to understand and to quickly identify where one needs to go, the space can be divided upon layers.

Colour—
Using hue to define public, limited access, and staff spaces. (Perhaps storage also).

Icons—
A strong icon using positive and negative spaces to represent specific spaces define by their uses, for example:

Wards, reception, waiting areas, food & beverage, retail areas, chemist, research areas, offices, information desks and perhaps the trust.

Extended to wayfinding and key traveling points, e.g. elevator, stairs, bathrooms, telephone and wi-fi.

Numbers—
A numerical system allows to note specifically what, for example the food and beverage place is called:

523: Muffin Break Cafe

Friendly, accessible icons that have a strong readability for non-English speakers, & those who are vision impaired.

Designing Pictograms

Balancing—
Strong positive and negative space making them easy to distinguish with varying sizing (e.g. small to large).

Identifiable—
Being able to immediately recognise what the pictogram is referencing to aid understanding that will be accompanied by verbal language.

Consistency—
All pictograms must visually be speaking the same language e.g. same use of spacing, angles, grid etc.

Construct as series of rules all must follow, then use optical refinement.

Rules of use—
A guide in which all use of the pictograms must be used for so that they may be applied to the rest of the hospital.

Print-based artefacts used as a accessible medium for an aging population.

Print vs. Digital

A long term guide to the hospital

Wayfinding from the carpark to
the main reception

Map the 5th floor districts
& spaces

**Potential
Prototypes**

12.10pm — 1.00pm

Camouflaged coffee drinker at Planet Espresso

People Watching—5th Floor Entrance

A fast paced, quick environment. Most people move with purpose, are stoic and do not reveal through body language or expression why they are here. Only those with flowers entering could be identified as visitors, or patients with armbands, hospital gown or other distinct signifiers. Staff had either name badges, uniform, or those who had neither were impeccably dressed with an air of confidence in the space and direction.

Many visitors/patients coming through the space carried large bags, packages etc.

The lines & graphics on the low ceiling—
The retail section has a low ceiling, and dully light. A way-finding component to add to the atmosphere of the space, could be to direct people where to go on the ceiling as well as the floor – 2 extremes. Creates a more welcoming space, and highlights there is more beyond the retail area.
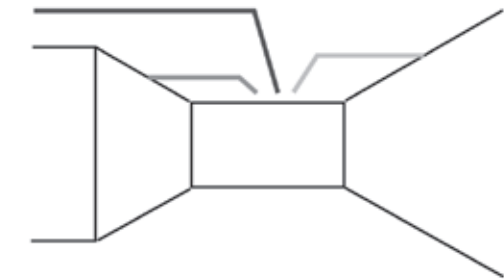
Effective wayfinding doesn't have to be repeated through the same platform within the same space

If the wayfinding is there – people will use it. The same sign doesn't have to be repeated within a space – people will actively look for a sign if its not in front of them, they're not stupid. They're trusting that the public space will provide some direction.

We look around us for direction

Differences in ages—
Older people seemed more comfortable asking for help at the Blue Coats. However the younger (teens and early 20s) wanted to help themselves using technology, calling loved ones asking where they are or sheepishly asking for directions.

http://www.architonic.com/ntsht/signs-of-the-times-wayfinding-design-that-
pushes-the-boundaries/7000779

Yet the fact of the matter is that we live in an increasingly digital age, one where we have become used to navigating our way through the proliferation of data out there thanks to highly structured information architectures, hierarchies and search paths. Offline, our level of our expectation with regard to how we encounter and experience the analogue world has grown to match this: we want to know where we can go and how to get there... [This] has created a greater need for wayfinding systems that help us go forth with a healthy degree of confidence.

While buildings often attempt to make themselves legible to users with regard to how they should be moved through and negotiated, orientation systems, through a dialogue with the architectural spaces in which they are installed, serve to amplify this readability. Successful systems, however, don't seek to draw too much attention to themselves. "Done right," observes design critic and academic Per Mollerup, "nobody talks about them. Done wrong, they can spoil everything."

Findings

Questioning staff, volunteers and users
to validate assumptions and gain insider
knowledge.
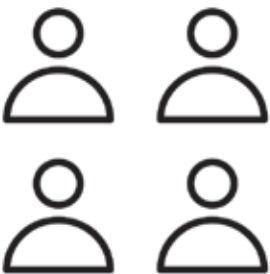
Questionnaire

Staff—
What are your most frequently asked questions from the public in regards to finding ones way about the hospital?

Where do most people get lost, or what are the main points of confusion?

What do you find are the most difficult places to get to, especially for the public?

Where do you find are the majority of people going (if you can generalise it)? E.g. high traffic destinations.

Do you have any suggestions or issues (other than previously mentioned) about people finding their way in the hospital and the signs that are currently in place?

Patients—
Where are you going to in the hospital?

Where are you heading from?

What would you consider other points of interest in the hospital or around it?

What did you find most difficult about your journey?

What did you find the easiest?

How did you find your way? Was it through following the signage, asking staff members or volunteers, or have you been here before?

If you've been here before, what can
you remember from your first visits, and
how you found finding your way?

What are your suggestions for how
finding your way about the hospital may
be improved?

16.12.2014

Key areas identified:

Level 5 > Starship

> Radiology

> Emergency

Bluecoats Meeting #1

The issues—

Coloured lines on level 1 - the wrong signage on the outside about the colours

Finding the different lift banks, especially lift bank A is an issue.

Level 1 elevator to level 2 emergency - needs to let people know level 2 is to emergency.

Patients finding their way to level 5 radiology

Finding Neurology - lift B

Tamaki ward, lift C

Directing to Starship from level 4 and 5 entrances.

Pregnant women coming in level 4 and 5 not knowing where to go.

Being clear about what level you're on e.g. 4 and 5

Starship outpatients lift sign to level 3.

Starship x-ray lift sign.

Finding way to emergency

Level 5 entranced closed after 8pm - needs signage that only way in is level 1 and 4.

Directing to Starship from level 5 entrance.

Whats working—

The coloured line to oncology between buildings.

Letters of where people need to go.

24 center – sending them there to find out where they need to go.

Working well with people that have language barriers. Those with health impairments usually are prepared with an orderly or an escort.

Lifts B and C when entering on the 5th floor entrance.

Either directing people where they need to go, or escorting.

Level 1 & 5 entrances are high traffic areas. Most people coming through these spaces are going to all areas of the hospital.

The key is being prepared—— Providing accessible resources online so on a planned or upcoming visit is a less stressful & daunting experience.

For example expecting mothers, those with an upcoming outpatient appointment. Not only what your appointment is, but where and how to get there.

If you're an expecting mother, what if its after hours, where do you park, whats the best way to come in etc.

16.01.2015

Bluecoats Meeting #2

Radiology—
Level 5 entrance > over bridge >
Building 32 > along corridor till
reception at the very end

Emergency Department—
Level 5 entrance > over bridge >
Building 32 > Lift bank A > Level 1 >
along corridor > left to elevator > level
2 > exit building > right along side of
road > enter ED on second right

Level 5 entrance> over bridge > stairs
on left > down to level 4 > exit building
> left along roadside?

Starship—
Level 5 entrance > Straight to lift bank
C > down to level 3 > follow corridor &
wayfinding signs > Starship bridge

Main issues with routes—
Getting people from level 5 entrance
through to the over bridge. Muffinbreak
juts out so much, you cannot see what
is beyond it i.e. the over bridge and
continued path.

– Direct people through from the
entrance point through the retail section
to realise what is beyond it.

Other issues brought up—
People parking in carpark A, not
knowing oncology has free parking for
patients.

Onward—
Meeting beginning of February to gain
feedback on tangible things we've
worked on.

17.02.2015

"My newness, and was uncertain at long pathway to radiology. Some terminology were a bit ambiguous on signs"

User Testing Session

An overview—

My first/most memorable experience of finding my way at Auckland Hospital—

Overwhelming
Parking not relating to destination, and location

Tiring
"Confusing about if I was going the right way"

"Getting to Starship was extremely confusing and poorly marked"

Awkward
"My newness, and was uncertain at long pathway to radiology. Some terminology were a bit ambiguous on signs"

"Several staff members giving conflicting descriptions" – letter, phone and on-site staff

Familiarity—

Auckland Hospital wayfinding key words
Confusing, Time consuming
Overwhelming, Not logical, Frustration

"Lift banks go to different areas and knowing which lift to use is not always clear"

Importance—

Naming conventions
"Similar names in different locations"

Labeling the campus map—

All named main building and support
building 1 and 2.

Notes—

Clinical and colloquial term helpful for
first time in clinical area

Icons – service description and icon for
clinic

Group sessions—

Most important areas
Entrance – main entrance, reception,
welcome

Clinical—ward, clinic
Recreational—quiet room, chemist, gifts
and flowers, water, bookstore, lotto,
coffee, food, seating

Standard—drop off and pick up zones,
toilets, parking

Wayfinding—diagrams, lift banks, signs

Notes—

More clarity in terms
Directional not true north
Identify parking
Location in a visible space as soon as
you come in

Appendix 2
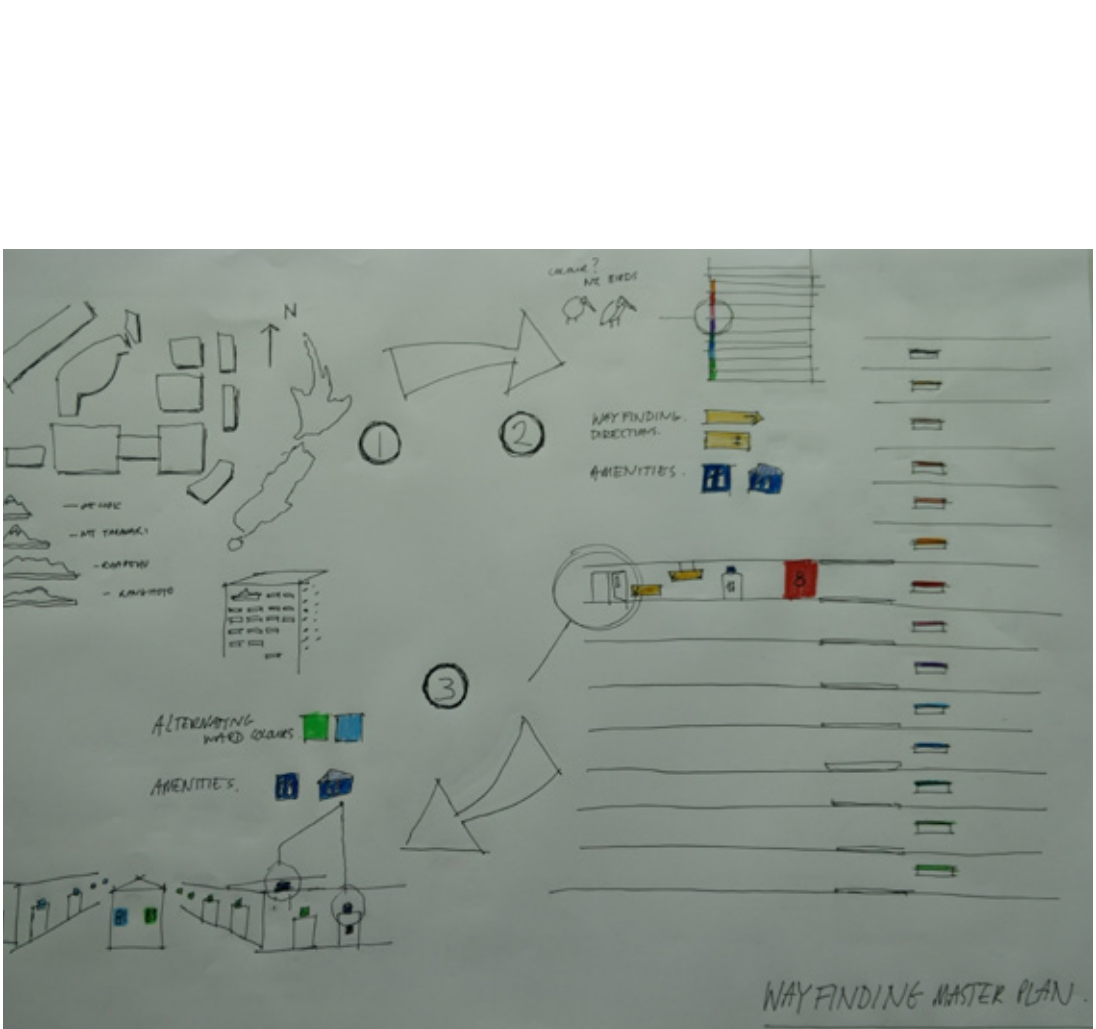
Figure 160. DHW Lab. (2015). *Wayfinding master plan draft*.

A rough outline of the big wayfinding picture for the Auckland
City campus, and how current projects sit within in. This was
to map current work and start to establish consistency with
wayfinding projects due to implementation without consideration of
the whole system.

Figure 161. DHW Lab. (2015). *Emergency waiting room.*

A multi-faceted solution, considering the experience journey, wayfinding and anticipated wait times.
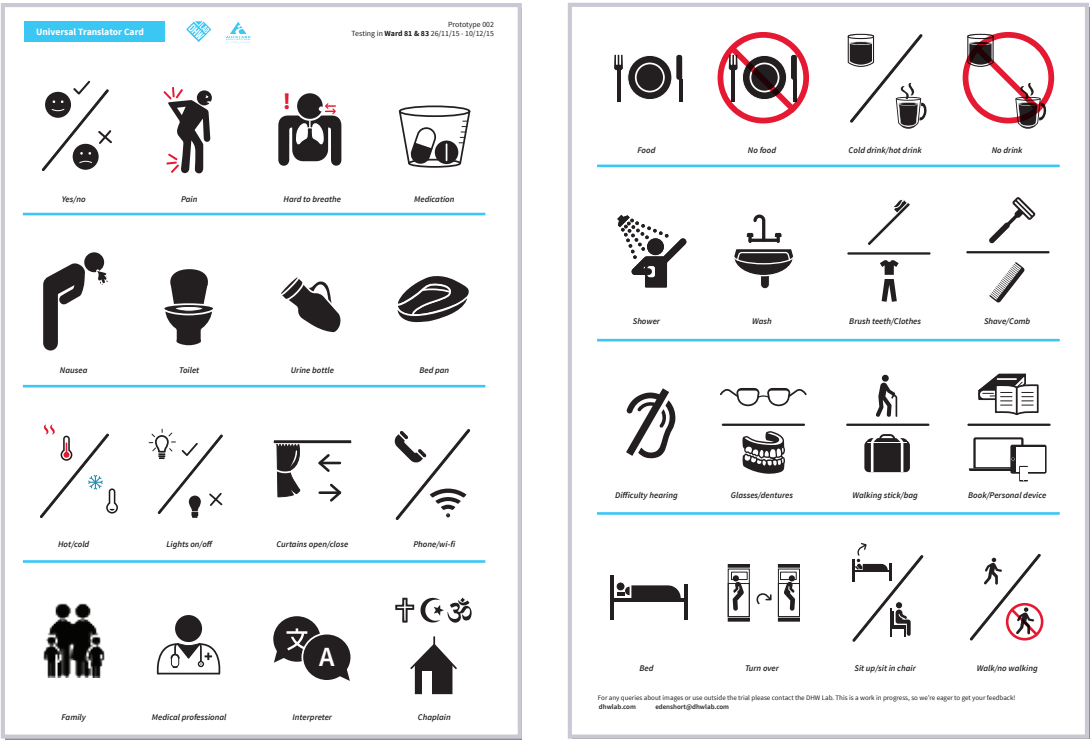
Figure 162. DHW Lab, (2015). *Translater card prototype.*

The hierarchy of the information and its placement in these cards was imperative to efficient communcication from patient to staff, or visersa. The intended audience is for inpatients who cannot, or have difficulty speaking english, alongside patients who cannot speak. Organising groups of information had to adhere to what was 'univerally logical' to ensure understanding from a wide audience.

Appendix 3

Cognitive maps

Downs and Stea (1973) define cognitive mapping as shorthand spatial information that we gather and employ when visiting or remembering an environment. Cognitive maps provide environmental context when solving spatial orientation and or deliberating destination; thus, to have a cognitive map is to be orientated (Passini, 1980). Each map is unique to the individual's acquired, coded, stored, recalled and decoded spatial information.[1] Lynch (1960) discusses how we cognitively read space in terms of the following categories:

Paths you move along when travelling.

The edges of a space or of an environment, for example, walls, doorways, etc.

Districts have identifiable characteristics that form sections.

Nodes are a focal point, or a concentration of features.

Landmarks that are an identifiable object, used as a reference point (Lynch, 1960).

1. This mental coding is not relevant only to space, but also to the way in which we use things in our day-to-day lives; these are known as mental models, which takes advantage of a users physical and cultural prior understandings (Norman, 2002, p. 13).

However, it is important to note that these mental maps have become increasingly broad in meaning during the past century. Previously, buildings followed the same formula in terms of functionality; for example, a church always had the same layout and features (Berger, 2009). However, the form-follows-function movement within architecture[2] created more complex environments with a greater need for wayfinding cues, as buildings are no longer self-explanatory (Mollerup, 2013). Downs and Stea (1973) note that "human spatial behavior is dependent on the individual's cognitive map of the spatial environment" (p. 9), meaning the impression we build of an environment cognitively affects our behaviour within it. However, as structures become more diverse, and functions vary within a space while the architectural form continues, questions arise as to how one is influenced within the space to behave appropriately.

2. "Ludwig Mies von Rohe and Walter Gropius used the term 'form follows function' to explain their stripped down, rational approach to building design. This logical creation of spaces was meant to create a better understanding of wayfinding needs, but the opposite proved to be true. The collective memory broken and buildings became detached from any innate understanding of them that people had." (Berger, 2009, p. 21)

Technology

The role of technology in contemporary society is an interchangeable one. While it is viewed by some as an impressive solution, Norman (2002) states that while "Technology may change rapidly...people change slowly" (p. xv). Within the healthcare context, Jones (2013) discusses the disruptive nature technology has within the sector:

> The technologically determined scenarios suggest a sociological change more radical than any other system designed in human society. Healthcare is the world's largest employment base, with national health systems among the largest employers in their respective countries. Such a disruption would ignore the sociotechnical foundation of healthcare that underlies practice, education, policy, employment, and the very meaning of care. It risks replacing medicine with a new corporate system devoid of human socioculture or caring, treating diseases as functional states medicated by robots. Although the enabling technologies can and will be developed, their implementation will look very little like the visions of computational 'personalised' medicine imagined by technological utopians (and investors standing to benefit (Jones, 2013, p. 9).

Thus, technology brings little change to service and experience within healthcare (Jones, 2013). As noted by Sklar (cited in Farr, Aug 24, 2015, para 4), "What design can bring to health care isn't [only] the technology, but the patient-centered approach". As such, human-centred as opposed to technology-centred innovation rarely leads to disruptiveness, as human-centred innovates meaning rather than things (Jones, 2013; Norman, 2002).

Appendix 4

Please do not
staple your
application

AUT
UNIVERSITY
TE WĀNANGA ARONUI O TĀMAKI MAKAU RAU
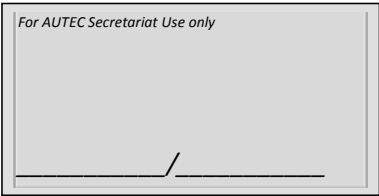
AUCKLAND UNIVERSITY OF TECHNOLOGY ETHICS COMMITTEE (AUTEC)

EA1

APPLICATION FOR ETHICS APPROVAL BY AUTEC

Once this application has been completed and signed, please read the notes at the end of the form for information about submission of the application for review.

NOTES ABOUT COMPLETION

❖ Ethics review is a community review of the ethical aspects of a research proposal. Responses should use clear everyday language with appropriate definitions being provided should the use of technical or academic jargon be necessary.

❖ The AUTEC Secretariat and your AUTEC Faculty Representative are able to provide you with assistance and guidance with the completion of this application which may help expedite the granting of ethics approval.

❖ The information in this application needs to be clearly stated and to contain sufficient details to enable AUTEC to make an informed decision about the ethical quality of the research. Responses that do not provide sufficient information may delay approval because further information will be sought. Overly long responses may also delay approval when unnecessary information hinders clarity. In general each response should not exceed 100 words.

❖ AUTEC reserves the right not to consider applications that are incomplete or inadequate.

❖ Comprehensive information about ethics approval and what may be required is available online at http://aut.ac.nz/researchethics

❖ The information provided in this application will be used for the purposes of granting ethics approval. It may also be provided to the University Postgraduate Centre, the University Research Office, or the University's insurers for purposes relating to AUT's interests.

❖ The Form is focussed around AUTEC's ethical principles, which are in accordance with the *Guidelines for the approval of ethics committees* in New Zealand.

To respond to a question, please place your cursor in the space following the question and its notes and begin typing.

A.   *Project Information*

A.1.   What is the title of the research?

If you will be using a different title in documents to that being used as your working title, please provide both, clearly indicating which title will be used for what purpose.

Too little, too much: Exploring ways communication design can be used to ease stress and anxiety within information dense outpatient environments.

A.2.   Who is the applicant?

When the research is part of the requirements for a qualification at AUT, then the applicant is always the primary supervisor. Otherwise, the applicant is the researcher primarily responsible for the research, to whom all enquiries and correspondence relating to this application will be addressed.

Stephen Reay

A.3.   Further information about the applicant.

A.3.1.   In which faculty, directorate, or research centre is the applicant located?

Art and Design

A.3.2.   What are the applicant's qualifications?

PhD, Mphil, M .For.SC, BSc

A.3.3.   What is the applicant's email address?

An email address at which the applicant can be contacted is essential.

stephen.reay@aut.ac.nz

A.3.4.   At which telephone numbers can the applicant be contacted during the day?

09 021 9999 extn. 6719

A.4.   Research Instruments

A.4.1.   Which of the following does the research use:

☒ *a written or electronic questionnaire or survey*   ☐ *focus groups*   ☒ *interviews*
☒ *observation*   ☐ *participant observation*   ☐ *ethnography* ☐ *photographs*
☐ *videos*   ☐ *other visual recordings* ☒ *a creative, artistic, or design process*
☐ *performance tests*
☐ *some other research instrument (please specify)*

Please attach to this application form all the relevant research protocols. These may include: Indicative questions (for interviews or focus groups); a copy of the finalised questionnaire or survey in the format that it will be presented to participants (for a written or electronic questionnaire or survey); a protocol indicating how the data will be recorded (e.g. audiotape, videotape, note-taking) for focus groups or interviews (Note: when focus groups are being recorded, you will need to make sure there is provision for explicit consent on the Consent Form and attach to this Application Form examples of indicative questions or the full focus group schedule. Please note that there are specific confidentiality issues associated with focus groups that need to be addressed); a copy of the observation protocol that will be used (for observations); full information about the use of visual recordings of any sort, including appropriate protocols and consent processes; protocols for any creative, artistic, or design process; a copy of the protocols for the instruments and the instruments that will be used to record results if you will use some other research instrument.

A.4.2.   Who will be transcribing or recording the data?

If someone other than the applicant or primary researcher will be transcribing the interview or focus group records or taking the notes, you will need to provide a confidentiality agreement with this Application Form.

The primary researcher, Eden Short.

B.   *The Ethical Principle of Research Adequacy*

AUTEC recognises that different research paradigms may inform the conception and design of projects. It adopts the following minimal criteria of adequacy: the project must have clear research goals; its design must make it possible to meet those goals; and the project should not be trivial but should potentially contribute to the advancement of knowledge to an extent that warrants any cost or risk to participants.

B.1.   Please provide a brief plain English summary of the research (300 words maximum).

This project explores how a design-led approach could be used to improve the heath-seeker experience within Auckland City Hospital. Whilst addressing physical wellness, hospitals overlook addressing the high stress, anxiety and uncertainty that comes with this particular environment (Ulrich, 1991). The majority of research in the healthcare experience is done in regards to the inpatient rather than outpatient experience. Yet as healthcare moves towards more accessible outpatient treatments, there is a gap in knowledge of what defines a satisfactory experience beyond shorter wait times (Khan, 2012; Becker & Douglass, 2006). This research focuses on the Starship Children's Hospital outpatient's department as a prototyping area for which user engagement may be facilitated to improve the patient's emotional experience. Placing the health-seeker at the centre of the design process, there is a focus on how designing environments incorporating graphic design could be used to encourage emotional support and wellbeing. Through prototyping, designs can be produced to respond to real problems, test assumptions and validate need for change.

B.2.   Is the applicant the person doing most of the research (the primary researcher)?   ☐ Yes ☒ No

If the answer is 'No' please answer B.2.1 and the following sections, otherwise please answer B.3 and continue from there.

B.2.1.   What is the name of the primary researcher if it is someone other than the applicant?

Eden Short

B.2.2.   What are the primary researcher's completed qualifications?

Bachelor of Design

Bachelor of Art and Design (Hons) (First Class)

B.2.3.   What is the primary researcher's email address?

An email address at which the applicant can be contacted is essential.

shorteden@gmail.com

B.2.4.   At which telephone numbers can the primary researcher be contacted during the day?

027 311 6817

B.3.   Is the primary researcher   ☐ an AUT staff member ☒ an AUT student

If the primary researcher is an AUT staff member, please answer B.3.1 and the following sections, otherwise please answer B.4 and continue from there.

B.3.1. **In which Research Institute or Faculty and school or department is the primary researcher employed?**

Design and Creative Technologies

B.4. **If the primary researcher is a student:**

B.4.1. **What is their Student ID Number?**

1108411

B.4.2. **In which faculty school, department, or Research Centre are they enrolled?**

Art and Design

B.5. **What is the primary researcher's experience or expertise in this area of research?**

Where the primary researcher is a student at AUT, please identify the applicant's experience or expertise in this area of research as well.

The applicant, Stephen Reay, is the co-director of the 'Design for Health and Wellbeing Lab', which is a collaboration between AUT and the Auckland District Health Board. He also has significant input in the centre for eHealth at AUT and has supervised several undergraduate and postgraduate design and health related projects.

The primary researcher has experience in research design methods having completed bachelors in Art and Design (hons) at AUT. This was further developed through a summer studentship 2014/2015 at the Design for Health and Wellbeing Lab examining difficulties in navigating within the hospital, and generating deisgn solutions to address this. Further, facilitating along with other of the Design for Health and Wellbeing Lab a user testing session to test and validate assumptions of the project.

B.6. **Who is in charge of data collection?**

The primary researcher, Eden Short.

B.7. **Who will interact with the participants?**

The primary researcher, Eden Short.

B.8. **Is this research being undertaken as part of a qualification?**   ☒ Yes ☐ No

If the answer is 'Yes' please answer B.8.1 and the following sections, otherwise please answer B.9 and continue from there.

B.8.1. **What is the name of the qualification?**

Masters of Art and Design

B.8.2. **In which institution will the qualification be undertaken?**

Auckland Univeristy of Technology (AUT)

B.9. **Details of Other Researchers or Investigators**

B.9.1. **Will any other people be involved as researchers, co- investigators, or supervisors?**   ☒ Yes ☐ No

If the answer is 'Yes' please answer B.9.1.1 and the following sections, otherwise please answer B.9.2 and continue from there.

B.9.1.1 **What are the names of any other people involved as researchers, investigators, or supervisors?**

Peter Gilderdale

B.9.1.2 **Where do they work?**

AUT University

B.9.1.3 **What will their roles be in the research?**

Secondary Supervisor

B.9.1.4 **What are their completed qualifications?**

PhD.

B.9.2. **Will any research organisation or other organisation be involved in the research?**   ☒ Yes ☐ No

If the answer is 'Yes' please answer B.9.2.1 and the following sections, otherwise please answer B.10 and continue from there.

B.9.2.1 **What are the names of the organisations?**

Auckland District Board of Health

B.9.2.2 **Where are they located?**

2 Park Road,

Grafton, 1142

Auckland

B.9.2.3 **What will their roles be in the research?**

Both supervisors will support the researcher, offering advice for planning and feasiblity of the interventions. Stephen Reay brings access to contacting experts within healthcare to consult and/or interview.

B.10. **Why are you doing this research and what is the aim and background?**

Please provide the key outcomes or research questions and an academic rationale with sufficient information, including relevant references, to place the project in perspective and to allow the project's significance to be assessed.

Hospital environments are generally harsh, utilitarian, and built for the effiecency of its staff (Ulrich, 1991). This hard environment does little to support the emotional wellbeing of the patient or their support/ers, whilst the physical aspect (their health) is maintained a whole piece of the persons care is largely missed. Healthcare is currently moving towards a more outpatient, rather than inpatient care (Khan, 2012). The majority of research in design, healthcare, and improving the patient experience is regarding the inpatient environment. Most inpatient findings are irrelvent for those coming for an outpatient appointment, for example windows, lighting, and number of beds to a room (Ulrich, 1991). Currently the definition of a good experience within outpatients is a reduced waiting time, and superifical aesthetics rather than improving the emotional experience (Becker & Douglass, 2006).

The research scope is within the Starship outpatients department as an area to facilitate prototyping, due to upcoming renovations in December which the research could potenialy influence. By testing possible solutions, the final outcome of the research is intended to be able to be recreated throughout other areas of the hospital and other district health boards. By placing the patient and their support/ers at the centre of the design, and involving them within the process it ensures the researchers assumptions are validated or disproved, and needs are being accurately addressed.

B.11. **What are the potential benefits of this research to the participants, the researcher, and the wider community?**

The participants in the research may feel empowered having their input within a space that currently does not facilitate this. The patient and their supporters stand to benefit by potenially providing a easier and less stressful experience. The wider community may benefit as the results of the research may be replicable to other areas of the hospital and perhaps other district boards of health. The researcher stands to benefit from gained experience of facilitating the design process with participants as well as delivering an informed design as part of their degree.

B.12. **What are the theoretical frameworks or methodological approaches being used?**

A qualitative approach is to be taken within the research, using design thinking and a human centred approach by placing the user at the centre of the process. The research is based around empathy towards the user to capture their human-ness and have a deeper understanding of their experience (Young, 2015). The research is broken into two phases, phase one is about listening as noted by Young (2015), listening helps to develop empathy. Phase two is the application of emapthy, using previous insights to generate, or create something from it (Young, 2015). It is important to note, listening still occurs here yet in a more direct and deliberate way in response to the design.

During phase one of the research expert interviews, observation, and anonyous questionnaires will be conducted. During phase two, previous insights will be formulated into prototyped designed outcomes to test within the space. Here feedback forms will be available with the area it is faciliated in for those to offer thoughts and opinions. Phase two will be repeated as prototypes become reevaluated and more refined, approximately 3-4 cycles every 3-6 weeks.

B.13. **How will data be gathered and processed?**

Within phase one and two participants observed are those who interact with objects and environments within the public spaces, or areas accessable by the general public in the hospital and surrounds. This may include patients, family and friends, and staff. However it is likely most research will be primarily be conducted within the public areas of the Starship Outpatients department.

Phases one:

Expert interviews:

Experts will be contacted through consultants such as Judy Haslemore, Justin Kennedy-Good and supervisor Stephen Reay. Interviews will be with clinical staff, experts in the health system, or staff within the Starship outpatient patient journey (i.e. staff the patient and their supporter will come in contact with in their care experience). Each session will last maximum an hour, but it is aniticipated most will last no longer than 30 minutes. During expert interviews data will be gathered through notation, a non-threatening form of documentation. Audio recording will be taken only with the experts verbal and written consent (Consent form). Any transcription taken by anyone other than the researcher will be required to complete a confidentiality form (##) by the transcriber. Questions will be open ended and related to the experts area of expertise as it relates to the specific area of the project, such as what their role is within the patients journey, how their role sits within the Outpatient area, whats working well within the department, what needs more attention.

Observation:

Beforehand the researcher will contact the charge nurse or equivalent of the area/site to notify and preapprove day and times of observing. On first arrival to the area/site the researcher will then check in with the charge nurse or equivalent and the receptionist if relevant to inform them of the duration that they will be undertaking observations. Approval from a staff member will be sought for

each period of observation/activity. The researcher will not interact with participants but will position themselves in a public area so they are able to view a wide range of activity. Whilst observing participants, the researcher will uphold a high level of professional conduct. The researcher's movements around the room will influece the participants movements, so the researcher needs to be aware of this and 'step back' from interacting with participants. The researcher will wear their ADHB staff card and will carry an information sheet to give to any participant who may approach to ask what the researcher is doing. At any point if the researcher feels uncomfortable or needs to leave, they will excuse themselves from the area and inform the notified staff members. Upon returning to the area, the researcher will inform the staff member/s. A participant is able to ask the researcher to leave the room at any time during the research. In the case of shy participants or young children, one participant will be assigned the role to indicate to the researcher if other participants wish for them to leave, with no explaination required. This participant will also inidicate to the researcher when they may continue observations. If at any time the researcher is asked to step out of the room, this can be seen as the five-minute break. In the case of a sleeping child with other participants present in the room, observations can continue. But if the child is in a sleeping room on their own, then observations will pause, as no interaction is taking place at the time. Observations will take place over a maximum of one week (for the entire data collection), unless there is a good reason for taking longer. Observations will occur in blocks of one hour. After each one hour block of observation, the researcher will leave the area for a short five-minute break (for example go to the bathroom, write some notes, etc). All information will be recorded through note taking and sketches by the researcher. This is non-invasive and sufficient for these research projects.

Anonymous survey:

Participants observed are those who interact with objects and environments in the public spaces, or areas accessible by general public in the hospital and surrounds. This may include patients, family and friends, and staff. Children may be observed as patients, or in family groups. Upon first arrival in the area/site where the research will be undertaken, the researcher will check in with the charge nurse or equivalent to inform them of the duration that they will be installing the anonymous surveys. Approval from a staff member will be sought for each period of observation/activity. Surveys will be collected each evening.

A poster (poster), information sheets (collateral_survey/observation), surveys (Survey) and a collection box will be available in each waiting room at at the main reception. The participant may enquire about the study by asking staff (for which they will be informed via email) or reading the poster and/or information sheet. They will be informed that they may stop at any time and withdraw from the study, and that they do not have to answer any question they do not wish. No identifiable information will be collected survey the survey. Questions may be opened ended or will relate to the experience of participants in the hospital environment or use of public areas or space, the how they interact with objects in it, or their experience in the hospital.

It is anticipated that each survey will take 10 minutes or less. However, surveys may take longer if rich data is being collected, and the participant happy to continue. Surveys will be written. Surveys will run maxiumum a week overall, depending on responses.

Phases two:

Using insights gained from phase one, a prototype will be created to temporarily place within the area/site. Approval from a charge nurse or equivalent will be sought in advance to review. Once approval is given, on first arrival to the area/site the researcher will check in with the charge nurse or equivelent, and other staff within the area to inform the duration of the temporary prototype.

The researcher will not interact with participants but will position themselves within clear view of the prototype intervention to notate interaction and effectiveness. The researcher will follow all observational protocol as seen in phase one. When the researcher leaves the area/site (excluding the five-minute break), depending on the approval, size and placement of prototype, this will be taken with the researcher. The prototype or pieces of it may be left in the area/site if given permission by the charge nurse or equivalent, and is considered safe to leave unsupervised.

Whilst the prototype is fully installed, a questionnaire/survey will be conducted to get direct feedback from the participants. A information sheet will accompany the survey that explains the study, and asks if they wish to participate. Surrounding this there will also be posters informing participants of the study and their opportunity to participate. Questions may be open ended, or closed to rate the effectiveness of the prototype. Survey protocol as mentioned in phase one will be followed, and a box will be provided to place surveys which will be emptied after each session.

By not confronting participants of the design effectiveness as the creator, the researcher hopes to draw more honest, insightful and unbias results.

Through observing what is currently happening within the environment (phase one), it will act as a measure for prototyping in phase two, to distiniguish if emotional change is occuring or not.

B.14. How will the data be analysed?

Please provide the statistical (for quantitative research) or methodological (for qualitative or other research) justification for analysing the data in this way.

The researcher will analyse all data by organising, sorting and arranging the different types of data, how it was collected, and dates of collection. All evidence and data will be reviewed to understand and gain insight into the overall view of the participants represented. Common words, themes, and inspiration will be recorded to get an general view and later reflect upon. Analysis will then follow, validating or disproving assumptions, finding what was unexpected and relating this back to the research question. From here categories will be created to represent key findings, and then findings/evidence of the resrach will be interepted by the researcher.

B.15. Has any peer review taken place (e.g. approval of a PGR1, PGR2, or PGR9 for postgraduate research)? ☒ **Yes** ☐ **No**

If your answer is 'Yes', please specify and provide evidence.

A PRG1.

C.   *General Project Details*

C.1.   Likely Research Output

C.1.1. Will the research result in one or more of the following

☒ *a thesis*   ☐ *a dissertation* ☐ *a research paper*   ☐ *a journal article*
☐ *a book*   ☐ *conference paper* ☐ *other academic publications or presentations*
☒ *an exhibition*   ☐ *a film*   ☐ *a documentary*   ☐ *some other artwork*
☒*Some other output, please specify*

An designed artefact

C.2.   Research Location and Duration

C.2.1. In which countries and cities/localities will the data collection occur?

Auckland, New Zealand

C.2.1.1   Exactly where will any face to face data collection occur

If face to face data collection will occur in participants' homes or similarly private spaces, then a Researcher Safety Protocol needs to be provided with this application.

Starship Outpatients Area, Level 3,

Starship Childrens Hospital,

2 Park Road,

Grafton, Auckland

C.2.2. In which countries and cities/localities will the data analysis occur?

Auckland, New Zealand

C.2.3. When is the data collection scheduled to commence?

When the ethics application is approved

C.3.   Research Participants

C.3.1. Who are the participants?

The particpants include anonymous support person(s) for the child (the child is not included in the study) at the Starship Outpatients Clinic, staff members of the Outpatients clinic, and other healthcare experts.

C.3.2. How many participants are being recruited for this research?

If you are unsure, please provide an indicative range.

Regarding expert interviews, researcher aims for a reprentative of each field (6-10 participants) involved in the patient journey e.g. clinician, receptionist, nurse alongside external health experts where appropriate. For the phase one and two questionnaire/survey, 20-50 participants in all.

C.3.3. What criteria will be used to choose who to invite as participants?

Any person using the outpatients area will be invited to particpate through expert interviews, anonymous surveys, or observation. All experts must be willing to participate and provide written consent. Anonymous participants should have an interest in participating in the research, as well as having adequete english.

C.3.3.1   How will you select participants from those recruited if more people than you need for the study agree to participate?

The researcher will informally screen the participant for a high level of enthusiasm, however this is only in regards to the expert interviews as the questionnaire/survey is anonymous.

C.3.4. Will any people be excluded from participating in the study?   ☒ **Yes** ☐ **No**

If the answer is 'Yes' please answer C.3.4.1 and the following sections, otherwise please answer C.3.5 and continue from there.

C.3.4.1   What criteria will be used to exclude people from the study?

Any persons who are related to the researcher or has any relationship to the researcher will be excluded from the study. If a participant is stressed, visibly anxious or rushing they will be excluded.

C.3.4.2   Why is this exclusion necessary for this study?

Exclusion is necessary to ensure safety within the research, and avoids a conflict of interest of participants who feel they must attend based on a preexisting relationship. By excluding those who are emotionally distressed, it avoids adding potential undue stress. Children could pick up and fill in a survey, if this occurs, or there is reason to believe this has occurred, the data will be excluded.

C.3.5. How will participants be recruited?

Please describe in detail the recruitment processes that will be used. If you will be recruiting by advertisement or email, please attach a copy to this Application Form

C.3.5.1   How will the initial contact with potential participants occur?

Expert interviews:

The charge nurse Judy Haslemore or equivalent will reach out and invite staff to participate if they are working in Starship outpatients. If the participant is outside the outpatient area, they will be contacted through Justin Kennedy-Good, or Stephen Reay.

Questionnaire phase one and two:

Seeing posters advertising the study, information sheets, and a questionnaire within the outpatients area as an anonymous way to participate.

C.3.5.2   How will the contact details of potential participants be collected and by whom?

The contact details of experts will be collected by the researcher. All other participants are anonymous.

C.3.5.3   How will potential participants be invited to participate?

Through posters, information sheets, or personal contact through consultant.

C.3.5.4   How much time will potential participants have to consider the invitation?

Regarding experts, a period of two weeks to respond. All other participants, the duration of their time within the outpatients area.

C.3.5.5   How will potential participants respond to the invitation?

Experts can email the researcher directly. All other participants can chose not to participate at any point from initial contact to completion of the survey.

C.3.5.6   How will potential participants give consent?

Experts will give verbal and written consent by filling in the form (Consent form). All other participants give consent by filling and submitting the survey.

C.3.5.7   How and when will the inclusion criteria and exclusion criteria given in sections C.3.3 and C.3.4 be applied?

Participants will not be approached if they meet the exclusion criteria.

C.3.5.8   Will there be any follow up invitations for potential participants?

If developments happen within the research that require further insight, an expert may be reapproached.

D.   *Partnership, Participation and Protection*

D.1.   How does the design and practice of this research implement the principle of Partnership in the interaction between the researcher and other participants?

How will your research design and practice encourage a mutual respect and benefit and participant autonomy and ownership? How will you ensure that participants and researchers will act honourably and with good faith towards each other? Are the outcomes designed to benefit the participants and/or their social or cultural group? How will the information and knowledge provided by the participants be acknowledged?

Participating in the research is on a voluntary basis and any participant can leave at anytime. Any participant known or anonymous can contact the research at anytime through given email, and contact details available on public posters/surveys/pamplets. Every persons opinion, ideas and point of view are equally valued regardless of job, social and cultural status. They will be repsected and valued as experts in their own experience. There will be transparency within the research, where all questions/enquiries will be answered and when applicable (i.e. non anonymous), will be asked if they would like to participate.

D.2.   How does the design and practice of this research implement the principle of Participation in the interaction between the researcher and other participants?

What is the actual role of participants in your research project? Will participants be asked to inform or influence the nature of the research, its aims, or its methodology? Will participants be involved in conducting the research or is their principal involvement one of sharing information or data? Do participants have a formal role as stakeholders e.g. as the funders and/or beneficiaries of the research? What role will participants have in the research outputs (e.g. will they be asked to approve transcripts or drafts)?

Experts will be informing and influencing the research through their relevant backgrounds through advising the researcher what is plausible, sustainable, and safe. All exerpts within the draft exegesis from exepert interviews will be approved by the participant before submission/publication.

Anonymous participants will be sharing their expertise and experiences through interium phases of the project. Phase one for the researcher to firstly create a design based on initial findings, phases two being the participants influencing the design in order to create an informed artefact.

D.3.   How does the design and practice of this research implement the principle of Protection in the interaction between the researcher and other participants?

How will you actively protect participants from deceit, harm and coercion through the design and practice of your research? How will the privacy of participants and researchers be protected? How will any power imbalances inherent in the relationships between the participants and researchers be managed? How will any cultural or other diversity be respected?

At the initial contact of experts, either by email or what is otherwise deemed appropriate the research will be clearly summarised, with an oppertunity to ask questions. Once the expert has inidicated they are interested in participating as determined by the researcher, when a meeting is confirmed the researcher will ask verbal consent, followed by asking the expert to give written consent (form ##). The expert will be informed they may stop at any time. All experts identities will be protected, and identified instead by their profession, i.e. clinician, receptionist, nurse, child psychologist.

All other participants are anonymous, and if known by the researcher through observation or surveys/questionnaires, their privacy will be respected. Every persons opinion, ideas and point of view are equally valued regardless of job, social and cultural status. They will be repsected and valued as experts in their own experience.

 All data collected will be seen only by the researcher and the supervisors. Any data represented as outputs of the research will be anonymoused. Regardless of any job, social and cultural differences all opinions and ideas brought forward by participants and the researcher must have respect and seen as valued.

E.   *Social and Cultural Sensitivity (including the obligations of the Treaty of Waitangi)*

E.1.   What familiarity does the researcher have with the social and cultural context of the participants?

The researcher has completed a summer studentship in the Auckland Hospital and has previously facilitated a focus group for users for the summer project. The researcher has also completed a literature review in regards to the research topic.

E.2.   What consultation has occurred?

Research procedures should be appropriate to the participants. Researchers have a responsibility to inform themselves of, and take the steps necessary to respect, the values, practices and beliefs of the cultures and social groups of all participants. Where a research project targets persons from another cultural, social or language group, consideration must be given to the preferences of the potential participants as far as consultation, language and documentation are concerned. Researchers should also be cognisant of potential implications or interest that the process and outcomes of the research might have for other cultures or groups.. The purpose of any consultation is to ensure that research practices are appropriate and acceptable. Consultation should begin as early as possible in the project and should continue throughout its duration (the Ethics Knowledge Base (http://www.aut.ac.nz/research/research-ethics/ethics). All researchers are encouraged to make themselves familiar with Te Ara Tika: Guidelines for Maori Research Ethics: A framework for researchers and ethics committee members (This is able to be accessed through the Ethics Knowledge Base). Researchers may also find Te Kahui Mangai a directory of Iwi and Maori organisations to be helpful. This may be accessed via the Te Puni Kokiri website (http://www.tkm.govt.nz/).

The researcher has consulted with experts in Starship who deal with the outpatient clinic staff, patients, and supporters on a daily basis.

E.2.1.   With whom has the consultation occurred?

Please provide written evidence that the consultation has occurred.

Trisha – Child Psychologist

Judy Haslemore – Starship Charge Nurse

Justin Kennedy-Good – Design for Health and Wellbeing Lab co-director

Stephen Reay – Supervisor and Design for Health and Wellbeing Lab co-director

E.2.2.   How has this consultation affected the design and practice of this research?

Through consultation valuable insights have been provided, such as the limitations of what is possible within the outpatients area as it is a high volume department. Because of this, consultants involved with the Auckland Hospital and Starship will continue to be consultants over what is possible throughout the research. Through consulting those whose focus is on the children it was reveled targeting the supporter rather than the child would be highly effective, as a stress free supporter of the patient equals more likelyhood of a happier child.

Judy Haslemore, Starship charge nurse advised the survey be efficient, and easy to understand as for a large majority of supporters english is their second language. Following this consult, the survey was made far more consise, and information sheets and posters more colloquial.

E.3.   Does this research target Maori participants?   ☐ Yes ☒ No

All researchers are encouraged to make themselves familiar with Te Ara Tika: Guidelines for Maori Research Ethics: A framework for researchers and ethics committee members

If your answer is 'No', please go to section E.4 and continue from there. If you answered 'Yes', please answer the next question.

E.3.1.   Which iwi or hapu are involved?

E.4.   Does this research target participants of particular cultures or social groups?   ☒Yes ☐ No

AUTEC defines the phrase 'specific cultures or social groups' broadly. In section 2.5 of Applying for Ethics Approval: Guidelines and Procedures it uses the examples of Chinese mothers and paraplegics. This is to identify their distinctiveness, the first as a cultural group, the second as a social group. Other examples of cultural groups may be Korean students, Samoan husbands, Cook Islanders etc., while other examples of social groups may be nurse aides, accountants, rugby players, rough sleepers (homeless people who sleep in public places) etc. Please refer to Section 2.5 of AUTEC's Applying for Ethics Approval: Guidelines and Procedures (accessible in the Ethics Knowledge Base online via http://www.aut.ac.nz/about/ethics) and to the relevant Frequently Asked Questions section in the Ethics Knowledge Base.

If your answer is 'No', please go to section E.5 and continue from there. If you answered 'Yes', please answer the next question.

E.4.1. Which cultures or social groups are involved?

People affected by and involved with the Starship outpatients area.

E.5.   Does this research focus on an area of research that involves Treaty obligations?   ☐Yes ☒ No

All researchers are encouraged to make themselves familiar with Te Ara Tika: Guidelines for Maori Research Ethics: A framework for researchers and ethics committee members.

If your answer is 'No', please go to section E.6 and continue from there. If you answered 'Yes', please answer the next question.

E.5.1. Which treaty obligations are involved?

E.6.   Will the findings of this study be of particular interest to specific cultures or social groups?   ☒ Yes ☐ No

If the answer is 'Yes' please answer E.5.1 and the following sections, otherwise please answer F.1 and continue from there.

E.6.1. To which iwi, hapu, culture or social groups will the findings be of interest?

People who are affected by the Starship outpatients area, other outpatients area in the current hospital and potentially other District Boards of Health.

E.6.2. How will the findings be made available to these groups?

An exegesis will be published in the AUT library of scholarly commons and potentially future publications in journal articles.

F.   *Respect for the Vulnerability of Some Participants*

F.1.   Will your research involve any of the following groups of participants?   ☐ Yes ☒ No

If your research involves any of these groups of participants, please clearly indicate which ones and then answer F.2 and the following sections, otherwise please answer G.1 and continue from there.

☐ **unable to give informed consent?**   ☐ **your (or your supervisor's) own students?**
☐ **preschool children?**   ☐ **children aged between five and sixteen years?**
☐ **legal minors aged between sixteen and twenty years?**   ☐ **aged over seventy years?**
☐ **in a dependent situation, such as people with a disability, or residents of a hospital, nursing home or prison or patients highly dependent on medical care?**
☐ **vulnerable for some other reason (e.g. the elderly, prisoners, persons who have suffered abuse, persons who are not competent in English, new immigrants) – please specify**

F.2.   How is respect for the vulnerability of these participants reflected in the design and practice of your research?

F.3.   What consultation has occurred to ensure that this will be effective?

Please provide evidence of the consultation that has occurred.

G.   *Informed and Voluntary Consent*

G.1.   How will information about the project be given to potential participants?

A copy of all information that will be given to prospective participants is to be attached to this Application Form. If written information is to be provided to participants, you are advised to use the Information Sheet exemplar. The language in which the information is provided is to be appropriate to the potential participants and translations need to be provided when necessary.

Participants will be made aware of the study with posters, information sheets and pamphlets in the Starship outpatient area relvent to the phase currently occuring within the space. Experts will be given a clear verbal summary of the research, and a information sheet if they wish.

G.2.   How will consent of participants be obtained and evidenced?

AUTEC requires consent to be obtained and usually evidenced in writing. A copy of the Consent Form which will be used is to be attached to this application. If this will not be the case, please provide a justification for the alternative approach and details of the alternative consent process. Please note that consent must be obtained from any participant aged 16 years or older. Participants under 16 years of age are unable to give consent, which needs to be given by their parent or legal guardian. AUTEC requires that participants under the age of 16 assent to their participation. When the nature of the research requires it, AUTEC may also require that consent be sought from parents or legal guardians for participants aged between 16 and twenty years. For further information please refer to AUTEC's Applying for Ethics Approval: Guidelines and Procedures.

For all participants there will be transpareny about the background, nature and current direction of the study. Experts consent will be verbally asked, once confimed written consent will be given in order to proceed. If audio recording is taken, an additional form will be signed for consent. They will be informed they have the ability to opt out at any time. Anonymous participants consent is evidenced through the completion and return of the survey/questionnaire. If it is believed a child under 16 years has filled in a form, this will be excluded from the study. Participants can opt out at anytime by not filling in the form, or not submitting.

G.3.   Will any of the participants have difficulty giving informed consent on their own behalf?   ☐ Yes ☒ No

Please consider physical or mental condition, age, language, legal status, or other barriers.

If the answer is 'Yes' please answer G.3.1 and the following sections, otherwise please answer G.4 and continue from there.

G.3.1. If participants are not competent to give fully informed consent, who will consent on their behalf?

Researchers are advised that the circumstances in which consent is legally able to be given by a person on behalf of another are very constrained. Generally speaking, only parents or legal guardians may give consent on behalf of a legal minor and only a person with an enduring power of attorney may give consent on behalf of an adult who lacks capacity.

G.3.2. Will these participants be asked to provide assent to participation?

Whenever consent by another person is possible and legally acceptable, it is still necessary to take the wishes of the participant into account, taking into consideration any limitations they may have in understanding or communicating them.

G.4.   Is there a need for translation or interpreting?   ☐ Yes ☒ No

If your answer is 'Yes', please provide copies of any translations with this application and any Confidentiality Agreement required for translators or interpreters.

H.   *Respect for Rights of Privacy and Confidentiality*

H.1.   How will the privacy and confidentiality of participants be protected?

Please note that anonymity and confidentiality are different. For AUTEC's purposes, 'Anonymity' means that the researcher is unable to identify who the participant is in any given case. If the participants will be anonymous, please state how, otherwise, if the researcher will know who the participants are, please describe how participant privacy issues and confidentiality of information will be managed.

All data will be anonymoused by the researcher in the outputs of the research. Participants of the survey/questionnaire will remain anonymous to all.

H.2.   How will individuals or groups be identified in the final report?

If participants or groups will be identified, please state how this will happen, why, and how the participants will give consent.

Experts will be indentified through a pseudonym of choice, and refered to by profession of experise e.g. clincan, receptionist, nurse. All identifiable knowledge will be removed or altered to protect anonymity. A final review will be conducted by the expert to okay before the exegesis is submitted or published.

H.3.   What information on the participants will be obtained from third parties?

This includes use of third parties, such as employers or professional organisations, in recruitment.

H.4.   How will potential participants' contact details be obtained for the purposes of recruitment?

The charge nurse of Starship outpatients will approach and give the researcher contacts only for clinical experts.

H.5.   What identifiable information on the participants will be given to third parties?

No identifiable knowledge will be given to third parties.

H.6.   Who will have access to the data during the data collection and analysis stages?

The applicant and the researcher/s.

H.7.   Who will have access to the data after the findings have been produced?

The applicant and the researcher/s.

H.8.   Are there any plans for the future use of the data beyond those already described?   ☐ Yes ☒ No

The applicant's attention is drawn to the requirements of the Privacy Act 1993 (see Appendix I of AUTEC's Applying for Ethics Approval: Guidelines and Procedures). Information may only be used for the purpose for which it was collected so if there are future plans for the use of the data, then this needs to be explained in the Information Sheets for participants. If you have answered 'Yes' to this question, please answer section H.8.1.1 and continue from there. If you answered 'No' to this question, please go to section H.9 and proceed from there.

H.8.1.1   If data will be stored in a database, who will have access to that data and how will it be used and for what?

H.8.1.2   Will any contact details be stored for future use and if so, who will have access to that data and how will it be used and for what?

H.9.   Where will the data be stored once the analysis is complete?

Please provide the exact storage location. AUTEC normally requires that the data be stored securely on AUT premises in a location separate from the consent forms. Electronic data should be downloaded to an external storage device (e.g. an external hard drive, a memory stick etc.) and securely stored. If you are proposing an alternative arrangement, please explain why.

Data will be stored in a lockable cabinet in Stephen Reay's office at the AUT city campus. Digital data will be stored on an external hard drive in a lockable cabinet in Stephen Reay's office. Consent forms will be stored in a lockable cabinet away from the data in the Art and Design (WE) building at AUT.

H.9.1.   For how long will the data be stored after completion of analysis?

AUTEC normally requires that the data be stored securely for a minimum of six years, or ten years for health related research. If you are proposing an alternative arrangement, please explain why.

For a mimimum of six years.

H.9.2.   How will the data be destroyed?

If the data will not be destroyed, please explain why, identify how it will be safely maintained, and provide appropriate informed consent protocols.

Electronic data will be deleted using erase through disk utility on a mac. Hard copy data will be shredded along with written consent forms.

H.10.   Who will have access to the Consent Forms?

The applicant and the researcher/s.

H.11.   Where will the completed Consent Forms be stored?

Please provide the exact storage location. AUTEC normally requires that the Consent Forms be stored securely on AUT premises in a location separate from the data. If you are proposing an alternative arrangement, please explain why.

H.11.1.   For how long will the completed Consent Forms be stored?

AUTEC normally requires that the Consent Forms be stored securely for a minimum of six years, or ten years in the case of health related research. If you are proposing an alternative arrangement, please explain why.

Six years mimimum.

H.11.2.   How will the Consent Forms be destroyed?

If the Consent Forms will not be destroyed, please explain why.

Consent forms will be shredded.

H.12.   Does your project involve the use of previously collected information or biological samples for which there was no explicit consent for this research?   ☐ Yes ☒ No

If the answer is 'Yes' please answer H.12.1 and the following sections, otherwise please answer H.13 and continue from there.

H.12.1.   What previously collected data will be involved?

H.12.2.   Who collected the data originally?

H.12.2.1   Why was the data originally collected?

H.12.2.2   For what purposes was consent originally given when the data was collected?

H.12.3.   How will the data be accessed?

H.13.   Does your project involve any research about organisational practices where information of a personal or sensitive nature may be collected and / or where participants may be identified?   ☐ Yes ☒ No

If the answer is 'Yes' please answer H.13.1 and the following sections, otherwise please answer I.1 and continue from there.

H.13.1.   How will organisational permission be obtained and recorded?

H.13.2.   Will the organisation know who the participants are?

H.13.3.   How will the identity of the participants be kept confidential?

I.   *Minimisation of risk*

I.1.   Risks to Participants

Please consider the possibility of moral, physical, psychological or emotional risks to participants, including issues of confidentiality and privacy, from the perspective of the participants, and not only from the perspective of someone familiar with the subject matter and research practices involved. Please clearly state what is likely to be an issue, how probable it is, and how this will be minimised or mitigated (e.g. participants do not need to answer a question that they find embarrassing, or they may terminate an interview, or there may be a qualified counsellor present in the interview, or the findings will be reported in a way that ensures that participants cannot be individually identified, etc.) Possible risks and their mitigation should be fully described in the Information Sheets for participants.

I.1.1.   How much time will participants be required to give to the project?

Experts will give an aproximate 30 minutes, maximum an hour. Anonymous participants through survey/questionnaire will give up to 15 minutes.

I.1.2.   What level of discomfort or embarrassment may participants be likely to experience?

Experts may feel discomfort if an unexpected question is asked, if this is noticed by the researcher it will be voiced that it can be skipped, and continue to the next question. Anonymous participants are expected to have perhaps mimimum discomfort due to completing the survey/questionnaire within a public space.

I.1.3.   In what ways might participants be at risk in this research?

It is not anticipated participants will be exposed to high level risk, however when voicing ideas verbally or written they may feel discomfort if unsure about validity of their ideas. This will be counteracted through information sheets/posters that communicate the importantace and respect of the individuals experience.

I.1.4.   In what ways are the participants likely to experience risk or discomfort as a result of cultural, employment, financial or similar pressures?

It is not anticipated, however for the large range of cultural and economic diversity within healthcare accessible language will be used for all collateral.

I.1.5.   Will your project involve processes that are potentially disadvantageous to a person or group, such as the collection of information, images etc. which may expose that person/group to discrimination, criticism, or loss of privacy?   ☐ Yes ☒ No

If your answer is 'Yes', please detail how these risks will be managed and how participants will be informed about them.

I.1.6.   Will your project involve collection of information of illegal behaviour(s) gained during the research which could place the participants at current or future risk of criminal or civil liability or be damaging to their financial standing, employability, professional or personal relationships?   ☐ Yes ☒ No

If your answer is 'Yes', please detail how these risks will be managed and how participants will be informed about them.

I.1.7.   If the participants are likely to experience any significant discomfort, embarrassment, incapacity, or psychological disturbance, please state what consideration you have given to the provision of counselling or post-interview support, at no cost to the participants, should it be required.

Research participants in Auckland may be able to utilise counselling support from the AUT Counselling Team, otherwise you may have to consider local providers for participants who are located nationwide, or in some particular geographical area. You can discuss the potential for participant psychological impact or harm with the Head of AUT Counselling, if you require.

Participants are unlikely to experience harm.

I.1.8. **Will any use of human remains, tissue or body fluids which does not require submission to a Health and Disability Ethics Committee occur in the research?**   ☐ Yes ☒ No

e.g. finger pricks, urine samples, etc. (please refer to section 13 of AUTEC's Applying for Ethics Approval: Guidelines and Procedures). If your answer is yes, please provide full details of all arrangements, including details of agreements for treatment, how participants will be able to request return of their samples in accordance with right 7 (9) of the Code of Health and Disability Services Consumers' Rights, etc.

I.1.9. **Will this research involve potentially hazardous substances?**   ☐ Yes ☒ No

e.g. radioactive material, biological substances (please refer to section 15 of AUTEC's Applying for Ethics Approval: Guidelines and Procedures and the Hazardous Substances and New Organisms Act 1996).

If the answer is 'Yes', please provide full details, including hazardous substance management plan.

I.2. **Risks to Researchers**

If this project will involve interviewing participants in private homes, undertaking research overseas, in unfamiliar cultural contexts, or going into similarly vulnerable situations, then a Researcher Safety protocol should be designed and appended to this application. This should identify simple and effective processes for keeping someone informed of the researcher's whereabouts and provide for appropriate levels of assistance.

I.2.1. **Are the researchers likely to be at risk?**   ☐ Yes ☒ No

If the answer is 'Yes' please answer I.2.1.1 and then continue, otherwise please answer I.3 and continue from there.

I.2.1.1 **In what ways might the researchers be at risk and how will this be managed?**

I.3. **Risks to AUT**

I.3.1. **Is AUT or its reputation likely to be at risk because of this research?**   ☐ Yes ☒ No

If the answer is 'Yes' please answer I.3.1.1 and then continue, otherwise please answer I.3.2 and continue from there.

I.3.1.1 **In what ways might AUT be at risk in this research?**

Please identify how and detail the processes that will be put in place to minimise any harm.

I.3.2. **Are AUT staff and/or students likely to encounter physical hazards during this project?**   ☐ Yes ☒ No

If yes, please provide a hazard management protocol identifying how harm from these hazards will be eliminated or minimised.

J. **_Truthfulness and limitation of deception_**

J.1. **How will feedback on or a summary of the research findings be disseminated to participants (individuals or groups)?**

Please ensure that this information is included in the Information Sheet.

Experts will be given access to the digital copy of the final exegesis.

J.2. **Does your research include any deception of the participants, such as non-disclosure of aims or use of control groups, concealment, or covert observations?**   ☐ Yes ☒ No

Deception of participants in research may involve deception, concealment or covert observation. Deception of participants conflicts with the principle of informed consent, but in some areas of research it may sometimes be justified to withhold information about the purposes and procedures of the research. Researchers must make clear the precise nature and extent of any deception and why it is thought necessary. Emphasis on the need for consent does not mean that covert research can never be approved. Any departure from the standard of properly informed consent must be acceptable when measured against possible benefit to the participants and the importance of the knowledge to be gained as a result of the project or teaching session. This must be addressed in all applications. Please refer to Section 2.4 of AUTEC's Applying for Ethics Approval: Guidelines and Procedures when considering this question.

If the answer is 'Yes' please answer J.2.1 and the following sections, otherwise please answer J.3 and continue from there.

J.2.1. **Is deception involved?**

J.2.2. **Why is this deception necessary?**

J.2.3. **How will disclosure and informed consent be managed?**

J.3. **Will this research involve use of a control group?**   ☐ Yes ☒ No

---

If the answer is 'Yes' please answer J.3.1 and the following sections, otherwise please answer K.1 and continue from there.

J.3.1. **How will the Control Group be managed?**

J.3.2. **What percentage of participants will be involved in the control group?**

J.3.3. **What information about the use of a control group will be given to the participants and when?**

K. **_Avoidance of Conflict of Interest_**

Researchers have a responsibility to ensure that any conflict between their responsibilities as a researcher and other duties or responsibilities they have towards participants or others is adequately managed. For example, academic staff members who propose to involve their students as participants in research need to ensure that no conflict arises between their roles as teacher and researcher, particularly in view of the dependent relationship between student and teacher, and of the need to preserve integrity in assessment processes. Likewise researchers have a responsibility to ensure that any conflict of interest between participants is adequately managed for example, managers participating in the same research as their staff.

K.1. **What conflicts of interest are likely to arise as a consequence of the researcher's professional, social, financial, or cultural relationships?**

There are no conflicts of interest foreseen.

K.2. **What possibly coercive influences or power imbalances in the professional, social, financial, or cultural relationships between the researcher and the participants or between participants (e.g. dependent relationships such as teacher/student; parent/child; employer/employee; pastor/congregation etc.) are there?**

There may be a power inbalance between the researcher and expert participant, due to being a qualitative design student within a quantitive professional clinical culture.

K.3. **How will these conflicts of interest, coercive influences or power imbalances be managed through the research's design and practice to mitigate any adverse affects that may arise from them?**

Power imbalances will be manged through communicating clearly and consisely the nature of the project. Following this maintaining professionalism and preparedness following, during and after interviews.

K.4. **Does your project involve payments or other financial inducements (including koha, reasonable reimbursement of travel expenses or time, or entry into a modest prize draw) to participants?**   ☐ Yes ☒ No

If the answer is 'Yes' please answer K.4.1 and the following sections, otherwise please answer K.5 and continue from there.

K.4.1. **What form will the payment, inducement, or koha take?**

K.4.2. **Of what value will any payment, gift or koha be?**

K.4.3. **Will potential participants be informed about any payment, gift or koha as part of the recruitment process, and if so, why and how?**

K.5. **Have any applications for financial support for this project been (or will be) made to a source external to AUT?**   ☐ Yes ☒ No

If the answer is 'Yes' please answer K.5.1 and the following sections, otherwise please answer K.6 and continue from there.

K.5.1. **What financial support for this project is being provided (or will be provided) by a source external to AUT?**

K.5.2. **Who is the external funder?**

K.5.3. **What is the amount of financial support involved?**

K.5.4. **How is/are the funder/s involved in the design and management of the research?**

K.6. **Have any applications been (or will be) submitted to an AUT Faculty Research Grants Committee or other AUT funding entity?** ☐ **Yes** ☒ **No**

If the answer is 'Yes' please answer K.6.1 and the following sections, otherwise please answer K.7 and continue from there.

    K.6.1. **What financial support for this project is being provided (or will be provided) by an AUT Faculty Research Grants Committee or other AUT funding entity?**

    K.6.2. **What is the amount of financial support involved?**

    K.6.3. **How is/are the funder/s involved in the design and management of the research?**

K.7. **Is funding already available, or is it awaiting decision?**

K.8. **What is the financial interest in the outcome of the project of the researchers, investigators or research organisations mentioned in Part B of this application.**

L. *Respect for Property*

Researchers must ensure that processes do not violate or infringe legal or culturally determined property rights. These may include factors such as land and goods, works of art and craft, spiritual treasures and information.

L.1. **Will this research impact upon property owned by someone other than the researcher?** ☒ **Yes** ☐ **No**

If the answer is 'Yes' please answer L.1.1 and the following sections, otherwise please answer L.2 and continue from there.

    L.1.1. **How will this be managed?**

    Permission and feasibilty of temporary prototypes will be sought by charge nurse or equivalent well in advance.

L.2. **How do contexts to which copyright or Intellectual Property applies (e.g. virtual worlds etc.) affect this research and how will this be managed?**

Particular attention should be paid to the legal and ethical dimensions of intellectual property. Care must be taken to acknowledge and reference the ideas of all contributors and others and to obtain any necessary permissions to use the intellectual property of others. Teachers and researchers are referred to AUT's Intellectual Property Policy for further guidance.

The designed artefact from the research will remain the intellectual property of the researcher. However all participants and contributors will be acknowleged for their role in the research and referenced accordingly within the exegesis (or other publications) produced as an output of this research.

M. *References*

Please include any references relating to your responses in this application in the standard format used in your discipline.

Ulrich, R. S. (1991). Effects of interior deisgn on wellness: theory and recent scientific research, *Journal of healthcare interior design,* number (vol), pp. 97 – 109.

Khan, N. (2012). Analysing patient flow: reviewing literature to understand the contribution of space syntax to improve operational effieceny in healthcare setting.

Becker, F., Douglass, S. T. (2006). The ecology of the patient visit: Attractiveness, waiting times, and perceived quality of care, *Healthcare design,* 6 (7), pp. 12 – 19.

N. *Checklist*

Please ensure all applicable sections of this form have been completed and all appropriate documentation is attached as incomplete applications will not be considered by AUTEC.

Have you discussed this application with your AUTEC Faculty Representative, the Executive Secretary, or the Ethics Coordinator? ☐ *Yes* ☐ *No*

Is this application related to an earlier ethics application? If yes, please provide the application number of the earlier application. ☐ *Yes* ☐ *No*

Are you seeking ethics approval from another ethics committee for this research? If yes, please identify the other committee. ☐ *Yes* ☐ *No*

Section A	Project information provided	
Section B	Research Adequacy information provided	
Section C	Project details provided	
Section D	Three Principles information provided	
Section E	Social and Cultural Sensitivity information provided	
Section F	Vulnerability information provided	
Section G	Consent information provided	
Section H	Privacy information provided	
Section I	Risk information provided	
Section J	Truthfulness information provided	
Section K	Conflict of Interest information provided	
Section L	Respect for Property information provided	
Section M	References provided	
Section N	Checklists completed	
Section O.1 and 2	Applicant and student declarations signed and dated	
Section O.3	Authorising signature provided	

Spelling and Grammar Check (please note that a high standard of spelling and grammar is required in documents that are issued with AUTEC approval)

Attached Documents (where applicable)

Participant Information Sheet(s)	
Consent Form(s)	
Questionnaire(s)	
Indicative Questions for Interviews or Focus Groups	
Observation Protocols	
Recording Protocols for Tests	
Advertisement(s)	
Researcher Safety Protocol	
Hazardous Substance Management Plan	
Any Confidentiality Agreement(s)	
Any translations that are needed	
Other Documentation	

O.   *Declarations*

O.1.   Declaration by Applicant

Please tick the boxes below.

☐   *The information in this application is complete and accurate to the best of my knowledge and belief. I take full responsibility for it.*

☐   *In conducting this study, I agree to abide by established ethical standards, contained in AUTEC's Applying for Ethics Approval: Guidelines and Procedures and internationally recognised codes of ethics.*

☐   *I will continue to comply with AUTEC's Applying for Ethics Approval: Guidelines and Procedures, including its requirements for the submission of annual progress reports, amendments to the research protocols before they are used, and completion reports.*

☐   *I understand that brief details of this application may be made publicly available and may also be provided to the University Postgraduate Centre, the University Research Office, or the University's insurers for purposes relating to AUT's interests.*

_____   _____
Signature   *Date*

O.2.   Declaration by Student Researcher

Please tick the boxes below.

☐   *The information in this application is complete and accurate to the best of my knowledge and belief.*

☐   *In conducting this study, I agree to abide by established ethical standards, contained in AUTEC's Applying for Ethics Approval: Guidelines and Procedures and internationally recognised codes of ethics.*

☐   *I will continue to comply with AUTEC's Applying for Ethics Approval: Guidelines and Procedures, including its requirements for the submission of annual progress reports, amendments to the research protocols before they are used, and completion reports.*

☐   *I understand that brief details of this application may be made publicly available and may also be provided to the University Postgraduate Centre, the University Research Office, or the University's insurers for purposes relating to AUT's interests.*

_____   _____
Signature   *Date*

O.3.   Authorisation by Head of Faculty/School/Programme/Centre

Please tick the boxes below.

☐   *The information in this application is complete and accurate to the best of my knowledge and belief.*

☐   *In authorising this study, I declare that the applicant is adequately qualified to undertake or supervise this research and that to the best of my knowledge and belief adequate resources are available for this research.*

☐   *I understand that brief details of this application may be made publicly available and may also be provided to the University Postgraduate Centre, the University Research Office, or the University's insurers for purposes relating to AUT's interests.*

_____   _____
Signature   *Date*

Notes for submitting the completed application for review by AUTEC

Please ensure that you are using the current version of this form before submitting your application.

Please ensure that all questions on the form have been answered and that none have been deleted.

Please provide **one** printed, single sided, A4, and signed copy of the application and all related documents.

Please deliver or post to the AUTEC Secretariat, room WA 505F, fifth floor, WA Building, City Campus. The internal mail code is D-89. The courier address is 55 Wellesley Street East, Auckland 1010.

The application needs to have been received in the AUTEC Secretariat by 4 pm on the relevant agenda closing day [AUTEC's meeting dates are listed in the website at http://aut.ac.nz/researchethics]

If sending applications by internal mail, please post them at least two days earlier to allow for any delay that may occur.

Late applications will be placed on the agenda for the following meeting.

MINIMAL RISK CHECKLIST

Your application may be appropriate for an expedited review if it poses no more than minimal risk of harm to participants. To assist AUTEC's Secretariat to screen the application for assignment to the correct review pathway, complete the following checklist:

Does the research involve any of the following?

NEGLIGIBLE RISK ASSESSEMENT

		Yes	No
1	The collection of anonymous and non-sensitive survey/questionnaire data from adults that poses no foreseeable risks to participants OR any foreseeable risk is no more than inconvenience? *(If YES is checked, the application may receive an expedited review – no further questions on this checklist need be answered.)*		

MINIMAL RISK ASSESSMENT[1]

		Yes	No
2	Participants who are unable to give informed consent (including children under 16 years old), or who are particularly vulnerable or in a dependent situation, (e.g. people with learning difficulties, over-researched groups, people in care facilities, or patients highly dependent on medical care)?		
3	A reasonable expectation of causing participants physical pain beyond mild discomfort, or that experienced by the participants on an every-day basis, or any emotional discomfort, embarrassment, or psychological or spiritual harm, (e.g. asking participants to recall upsetting events)?		
4	Research processes which may elicit information about any participant's involvement in illegal activities, or activities that represent a risk to themselves or others, (e.g. drug use or professional misconduct)?		
5	Collection of any human tissue, blood or other samples, or invasive or intrusive physical examination or testing?		
6	The administration of any drugs, medicines, supplements, placebo or non-food substances?		
7	An intervention of any form of exercise, or other physical regime that is different to the participants' normal activities (e.g. dietary, sleep)?		
8	Participants who are being asked to give information of a personal nature about their colleagues, employers, teachers, or coaches (or any other person who is in a power relationship with them), and where the identity of participants or their organisation may be inferred?		
9	Any situation which may put the researcher at risk of harm? (E.g. gathering data in private homes)?		
10	The use of previously collected biological samples or identifiable personal information for which there was no explicit consent for this research?		
11	Any matters of commercially sensitive information?		
12	Any financial interest in the outcome of the research by any member(s) of the research team?		
13	People who are not giving consent to be part of the study, or the use of any deception, concealment or covert observations in non-public places, including social media?		
14	Participants who are in a dependent or unequal relationship with any member(s) of the research team (e.g. where the researcher is a lecturer/ teacher/ health care provider/ coach/ employer/ manager/ or relative etc.) of any of the participants?		

---

[1] If "No" is checked to all items 2-14, the application's status as Minimal Risk will be checked by the Secretariat, and may be forwarded to expedited review. Applications with more than Minimal Risk (any one "yes" to questions 2-14 above), and applications where the checklist is not completed will appear on AUTEC's next agenda.

Expert interview [indicative] questions

What is your role within healthcare?

How is your role situated within the patient journey?

What do you think works well?

What does not work?

In your opinion, what do you think will help to fix this?

What are the emotional states of patients and their supporters/parents/guardians like when you encounter them?

What are the most commonly asked non-health related questions?

WHO DO I CONTACT FOR MORE INFORMATION?

If you have any questions, concerns or want more information please contact:

Project Supervisor
Dr Stephen Reay
stephen.reay@aut.ac.nz
09 921 9999 extn. 6719

Researcher
Eden Short
cpr5125@aut.ac.nz

Executive Secretary of AUTEC
Kate O'Connor
ethics@aut.ac.nz
09 921 9999 extn. 6038

This research is approved by the Auckland University of Technology Ethics Commitee on 29 April, 2015, AUTEC reference: 15/114

TOO LITTLE, TOO MUCH.

Exploring ways communication design can be used to ease stress and anxiety in information dense Outpatient environments.

By completing this survey, it is taken as consent to participate in this research. Once you've completed the survey, place in the labeled box in your waiting area.

Is this your first visit to the Starship Outpatients department?

☐ Yes   ☐ No

What was your first impression of the Starship Outpatient department?

Negative   Positive

How was your experience finding the Outpatient Department?
If you've been here before, what was your first experience like?

Negative   Positive

When finding my way, the most important thing to me is:

☐ Where I am

☐ Where I need to go next

☐ How I am getting to my next destination

☐ What is around me

Is there anything else you'd like to add?

Rate the following of most important to the least:
1 being the most important, 5 being the least.

☐ Artwork **for** children

☐ Accessible health information

☐ Signage to find your way

☐ Current health campaigns

☐ Artwork **by** children

What do you think is working well within Starship Outpatients?

What do you think we could do better?

Is there anything else you'd like to add?

Figure 163 A. (2015). Current-state survey questions.

Figure 163 B. (2015). Current-state survey information booklet

TOO LITTLE, TOO MUCH.

Exploring ways communication design can be used to ease stress & anxiety in information dense Outpatient environments.

WHAT'S THE PURPOSE?

I'm looking to find out how different ways of communicating information can influence the user experience in Starship Outpatients.

This is anything from finding your way

Accessing health-related information like pamphlets etcetera

Your rights as a patient or caregiver for example

Alongside your role within the user's journey in healthcare

HELLO.

My name is Eden Short. I'm a graphic designer studying a Masters of Art & Design at Auckland Univeristy of Technology (AUT). I would like to ask for your help in my research this year.

WHAT'LL HAPPEN?

The research is broken into 2 phases. Phase one is about finding out what's happening now—what's working and what isn't in Starship Outpatients.

This will be through a survey

Along side observation

With interviews with experts like yourself

Phase two will be about using insights from phase one.

Designs will be created then trialed within Starship Outpatients

Observation will continue

Feedback forms will be available to find out how effective or not the design is. From here further trials will continue until a final prototype is made

WHAT DO I DO?

During the research, all I need is your honest opinion. You are an expert in your experience, and there is no such thing as a right or wrong answer.

Participation is on a voluntary basis, and you have the right to withdraw at any time. Consent is given verbally, and through a signed form.

WHAT'RE THE RISKS / BENEFITS?

By being able to have a say, I hope you feel empowered in sharing your experiences. All involvement will be confidential. Your identity will be anonymoused with a pseudonom of your choice, and all material from the interview used will be sent to you for final review.

IS THERE ANY COST?

There is no cost except an anticipated 30 minute interview (maximum an hour).

WHO DO I CONTACT FOR MORE INFORMATION?

If you have any questions, concerns or want more information please contact:

Project Supervisor
Dr Stephen Reay
stephen.reay@aut.ac.nz
09 921 9999 extn. 6719

Researcher
Eden Short
cpr5125@aut.ac.nz

Executive Secretary of AUTEC
Kate O'Connor
ethics@aut.ac.nz
09 921 9999 extn. 6038

This research is approved by the Auckland University of Technology Ethics Commitee on 29 April, 2015, AUTEC reference: 15/114

Figure 163 C. (2015). Current-state survey poster

Too LITTLE, Too MUCH.

Exploring ways communication design can be
used to ease stress and anxiety in information
dense Outpatient environments.

Survey

Who do I contact for more information?

If you have any questions, concerns or want more information please contact:

Project Supervisor
Dr Stephen Reay
stephen.reay@aut.ac.nz
09 921 9999 extn. 6719

Researcher
Eden Short
cpr5125@aut.ac.nz

Executive Secretary of AUTEC
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*This research is approved by the Auckland University of Technology
Ethics Commitee on 29 April, 2015, AUTEC reference: 15/114*

Navigating through healthcare

How a design-led approach may provide
a more empathetic hospital outpatient
wayfinding experience.

**By completing this survey, you consent to participate in this research. Once
completed please leave your survey in the labeled box in your waiting area.**

What were your first impressions of *Starship's main entrance* today?

☐ I did not use the entrance

Negative ─────────────── Positive

What were your first impressions of the *Starship's Outpatient Department
front entrance* today?

☐ I did not use this entrance

Negative ─────────────── Positive

If you came through both entrances how did the signage help to get you to the
Starship Outpatient Department? If not, why?

_____
_____
_____
_____

Have you been to the Starship Outpatient Department before?

☐ Yes   ☐ No

Have you noticed a change in the signage?

☐ Yes   ☐ No

How useful did you find the signage solution?

Not helpful ─────────────── Very helpful
at all

Taking what you know now, how useful do you think the signage solution would be for a
first-time visitor to Starship Outpatient Department?

Not helpful ─────────────── Very helpful
at all

What do you think was most helpful or effective about the signage?

_____
_____
_____
_____

What aspect of the signage do you think should be improved?

_____
_____
_____
_____

Is there anything else you'd like to add?

_____
_____
_____
_____
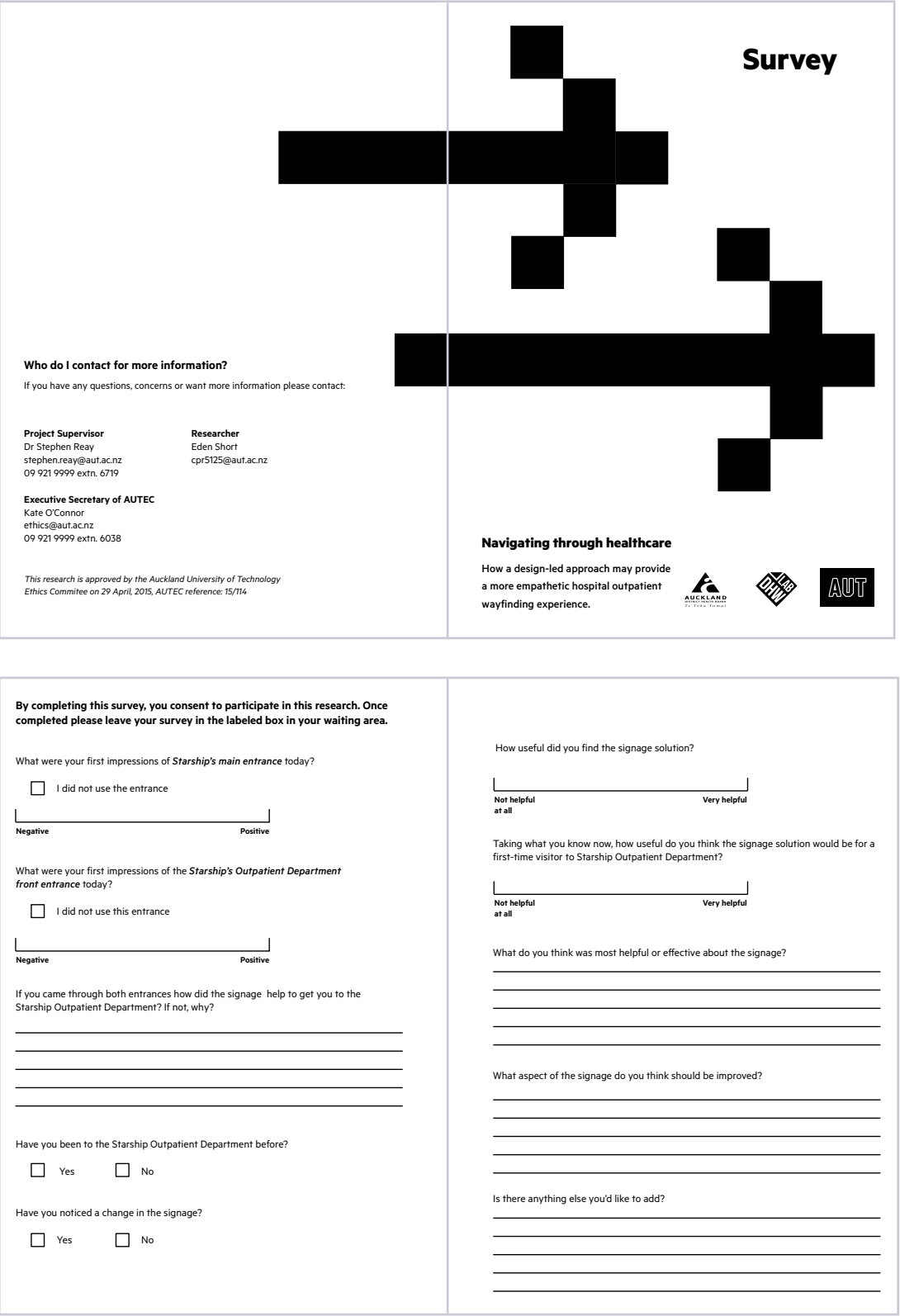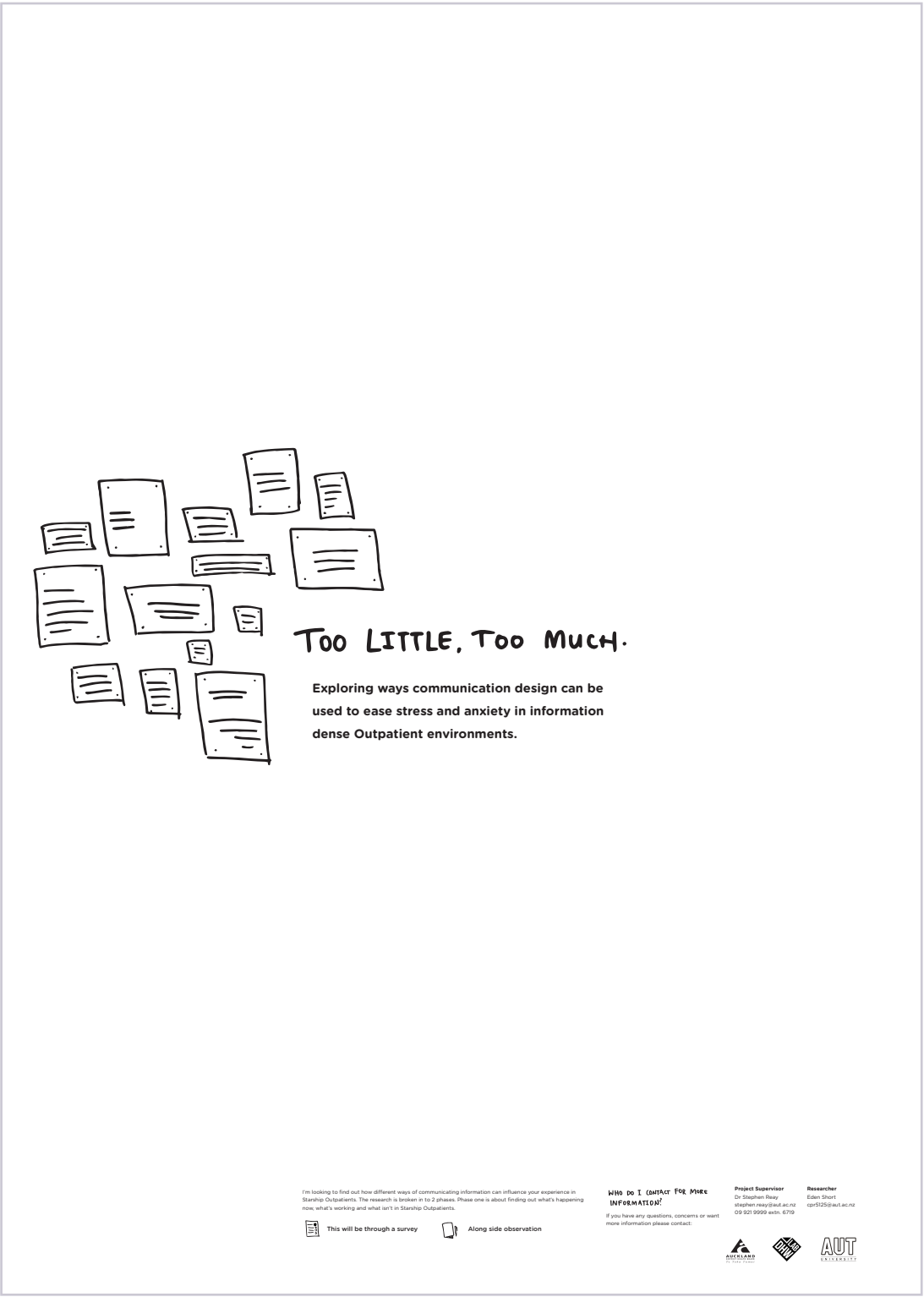
Figure 164 A. (2015). Current-state Prototype survey questions

Figure 164 B .(2015). Prototype survey information booklet

Navigating through healthcare
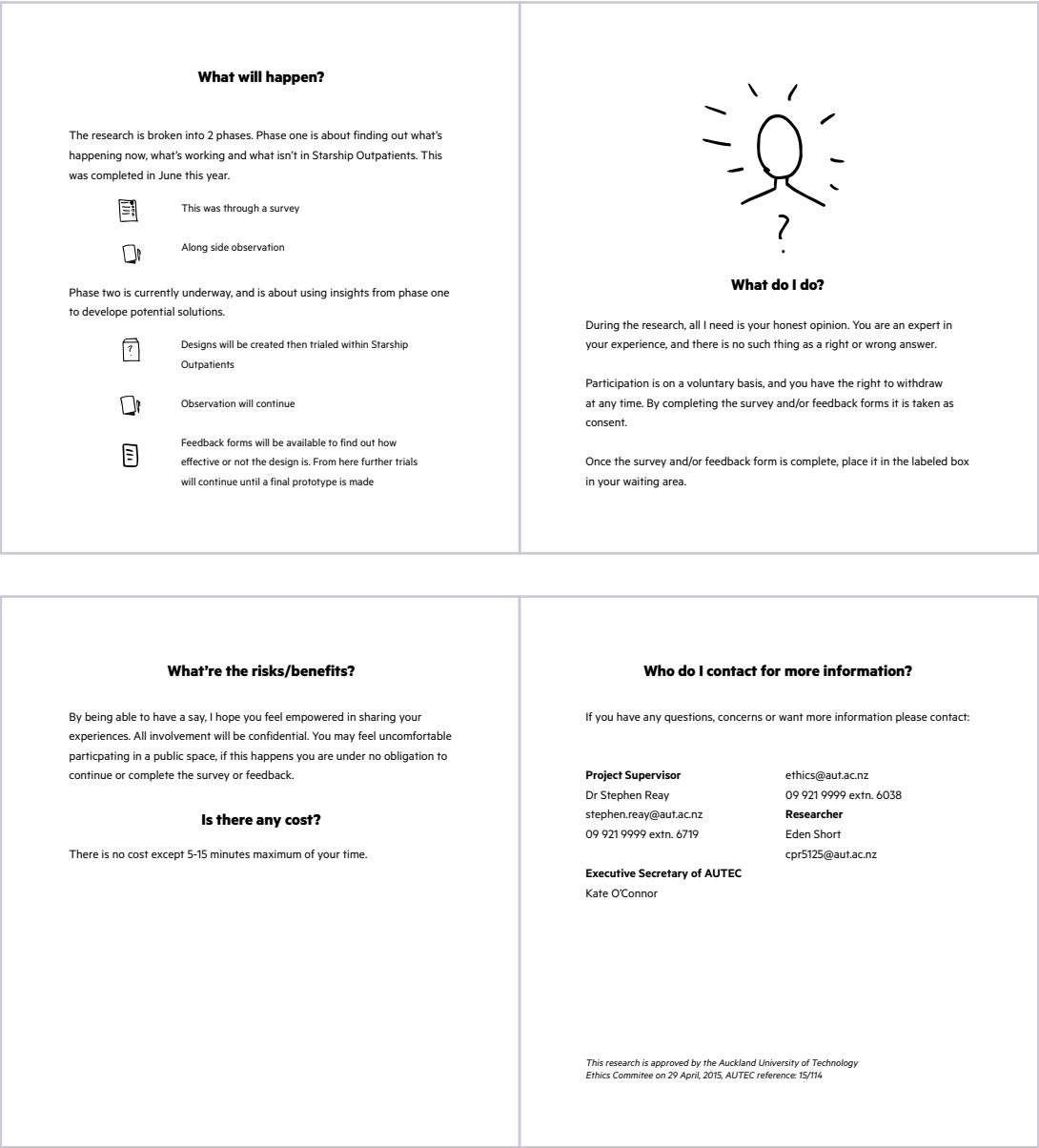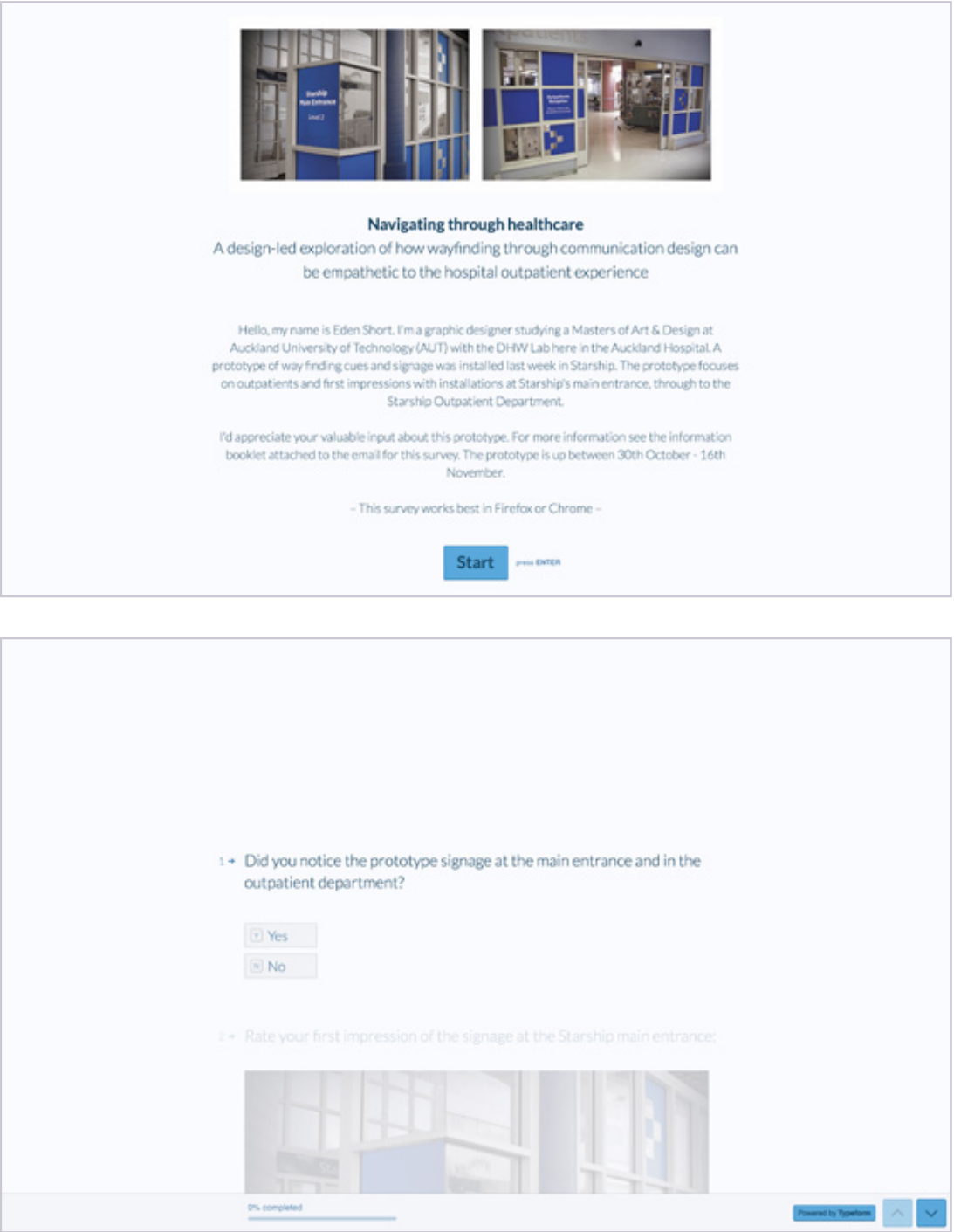
How a design-led approach may provide a more empathetic hospital outpatient wayfinding experience.

AUCKLAND / THE DESIGN / AUT

What will happen?

The research is broken into 2 phases. Phase one is about finding out what's happening now, what's working and what isn't in Starship Outpatients. This was completed in June this year.

This was through a survey

Along side observation

Phase two is currently underway, and is about using insights from phase one to develope potential solutions.

Designs will be created then trialed within Starship Outpatients

Observation will continue

Feedback forms will be available to find out how effective or not the design is. From here further trials will continue until a final prototype is made

---

What do I do?

During the research, all I need is your honest opinion. You are an expert in your experience, and there is no such thing as a right or wrong answer.

Participation is on a voluntary basis, and you have the right to withdraw at any time. By completing the survey and/or feedback forms it is taken as consent.

Once the survey and/or feedback form is complete, place it in the labeled box in your waiting area.

HELLO.

My name is Eden Short. I'm a graphic designer studying a Masters of Art & Design at Auckland Univeristy of Technology (AUT). I would like to ask for your help in my research this year.

What's the purpose?

I'm looking to find out how different ways of communicating information can influence the user experience in Starship Outpatients.

This is anything from finding your way

To your help in evaluating potential design solutions

What're the risks/benefits?

By being able to have a say, I hope you feel empowered in sharing your experiences. All involvement will be confidential. You may feel uncomfortable participating in a public space, if this happens you are under no obligation to continue or complete the survey or feedback.

Is there any cost?

There is no cost except 5-15 minutes maximum of your time.

Who do I contact for more information?

If you have any questions, concerns or want more information please contact:

Project Supervisor
Dr Stephen Reay
stephen.reay@aut.ac.nz
09 921 9999 extn. 6719

Executive Secretary of AUTEC
Kate O'Connor

ethics@aut.ac.nz
09 921 9999 extn. 6038
Researcher
Eden Short
cpr5125@aut.ac.nz

This research is approved by the Auckland University of Technology Ethics Commitee on 29 April, 2015, AUTEC reference: 15/114

Figure 164 C. (2015). *Prototype survey poster.*

Figure 165. (2015). *Prototype survey poster Prototype staff online survey.*

Navigating through healthcare:

How a design-led approach may provide a more empathetic hospital outpatient wayfinding experience.

2 → Rate your first impression of the signage at the Starship main entrance:

Starship
Main Entrance

Level 2

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

I really dislike it   I really love it

0% completed   Powered by Typeform

4 → Rate your first impression of the Starship Outpatient Department:

Outpatients Reception

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

I really dislike it   I really love it

5 → What made you choose the rating above?

0% completed   Powered by Typeform

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

I really dislike it   I really love it

3 → What made you choose the rating above?

4 → Rate your first impression of the Starship Outpatient Department:

0% completed   Powered by Typeform

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

I really dislike it   I really love it

5 → What made you choose the rating above?

6 → How you think this signage would be useful for patients and visitors (including or especially first-timers) to the Starship Outpatient Department?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Not useful at all   Very useful

0% completed   Powered by Typeform

I really dislike it   I really love it

5 → What made you choose the rating above?

6 → How you think this signage would be useful for patients and visitors (including or especially first timers) to the Starship Outpatient Department?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Not helpful at all   Very helpful

7 → Describe the most helpful aspects of this prototype:

8 → List and describe any improvements if this signage were to be made permanent:

0% completed   Powered by Typeform

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Not helpful at all   Very helpful

7 → Describe the most helpful aspects of this prototype:

8 → List and describe any improvements if this signage were to be made permanent:

9 → Do you have any further comments? Please list them here.

0% completed   Powered by Typeform

6 → How you think this signage would be useful for patients and visitors (including or especially first timers) to the Starship Outpatient Department?

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Not helpful at all   Very helpful

7 → Describe the most helpful aspects of this prototype:

8 → List and describe any improvements if this signage were to be made permanent:

9 → Do you have any further comments? Please list them here.

0% completed   Powered by Typeform

8 → List and describe any improvements if this signage were to be made permanent:

9 → Do you have any further comments? Please list them here.

Ok ✓ press ENTER

0% completed   Powered by Typeform

Staff survey content

Introduction

Navigating through healthcare:
A design-led exploration of how wayfinding through communication design
can be empathetic to the hospital outpatient experience

Hello, my name is Eden Short. I'm a graphic designer studying a Masters of
Art & Design at Auckland University of Technology (AUT) with the DHW Lab
here in the Auckland Hospital. A prototype of way finding cues and signage
was installed last week in Starship. The prototype focuses on outpatients and
first impressions with installations at Starship's main entrance, through to the
Starship Outpatient Department.

I'd appreciate your valuable input about this prototype. For more information
see the information booklet attached to the email for this survey. The
prototype is up between 30th October - 16th November.

– This survey works best in Firefox or Chrome –

Questions

Did you notice the prototype signage at the main entrance and in the
outpatient department?

Rate your first impression of the signage at the Starship main entrance:

What made you choose the rating above?

Rate your first impression of the Starship Outpatient Department:

What made you choose the rating above?

How you think this signage would be useful for patients and visitors (including
or especially first timers) to the Starship Outpatient Department?

Describe the most helpful aspects of this prototype: List and describe any
improvements if this signage were to be made permanent:

Do you have any further comments? Please list them here.

Appendix 5

Obervation notes

March 20, 2pm–3pm.

Wayfinding journey

Car park B to Starship outpatients

Walk out of car park building – map has little context to where I need to go

Follow blue line – don't really know where it goes

Feels like a back door entry

Enter building – now know what lines mean

Dark, smells weird

Signs every 5 meters 'to Starship'

Children's x-ray

Elevator in corridor with starship sign = confusing

No direct way level entrance to Starship

Faded paint

Front door entrance feels like back door = disorientated

Doesn't say whats up stairs

No wayfinding/direction when entering – just info desk

Don't know if I'm meant to be going up stairs

Backtrack and find lifts

Finally find directory by lift

In lifts buttons to left of doorway, directory to the right

Directory visible as soon as exiting lifts

Café next to Outpatients = quiet and basic

Outpatients

Quiet at this time – find out when busy

Daunting = unknown

Unsure – am I in the right reception line/area? Do I ask? They look busy.

Overwhelmed, BRIGHT colors, mismatched, no cohesion

Low, wide archway into outpatients area.

A4 laminated signs – important info

Flexibility – not enough in current signage

Laminated signs over current hanging wayfinding

Dark inside – looks like lights aren't on

Too many pamphlets to look through.

6 tiers.

Most look different (visual style-wise)

Outside the family information service directly to the left of the entrance.

Trying to celebrate other cultures with pamphlets and posters, yet space is a very non-inclusive in style.

Entrance – 3 steps in = rubbish bins to the left

At least 3 different shades of blue

Different sized families – from large (2 parents and siblings) to just 1 parent

Large families take over large seating area (with much left spare seating) yet small families take the awkward seats by the wall instead

Does ownership of the space transfer to the Outpatient area? Even when just there for a certain amount of time?

Ownership = trust & familiarity
Trust in the space to move about in facilities and in timing?

Thoroughfare = make a definite change in space, doesn't feel like a clinical area

How do you prioritise and organize information that is important to get to patients and the public?
= Product = stand that encourages interaction and sorts information easily.

Some wayfinding has different colors for different buildings
Attempts at decorating.
People waiting in corridors
Super quiet = music?
Carpeted corridor = like half back offices kind of clinic space?
Most important pamphlets in the waiting area?
Waiting area (main) – digital sign thing that changes to messages from reception to date and time
Hardly notices its there

Cartoons on TV
A5 signs to number waiting area
Outside to left of entering outpatients area = kids 'art gallery'
Staff member mentioned previously that walls in the area not appropriately used as a display for children's art – should be used for more practical things = where is appropriate for this?
Is there a way to stop the thoroughfare through graphic/environmental design?

More transparent
Focus on the welcome?

21 April, 1.35pm – 2.25pm

The advised route to outpatients (Lift B – tunnel – Starship) = 80s, super outdated.

Wrong way from café on level 3 creates a thoroughfare – most likely chosen as it is the more nicer, aesthetically pleasing route – even has the nicer artworks here, quiet.

Observing – Looking for:

Anxiousness

Stress

Seeking/engaging with information

Where are the people coming from entering/exiting

Start: Located in the waiting room one, main reception

Clown doctors in today.

One family waiting while clown entertains child.

Parents are unaware till informed the playroom is a place to wait – <u>maybe because its called the play room instead of something like 'play and wait'</u>

Staff

Clinicians

Clowns

Cleaners

Receptionists

Nurses

Carpet hallway = quite busy

Sole supporters = overloaded with child, pram and heavy bags
"So used to it now" – yet wasn't aware of the playroom waiting thing. And still seemed flustered – was it because parking was full at this time?

Majority of people waiting seems to be mothers and child (sole supporter and patient).
Is it a socio-economic thing for sole supporter and child/ren as opposed to the whole family coming?

Carpet corridor = inner department staff flow = very full/bustling

Entertainment = mural – mid tone
Disney channel against the mural

Natural light in this waiting room from large windows

Is a lot of the stress getting here rather than the stress of the child's health?
I guess alongside this, you trust that you're in the right place for help to happen, and that's the main thing.

Pamphlets in waiting room 1 seem messed with – could be through engagement or bustling children/environment

Positive staff engagement = first impression

How is the information organized?

How do you chose what to put where?

Pamphlet with cast seems most interacted with.

This could be from being the most popular reason for being at outpatients –

what most people come to starship for.

In prime location in waiting room 1

Unusual and distinctive shape

Senses

Noise

Disney channel – TV noises

Boxed laughter.

Shouting.

Dramatic pitching, noise effects.

Door creaking to playroom – sounds old, uncared for, clanking when someone enters = narrow doorway

Staff talking socially/banter = creates a positive atmosphere = respect for one another.

Echoes from the beginning of the room – can hear a convocation at the first reception desk between staff and a mother.

Can't hear much from the actual playroom.

Children's noises – crying, talking, running

Touch

Hard cold plastic

Shiny floors

Clip board

Computer paper (I think)

Shiny walls (murals = new), rough (retrofitting)

See

Clear crisp light in waiting room one. In the carpeted hallway light is very patchy – very dark to very light.

The clear strips where clinic/office doors are open and natural light is coming in. Darkness from the indoor lighting (very bad).

Hospital feel vs. positive distraction

Hospital feel = seats – beige, lino.

Natural material – shelf attached to reception, frame of indoor windows and indoor windows in doors

Above door frame in waiting room one – road like sign.

Positive distractions are overwhelming relevant/key information
E.g. checking in at reception, customer feedback what to do/where to go.

What is the direction to the other waiting rooms? Is it purely verbal information?

Smell

Quite neutral – not noticeably hospital like.

Other insights

Have not seen any patients (any age) unaccompanied.

Outdated vs retro fitting with colors.

Couple settling in waiting room 1, then realizing in the wrong area.

Focusing on the child and their calming, entertainment, wellbeing (middle child and lower).

Left to own devices to entertain themselves (Middle to teen).

What if different kinds of music played? I.e.. Something soothing/instrumental.
Maybe more likely to get parents of older children to fill in the survey, due to

younger children being more demanding.

Those with high demanding health needs children (frequent visitors) may not answer survey due to focus on child's needs.

Most there are solo supporters, 3-4 couples seen.

Staff approach the parent in the waiting room.

The staff traffic is very heavy within the department.

There is no sense of privacy – waiting room looks directly down the hall to the other waiting room.

Lots of wheelchairs/prams/foot traffic in the carpeted hallway.

Hospital feel vs. positive distraction
= So polar opposite and not integrated.

Questions

Are pamphlets more likely to be taken when looking more official i.e.. Magazine like?

When is the area most busy/quiet?

Tuesday, 3.15pm – 4pm

Encouraging visits to the Starship website through posters
Vinyl info onto the wall, complimenting/contrasting the pastel wall.

Doesn't officially say reception anywhere – a part from a5 signs on the reception desks.

Is the reception playing 2 roles?
A place to welcome and to do back office duties?
Staff white-board more visible than wayfinding

When you leave the clinician it is considered the end of your patient journey
Should a space be facilitated for finishing your journey? I.e. info seeking station? – NOT in the entrance/flow

Most busiest after lunch at 12.30 pm, and fracture clinic is Mondays and Thursdays.

Due to the line in peak hours for reception going out the door, somewhere earlier in the entrance there needs to be an indicator of reception.

INSIGHT – Retail campaign = only relevant for the promotion
Health campaigns = always relevant

Tuesday, 1.00pm – 2.30pm

What I am looking for

Emotions – Positive/negative
Does anyone look stressed?
How many people are bringing their letter?
Are patients/supporter's coming singularly or as family units?

Arrival to Starship outpatients

Coming from support building recommended main route, took an alternative route found in the role play. I found this route more natural with the curved path, seemed to direct traffic better.

However when arriving at the lifts at the end of the path it was clear this wasn't the proper route.

Need the welcome for visitors

The people

Parents of toddlers/younger children have come prepared with backpacks i.e. brought snacks etc.

Some letters were brought, approximately a third the time I was there.

Unsure if not bringing the letter is learnt behavior or not.

Once notifying when/where appointment is it has little value, except verbally giving destination of appointment without directions.

Most children who were of school age were accompanied by 1 supporter.

Babies/toddlers were usually accompanied by 2 supporters.

Common for those of ethnic minorities to come with more than 1 supporter.

It was common (approx. Half to a third of the time) for siblings to come with the patient and supporter. Some of the old siblings acting as supporters for both the patient, and the supporter themselves (especially when there was a baby and younger children involved).

A mother came in stressed, and puffing as she had parked whilst the father and child were at starship. She had to park "miles away" on the other side of Grafton Bridge. A father came later complaining to reception about parking.

Some children want to stay quite close to their supporter, others want to go off and play.

Wayfinding

Bluecoats sometimes guide parents to the reception. Staff often giving verbal directions to waiting rooms, doctors offices, children's x-ray and cardiology.

Slot signage in front of computers on reception desks seem to be ineffective as most patients don't see them. Is there a way to match the colored folder to the sign on the desk?

The space should facilitate the family unit

Making sure it is inclusive design – especially for mentally and physically disabled kids that come through there

What I know so far

A patient is ALWAYS accompanied by a supporter.

By first impressions MOST do not appear to be seriously ill

Perhaps as the waiting room 1 is an overflow room more focus should be on the welcome rather than the waiting experience.

Is there something that should be on the letter regarding a translator if you can't speak English and/or cant find an English speaking family member/friend to come with you?

Most people seem slightly resigned to coming to the hospital. Is there this acceptance that it must be bad, as it is a hospital? Its expected almost?

Could an opportunity for more patient/supporter feedback be facilitated?

Only 1-2 children during the observation seemed to use the playroom, a supporter mentioned they couldn't use it as they were going down the hall.

Waiting area 1

Health campaigns aren't really here, they're more down the hallways.

LOTS of pamphlets that aren't really elsewhere in the department
Wayfinding to and within the department is a huge issue, especially to children's x-ray
Art work – the mural
Staff information on the back wall of reception
- Is there a way to connect this to wayfinding? It is assumed that although this is for staff, visitors will make the connection between the room number and clinician.

Need to get in touch with someone in children's x-ray.

Consult with Clown doctors.

Check how patients get referred to Outpatients from GP

Ongoing treatment.

Role-play

Timeline

Left place of work/university

Constantly checking time to make sure not late.
Had to bring the car in to get to the appointment – added cost as had to pay for parking there.

Drove from there to directly to the hospital

Felt in control, as the car was something I directed. Got slightly misdirected on the way there through one way city streets.
Constantly checking watch to make sure I'd left enough time (I left 30 mins before my appointment on what should have been a 5-7 minute drive).

Couldn't find a park

Car park B (the one for starship) was full. I thought I'd left enough time, obviously not and had come at peak time.

Circled and got lost on the campus roads

Tried to find car park A internally, yet got lost on the inner campus roads.
Stressful, even though I am quite familiar with the campus I felt lost, anxious, stressed as I didn't want to miss my appointment and was constantly checking the time.
I felt my inability to navigate the campus was my own fault.

Drove outside of campus and around to car park A

I found car park A full.
Didn't quite know where to go from here, so went outside the campus again. I was worried that the distance I was creating meant more wasted time.

Drove around outside of campus

Managed to find a car park with pay and display.
Thinking the appointment/role play shouldn't be too long I paid an hour max.

Up until here the simulation was quite genuine, making sure I drove a car in as this is how most outpatients get to the hospital. Constraints that were unavoidable were the fact I did not have a child/dependent with me as I went through the process due not having ethics. I did not apply as this was a design exercise in developing empathy, rather than a core component i.e. the user themselves.

For example if I had a dependent I would have picked them up on the way, or have stayed at home for the morning before the appointment, as other supporters might.

Rushed in

Did not simulate no knowing the hospital as was running quite late at this point.
In hindsight I should have continued the simulation, however I was anxious and flustered, as I had not expected to be late.
Largely a lot of this was because I am quite familiar with the hospital, yet I found when coming into the campus as a whole, and the building itself a lot of my previous knowledge left me and I found myself going ways around I had not before and becoming lost.

Got to Starship

By this time I had made the descision to contine the simulation by asking the help desk for directions, however no one was there. Again, feeling anxious I was late found my own way through.
In this, I went a way I had never been before to outpatients, and was quite bewildered.

Arrived

Everything (visual noise) fell away as I narrowed in to the reception desk to

check in

I had my letter on hand and explained to the receptionist the fact I was a
student and role playing in the area

From here I enquired to the waiting time, to which she replied it was on my
letter (3 hours I later found).

I caught sight of a familiar face, a fellow student completing a role play at
the same time. We had a brief chat about the appointment, then agreed to
separate ourselves as to try to better experience the wait. Seeing a familiar
face was comforting, and a patient/supporter would not have this. Rather I
would assume they would feel lost, and slightly out of place. The staff are
very comfortable here, and the patients/supporters work to their way of doing
things rather than the patient/supporter way of doing things.

Waited

I took a seat in the waiting area 1, and simulated the waiting experience

I did not take notes, or use my phone as to try and experience the role play as
genuinely as I could.

Got anxious about parking, I had only anticipated being an hour. I was an hour
late in the end, and if had gotten caught by the parking guy would not been
in a finical position to pay with ease (as with most of the patients/supporters
there I imagine).

Observations

Many supporters coming in had their letter on hand ready to show reception

The 'find the stars' activity mural was at the back on peoples heads in the
waiting room.

Due to being fracture clinic, there was a steady flow of people arriving.

The murals were aimed at quite young children, and the TV channel at middle
to early teen.

Some parents seemed to already know about the playroom/ had been
informed.

Arriving in Starship and interacting with staff, the simulation was slightly jolted
as I had to explain I was a student doing a role play. My experience of waiting
was cut short, as Judy the charge nurse took this time to introduce me and
another student doing the role play to a orthopedics nurse for a brief consult.
After this I continued the wait, until seeing Judy again, and was introduced and
had a brief consult with another staff member in Family Information.

I could not pass up the opportunity to talk to staff, as working with other
people in a project like this I must work around others schedules. Especially
when they are as busy as those within a hospital. The quick introductions and
talks provided crucial insight into the patient journey we were missing in our
simulation (as this was not possible on the day).

Next time better notice, and organization would provide a richer method. However, this is part of the experience as things we now know are due to enacting the role play itself. To know too much of what is going to happen could devalue the emotional response i.e. not knowing what is coming next, much like a patient/supporter. Yet knowing what is to come allow more organization to experience every step until the clinician.

Placemaking – Auckland City Hospital campus

When exploring the Auckland City Hospital campus, the perimeter was documented (Figure 165). This was broadened to an investigation into the landmarks surrounding the campus, and how these were connected to the hospital.[1] Significant city landmarks were found, such as the Auckland Domain, Auckland University, the Grafton Bridge, and the motorway (Figure 166; Figure 167). The lack of connection with landmarks surrounding the hospital campus was prevalent, alongside campus navigation focusing on cars rather than people.

1. Kaiser (2015) discusses the importance of health districts in which a broader ecosystem is developed that promotes wellbeing beyond hospital walls. Examples include education, counselling, design, etc.

Figure 165, (2015). Grafton Campus, Grafton entrance

From the roadside the top peak of Starship is visible whilst
the rest is hidden by the car park (left) and trees. This hides
Starship's biggest strength as a landmark, due to being an iconic
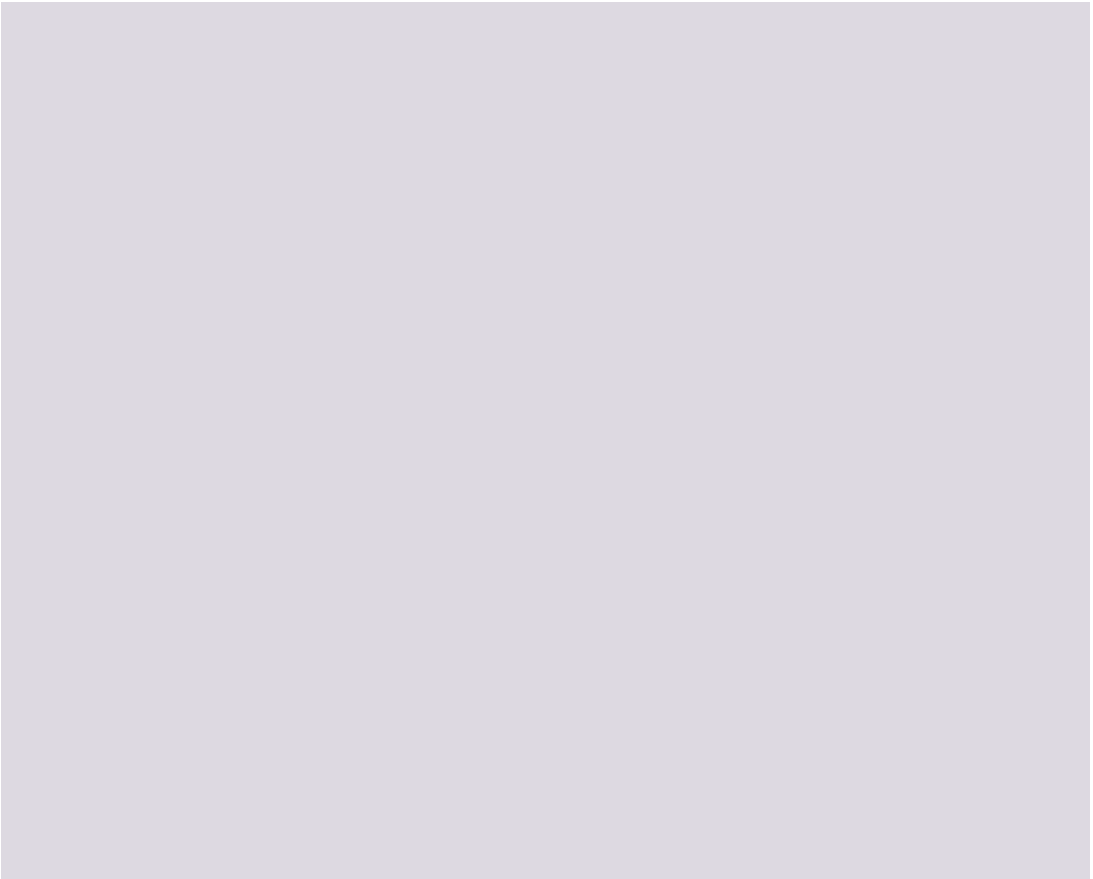building, it is barely visible from the road.

*Figure 166. (2015). Google map view of what is around the
Grafton Campus*

Figure 167. (2015). *Grafton campus from the Auckland Domain*

Full of gardens, trees and grass, the domain was faced by
functional staff buildings, rather than buildings for care.

Figure 168. (2015). *Whitcoulls entrance.*

The overload of information at the entrance was found to be much the same as hospital, i.e. more emphasis on advertising/ alternate information than wayfinding. Visual cues were bright and repetitive, clouding mid and high eye ranges. Wayfinding colours are muted and dark, often fading into the background.

Figure 169. (2015). *Valley girl entrance*.

Walking in, there was an immediate cognitive overload, yet
information had a clear distinction of cues when investigated.
Sale signs were always low in immediate eye height, whilst
permanent wayfinding cues were high, i.e. fitting room signage.

Figure 170. (2015). *Glassons entrance*.

Standard signs are muted and placed high. Temporary signage is
low, and bright. The entranceway provides a visual tunnel through
the store, welcoming users into the space.

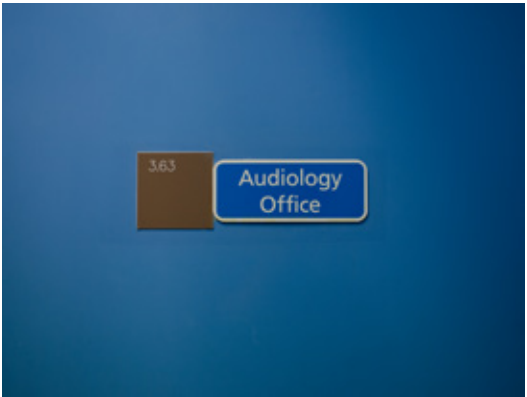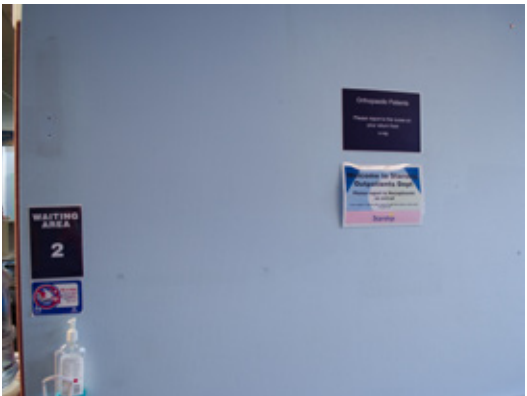*Figure 171. (2015). Starship Outpatient sign audit.*

Figure 172. *(2015). Starship Outpatient artwork audit.*