

# **Designing for disadvantaged and marginalised communities**

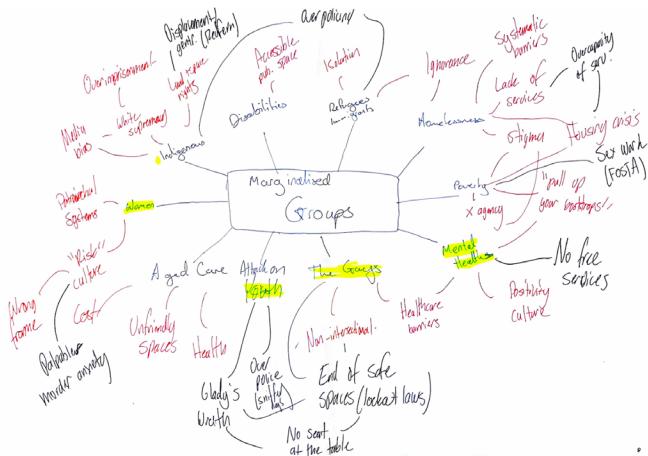
Assessment 1 concept proposal - a report by  
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# Introduction

Interactive products have evolved from isolated person-to-machine experiences to being woven into the fabric of our felt lives - the urban environment and our interactions with it being no exception. We experience digital checkouts in metropolitan supermarkets, rich displays telling us when the next bus arrives and how full it is, and navigate cities with computerised point to point maps as extensions of our own wayfinding mental models - contemporary built environments are inseparable from digital interventions. But do these technologies and spaces lend themselves to everyone in communities the same way? Are they doing enough to engage citizens on issues relevant to them within these urban environments?

BNB & Co sought to understand how these spaces work for, and in the empowerment of disadvantaged or marginalised groups. This report details our design process through research, analysis, frame generation and concept ideation, iteration and future refinement.

To understand these spaces we first mind mapped out our assumptions on marginalised groups - who are they, what systemic challenges create a "they," and what urban specific barriers do they face?



Highlighted areas are demographies we could access.

Our discussion was lead by which members of marginalised or disadvantaged communities we could access in order for us to design primary research methods. To prevent pigeon-holing ourselves early - we diverged our initial desk research efforts into one group each, aiming to return and discuss which was the best pursued. Our focus was on factors that represent that group and specific urban challenges they faced, as well as contrasting this research with existing design projects in this space and analysing who they were targeting, how, why, and their projected impact.

# Background research and market analysis

## The Interactive Punching Bag

Designer Thijs Biersteker, created an interactive punching bag to raise funds for the “Dutch Cancer Society”. The punching bag is made from LED screens and a motion-sensor that display replicating cancer cells the user needs to punch out to cure. People often feel like a bystander when a loved one is battling cancer, this punching bag empowers people to join the fight.



You enter your age, lifestyle and gender, and the cancer type that is most threatening to you will show on the punching bag. The cells then appear and explode ones they get punched. Every punch goes towards a donation.

## Contactless payment donation campaign for the Melanoma Institute

JCDecaux teamed up with Cancer Institute Australia to build an interactive donation display. Cancer shells are shown growing on a screen, when a user makes a donation the cancer shrinks pitting donors against the cancer cells to keep growth at a minimum.



While this display does accept donations and those donations go to a charity, the main purpose of this display was to create awareness through first-hand impressions and again through social media marketing.

As citizens of the country with the highest melanoma rate in the world it's crucial that we're aware of the dangers surrounding skin cancer and the need to find a cure. Resultantly, this display was aimed at the general Australian Public.

# How Women's Aid used digital OOH ads to make 327m people stop & look

Womens aid UK built a digital billboard that used facial recognition to track the number of times passersby viewed it's message. As more and more people viewed the woman and her scars, they began to fade off her face.

The installation presents a simple message. Be aware that domestic violence exists, even if it is often swept under the rug, and be aware of your power to make change. The interactivity implemented in this campaign adds effect.

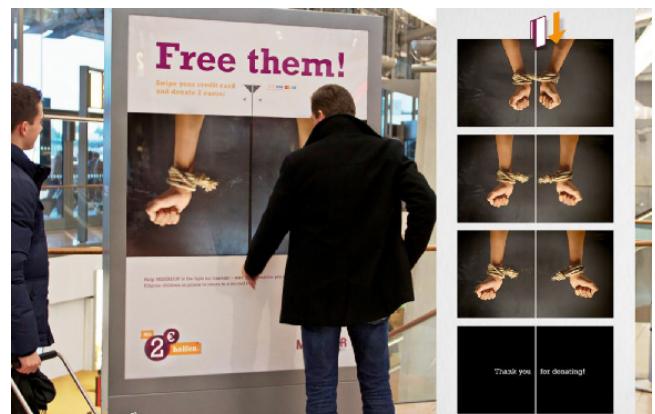
Through the physical installation and the subsequent press release, the campaign was aimed at the general population of the united kingdom.

## Social Swipe, an interactive poster to help children imprisoned in the Philippines

The social swipe initiative by MISERO-ER was an interactive poster with a split down the middle where the public was invited to swipe their credit cards to donate \$2 to help imprisoned children in the Philippines. The swiping action of the card activated a video which either showed you cutting of a slice of bread or cutting rope handcuffs, to represent how the donation was going to be used.

The aim behind this concept was to break donation fatigue, which is a major issue facing charities in our current climate. Many charities are forced to develop new, engaging infrastructures to attract new donors and retain current ones. The purpose of this campaign was to reduce the invasive nature of street fundraisers, by increasing the reach and cutting the cost of running the campaign, with the introduction of a unique interaction.

Similar to the 'Contactless payment donation campaign for the Melanoma Institute' the Social Swipe campaign was aimed toward the general public, with the interactive display being geared toward increasing donations by making the interaction limited, simple and accessible by most. By pre-selecting the donation amount and not including any buttons or



instructions, the curiosity and social learning aspect of the design is the driver for captivating donors.

## Hope Locker, an integrated donation scheme for rental facilities and equipment

The Hope Locker is a coin deposit box that provides the user with access to a locker at a swimming facility, that may be donated or retrieved by the participant at the end of their session. The coin is dropped into a collection box and then animated as though it is dropping into water, followed by a fact based on raising awareness for countries with low access to filtered water. The interaction is continued when the user finishes with their rented locker, as they are presented with the option of retrieving their gold coin, as usual, or leaving it as a donation for the charity.

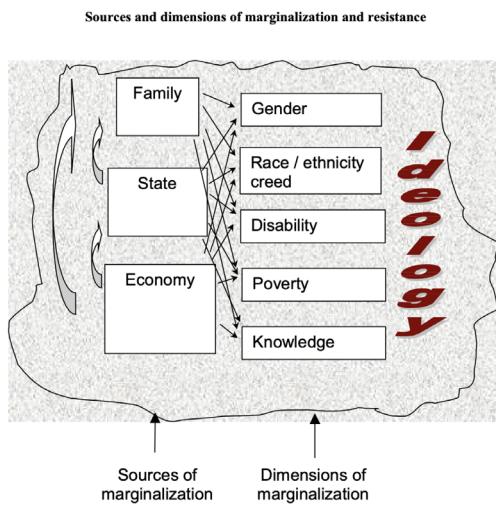


The purpose of this design was to alter/reverse the dynamic of donations, employing guilt as the core driver to get the public to leave a gold coin donation. While guilt can be a strong motivator for this kind of small donation, as mentioned above, donation fatigue plays a major role in reducing its effectiveness over time. Again, fixing the donation at such a small amount goes a long way to making this a successful attempt at fundraising, however the limited reach of the concept was a major barrier for it.

The Hope Locker was a themed design, based around the use of water and its role in different societies and contexts. The design was based solely at swimming areas where lockers were provided. The idea was to create empathy amongst the swimmers, who realise that they are privileged to have a nice new swimming pool to use at anytime, while there are people in the world who do not even have access to clean drinking water.

# Research

Upon meeting back to discuss our found interventions and research, our goal was still on creating and conducting a primary research endeavour with a select marginalised group. This presented a process challenge to us - we were restricted by our initial findings of how to best ethically approach this in a way that gave us actionable insights in a short time frame. Marginalisation is a “slippery and multi-layered concept,” and designing for people who are marginalised by the social system presents a “number of challenges that extend beyond fundamental principles such as prevention, empowerment, and participation” (Kaan et al. 2004) - themes we were uncovering in prior interventions.



It was quickly emerging that our first pass process had significant flaws. Design research has ushered in the domain of experiential design and experiential-oriented design, much of which involves the study of engaging user experiences, the basic concern is the interaction between products and users (D.K. Ho et al. 2011). When designing a mainstream product, crafting and engaging in primary research - where the user is the topic of study and designers understanding evidence for ideation - is typically considered good practice (Jiancaro, 2018), however these approaches are inherently dangerous when the marginalised or disadvantaged are to be designed for (Pal. 2017).

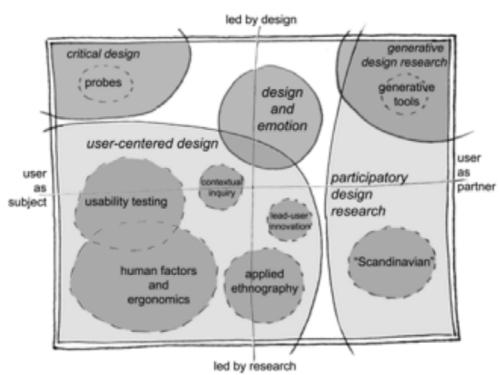
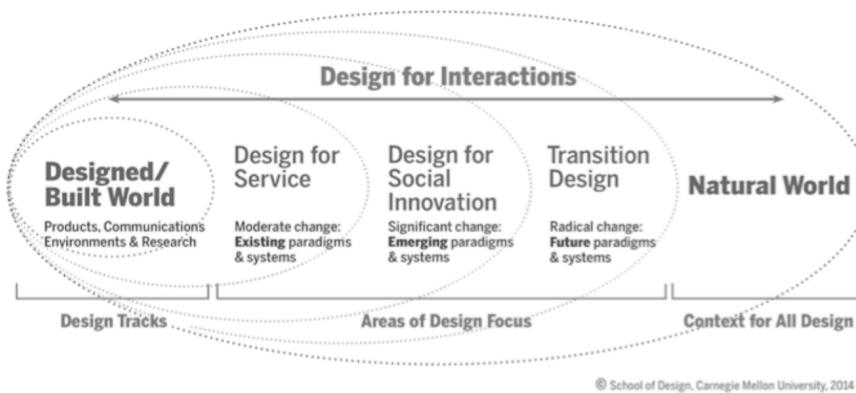


Figure 2: The current landscape of human-centered design research as practiced in the design and development of products and services. [10]

As designers, our practice most often involves taking on a problem, proposing a solution, and then moving on to the next thing to be solved, however contemporary problems are now not sandboxed, but open; with permeable boundaries, featuring many elements and relationships that change over time in a flux networked state - traditional problem solving methods were conceived to work in a reasonably isolated, static, and hierarchically ordered world (Doorst, 2015). To engage in these methods in an attempt to distill the multilayered rich experience of felt life of the disadvantaged into a “problem statement” that we design for disregards the complex nature of their experiences - risking trivialisation, exploitation and a “tech disruptor solution” approach that works well in advertising campaigns but never truly gains traction on the ground (Pal, 2017). It is now known that working with a specific marginalised group involves them no longer being the topic of research but having an active seat at the table throughout the design process through participatory or co-design methods (Enriquez, 2016).

As designers we were accustomed to uncovering a problem and designing for it, but in our efforts to do so had created challenges for ourselves. We were unable to conduct considered participatory design activities in a short time frame and were too focused on generating isolated problems and simple solutions. Locked in bad practice and unsure of where to go - we realised we needed to reframe our process from the outset and look at it with a new lens, changing the formulation of our initial problem statement, to make it broader and more abstract (Tomitch et al. 2018).



Our prior focus was on disparate marginalised groups - so we asked the question - what is marginalisation broadly? Who is marginalised, how, why is this an archetypal term? To say “marginalised people” immediately suggests a duality, you either are or you aren’t. Our focus was uncovering the problems these people faced - why not on the problems the non-marginalised may create or exacerbate? Utilising what we’d discovered at a more granular level, we realised there were significant threads across all the problem spaces and market solutions. If we couldn’t access these user groups in an ethical way - we could extrapolate on the barriers we ourselves create for marginalised people.

Table 1. Contemporary Australian Archetypes.

| Connected Retirees                                                                                                                                                                            | Financially Secure Working Age Couples                                                                                                                                          | Time-Pressed Couples with Children                                                                                                                                                                           | Dissatisfied Working Age Singles                                                                                                                                                                                        | Marginalised Australians                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| All over 55 years, average age 70 years, 60% women                                                                                                                                            | Most aged 25-55, average age 45 years, evenly men & women                                                                                                                       | All aged 26-55, average age 39 years, evenly men & women                                                                                                                                                     | Aged 15-55, average age 33 years, slightly more men                                                                                                                                                                     | Most aged 26-55, average age 38 years, 70% women                                                                                                                                                                      |
| More than 80% retired                                                                                                                                                                         | More than 70% in full-time paid work                                                                                                                                            | Full-time paid work, or many part-time and/or home duties                                                                                                                                                    | Majority full-time paid work                                                                                                                                                                                            | Home duties, students, not in paid employment, disabilities                                                                                                                                                           |
| Low income, some and high reliance on income support, but high home ownership, credit card usually repaid, low financial hardship, high financial satisfaction                                | Very high equivalent income, income support, own or buying home, credit card usually repaid, no financial hardship, high financial & highest job satisfaction                   | Equivalent income, slightly below average, minimal or no income support, buying home, credit card sometimes paid, little financial hardship, fair to good job and financial satisfaction                     | Equivalent income, income support, credit card rarely paid, some financial hardship; levels of satisfaction - job fair, financial low                                                                                   | Extremely low income, limited income, job & financial satisfaction, very low income support (80% for <2% income), renting, credit card rarely paid, extreme financial hardship,                                       |
| Very low education attainment, left school at 15<br>Early socio-economic hardship (Great Depression, WWII), but few other childhood adversities; no elevated pseudomaturity                   | Very highly educated – more than X tertiary or higher degree<br>No early socio-economic hardship, other childhood adversity rates not elevated; no elevated pseudomaturity      | Highly educated – ½ diploma or tertiary degree<br>Low levels of early socio-economic hardship, and of other childhood adversity; low rates of pseudomaturity                                                 | Extremely low education; ½ incomplete secondary<br>Highest levels of early socio-economic hardship, extreme rates of pseudomaturity                                                                                     |                                                                                                                                                                                                                       |
| Married 40+ years, often not for first time; extremely happily partnered; relationship with former partner very good; substantial minority are widows<br>No children under 15 (still at home) | All married (20+ years), often not for first time, or defacto (4+ years); very happily partnered; relationship with former partner fair<br>No children under 15 (still at home) | All married (13+ years), few ever divorced, or defacto (6+ years); happily partnered; relationship with former partner fair<br>All have children (approx 2) under 15 at home; 40% have non-resident children | % never married, so almost none ever divorced. Lowest current partner satisfaction, and low former partner satisfaction<br>More than children under 15 at home; but 10% have children or non-resident children under 15 | % single parent families, nearly ½ couples with children; ½ separated or divorced. Very low current and lowest former partner satisfaction<br>1-3 children under 15 at home and ½ have non-resident children under 15 |
| Poor physical health and average satisfaction with health                                                                                                                                     | Excellent physical health and satisfaction with health                                                                                                                          | Excellent (the best) physical health & wellbeing; highest satisfaction with health                                                                                                                           | Fair mental health & life satisfaction, very time-pressure                                                                                                                                                              | Extremely poor physical health for their age and lowest satisfaction with health                                                                                                                                      |
| Average mental health and good wellbeing, high levels of life satisfaction                                                                                                                    | Excellent mental health, excellent wellbeing & life satisfaction                                                                                                                | Fair mental health & life satisfaction, very time-pressure                                                                                                                                                   | Extremely poor mental health, too much spare time, lowest life satisfaction                                                                                                                                             |                                                                                                                                                                                                                       |
| Very low risk health behaviours (smoking, alcohol), good community participation                                                                                                              | Very low risk health behaviours, good community participation, best social support                                                                                              | Very low risk health behaviours, average community participation                                                                                                                                             | Likely to smoke, though also likely to have given up; low-risk alcohol consumption; highest contact with friends & family                                                                                               | Highly likely to smoke. Both highly likely to obtain from alcohol and at elevated risk of problem drinking. Lowest levels of social participation – all types                                                         |
| 22% (N=1,292)                                                                                                                                                                                 | 20% (N=1,228)                                                                                                                                                                   | 26% (N=1,150)                                                                                                                                                                                                | 19% (N=1,153)                                                                                                                                                                                                           | 13% (N=788)                                                                                                                                                                                                           |

Source: Berry et al. 2008

The key threads discovered are stigmatisation - otherness, us and them attitudes, societal difference. In the study Marginalised Australians: Characteristics and Predictors of Exit Over Ten Years, Cruwys et al. (2010) propose that a major component of being marginalised is being discriminated against and excluded from society due to being labelled the “wrong type” of person, or doing things at the “wrong time” in life. Previous research has indicated that stigma has a direct impact on wellbeing as well as limiting access to the kind of resources that are needed to improve one’s life circumstances.

Table 2. Marginalisation – Five Domains of Disadvantage.

| Domain                     | Indicators                                                                                                                                                                  |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A. Social Stigmatisation   | Membership of multiple highly stigmatised groups (e.g., being of Indigenous origin, being a welfare-reliant single parent, having a disability, not having paid employment) |
| B. Early-life disadvantage | Parental divorce, parental unemployment, incomplete schooling, early departure from childhood home                                                                          |
| C. Financial Hardship      | Reliance on government income support, little or no wealth, unfavourable forms of debt, low income, high financial stress                                                   |
| D. Poor Health             | Chronic health problems, poor physical functioning, poor mental health, adverse health behaviours                                                                           |
| E. Social Isolation        | Few social contacts, little social support, poor quality relationships                                                                                                      |

There are apparent and significant gaps between support services or community organisations, the marginalised themselves, acquiring funding and non marginalised people's awareness. This is evident in literature (O'Donnell et al. 2016) and in the intent of the majority of discussed interventions.

The third is a literacy factor - marginalised people's across all segments experience differing factors of technological, financial, other capitalist driven fundamental “literacies” that are the status quo of normal society (Cruwys et al. 2010; Australian Government, 2007). As people privileged to access these “fundamentals” - think our ability to use technology, have bank accounts, even read - they become so ingrained within us and in our perceptions of others that we can lack understanding that not everyone has the ability to access knowing as we do (Parker, 2014).

Some non-marginalised people are in essence unable to empathise with oppressed scenarios - they may be aware but unable to really feel the gravity of situations - leading to a stigmatising thought pattern that exacerbates social exclusion through their unawareness of felt experiences. This leads to a "I shouldn't care, shouldn't donate, shouldn't engage" mentality as if people should just "pull up their bootstraps" and exit marginalisation (Mabud and Flynn, 2017).

We distilled these new findings into a set of key factors to ideate for:

*Create empathy through self reflexive interactions in bespoke artistic or pragmatic interventions - realize elements of complex felt lives of the socially excluded in a way that evinces empathic realisation and critical thought.*

Creative and art driven approaches are deemed incredibly effective in this space by Moulaert et al. (2010): "A very important form of social innovation concerns changes of the 'perception' of particular social groups or issues whether by the involved people (how they perceive themselves) or by the public at large (how they perceive the marginalised)." Reflective activities are conducive to generating empathy (Jiancaro, 2018).

*Engage citizens in spheres of their local communities people and organisations in an active way (through thought, financial, informational methods).*

*Communicate how our unawareness of knowledge gaps - our privilege and literacy in fundamental "knowings" (technological, educational, financial) creates an exclusive environment and leaves people by the wayside - for some this is not a choice.*

The Interaction Institute for Social Change explains: "Acknowledging and dealing with unearned privilege – advantages conferred on people based on their identity rather than actions – turns out to be an important aspect of understanding structural inequities and facilitating social change. It's often challenging to facilitate a clear-eyed examination of privilege that enables people to grapple with the implications of privilege for their self-concept. And, that examination turns out to be important for building commitment to social change and building agreement on strategies to address inequities" (Parker, 2014). Disadvantage being curable by hard work is a common myth (Mabud and Flynn, 2017).

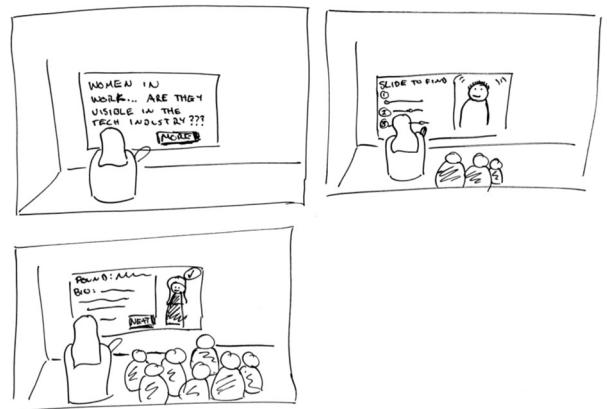
*Create artefacts that when interacted with leave a lasting impression and seek sharing - change thought paradigms individually that are shared digitally at scale*

With these factors - we individually generated multiple concepts in a “how might x achieve y through z” fashion - illustrating and detailing our thinking. We discussed these proto-concepts - some still were focused on isolated product solutions and others did not encompass all factors. As a group, we then crafted a second round of concepts that built on or amalgamated our individual ideas, working their functionalities and intents to more align with our goals. The early concepts will first briefly be discussed, the chosen more fleshed out concepts follow.

## Initial concepts

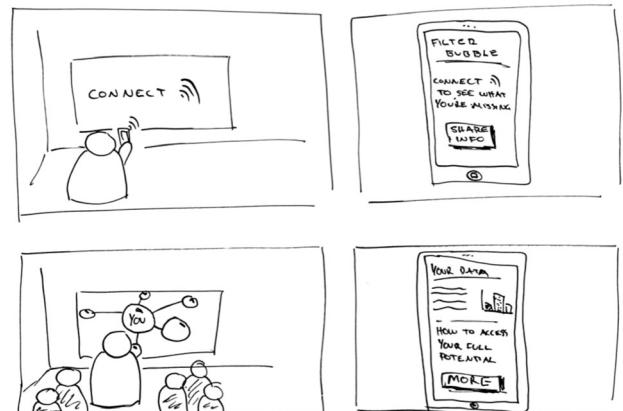
### Tech ceiling

Tech ceiling would invite users to play a seeking game projected on the wall. When they play - the game would pull in LinkedIn profile images of management technology positions and instruct the user to find all the women, monitoring their selections via a Kinect. The difficulty and intensity would force users to think critically on the impact non-diversity can represent.



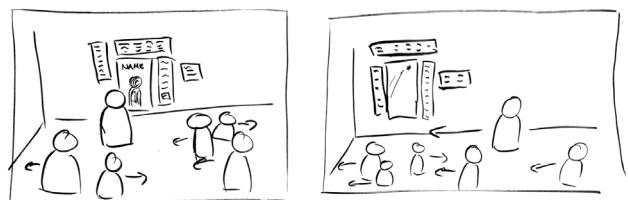
### Bias association

There are systems that govern every aspect of digital societies, yet the decisions these systems make are designed by a fraction percentage of people (REFERENCE). This projected game would force people to uncover their biases through image matching and word association, then contrasting their results with others - exemplifying the danger of our internal biases affecting other people through technology.



### Shadow mirror

A physical computing device that tracks and records users as ID numbers on the display as they glance at it - representing the systems that track and record their lives as digital identities without their knowledge or consent.



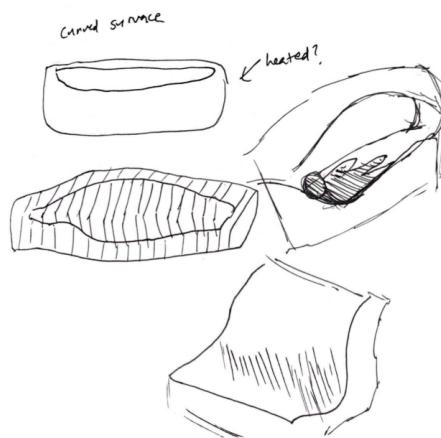
## Assumption A.I.

An A.I. based recognition system that analyses and makes assumptions about you. The user stands in front of a camera that displays the image on a screen. It will then determine different things about you based on your face, for example, age, height and gender, and compares you to others in the world, or perhaps, others who have also used this interaction. The idea is for it to show how similar or different you are in comparison with others.



## Anti-hostile architecture

Hostile architecture aims to prevent crime and homeless people from public streets. This idea would be combatting that by creating comfortable benches in public to give homeless people a place to rest at night. Hostile architecture does not solve the issue of homeless but only hides them, these new benches would serve to make their already struggling experience a little bit easier.



## Tap to play donation

This would be a fun way of getting people to donate money to charity by gamifying it. Two users would swipe their credit cards at the start of the game and compete in a challenge that relates to the charity in some way. Whoever loses has to pay the donation. The game could potentially be changed based on the charity it would be representing.



## Aging smart mirror

A smart mirror powered by a Raspberry Pi that recognises faces and applies a filter to the face to age it. Applying the filter onto a reflection rather than just an image on a screen makes the experience more personal and engaging. The face then fades and is replaced by a message, highlighting the rising percentage of homeless people over 55.



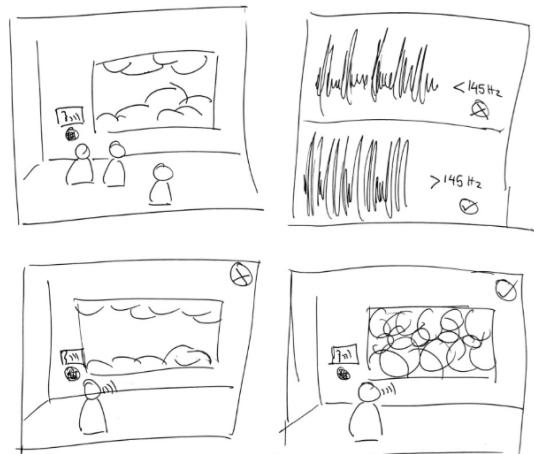
## Low powered device game

A screen or projector based game/interaction that can only be engaged with using a low powered/old/cheap smart device. The aim is to create empathy and awareness around the privilege that most of society take for granted. Amongst the homeless community there is a huge rate of people who have smart devices that cannot access the same resources as the rest of the population as their device is not up-to-date. This leaves them further and further behind and struggling even more to integrate back into society.



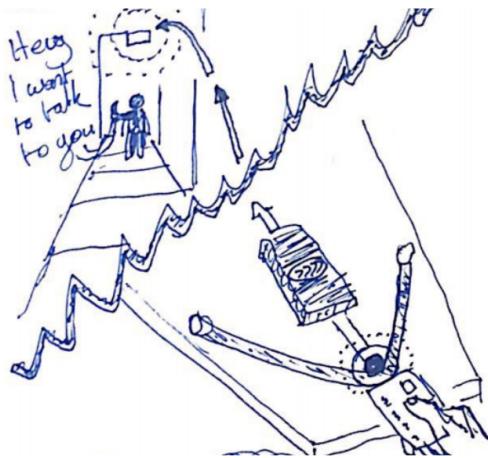
## Genderless technology

An artwork projected onto a wall in a public space that can only be interacted with by voices over the pitch of 145Hz. The aim of this would be to intentionally discriminate against males (who dominate the tech industry) and attempt to shift the balance of power. The idea builds on a new initiative called "Q" a genderless voice that was created to replace the voices of Siri, Alexa, etc... In an attempt to stop the propagation of gender stereotypes in technology.



## Slingshot

Slignshot is a gamified way of donation with the theme of gender-based street harassment. The interaction begins when a user donates via a paywave card reader where they are then tasked with shooting a pellet at a disabled street light that a figure of a man repeating street harassment phrases is standing under. If the user successfully hits the light, the figure would be illuminated and exposed as the harasser and, with his anonymity lost, would get flustered and run away.



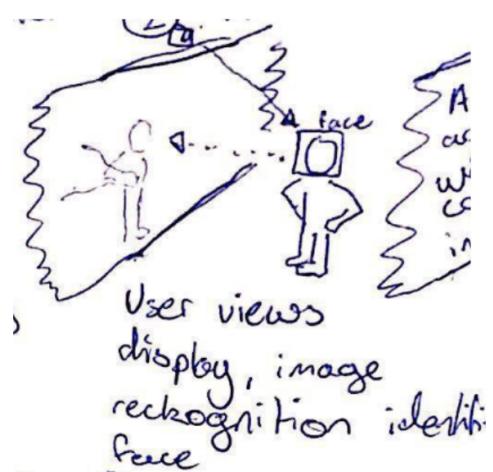
## Harassment trails

As a user passes by the installation, a trail of silhouettes with speech bubbles quoting gender-based street harassment phrases is painted against a screen on a wall. As more people imprint their trails onto the wall, it fills in all the gaps and becomes collage of silhouettes. Nearby users are able to clear the wall by donating via a paywave card reader.



## Hidden harassment

This display again depicts gender-based street harassment but is only active when a user's back is turned to it. It works by tracking their movements and having a silhouette follow them repeating gender-based street harassment. The user is able to interact by viewing the display in an opposing mirror underlining how invisible street harassment can be to those who are unaware.



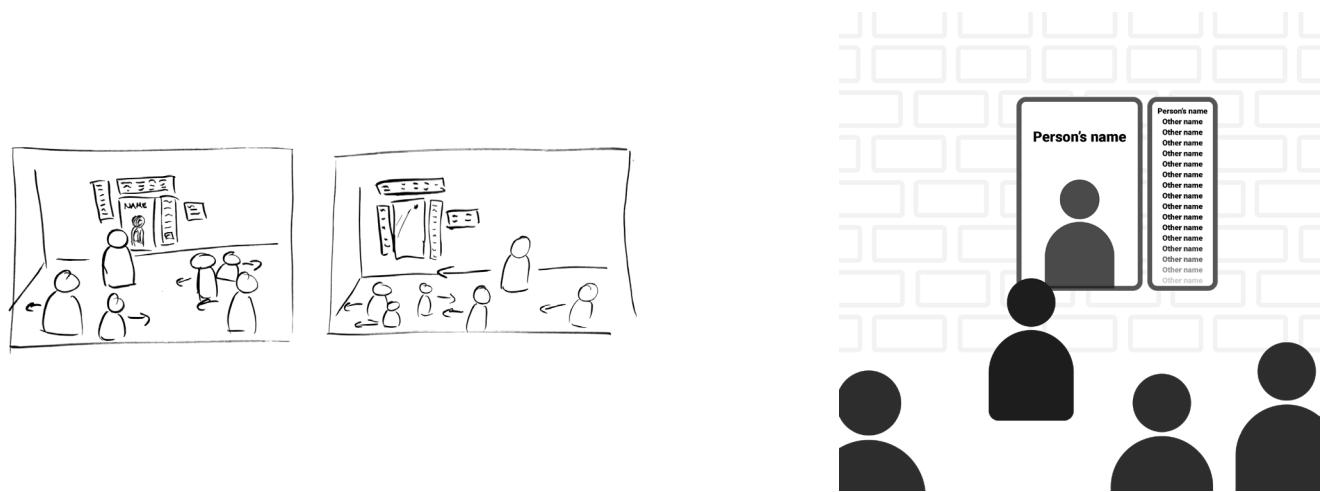
# Hero concepts

## Black mirror

This intervention immediately draws attention as a portrait mirror connected to multiple separate displays. When a user looks into the mirror it flashes in unison with an LED on one of the displays - they see a cryptic number appear in a list. They again look into the mirror - nothing. As they try and make sense of the experience, tapping on the display without a response, another glances at the mirror. Flash - on a different list. They discuss this as more new users get sorted - ruminating on who goes where and why. This machine can obviously see them, recognise them, and catalogue them without relinquishing why or how, offering no way to find out - or get out.

As users try and make sense of the experience - new users keep joining the fray - this constant sort and confused process around the artefact will create discussion from the users - "what is thing, what is it doing, why am I this list and you in another." This is to induce reflection in these users on the ever increasing role technologies play in our society and dread in how they or others would interact when you can't begin to understand them - hopefully evoking a critical thought pattern on the problems this could create for our futures.

The mirror will be constructed from a reflective coated backlit display unit with a small camera concealed in the frame. When a user approaches - image based machine learning models will register a new user and catalogue them based on a visible factor (gender, emotion, facial feature size etc) and add them to a list. This user is then represented as a number on a connected e-ink display (to represent permanence and low interaction) which alerts them with an LED in sync with the flash of the mirrored display.



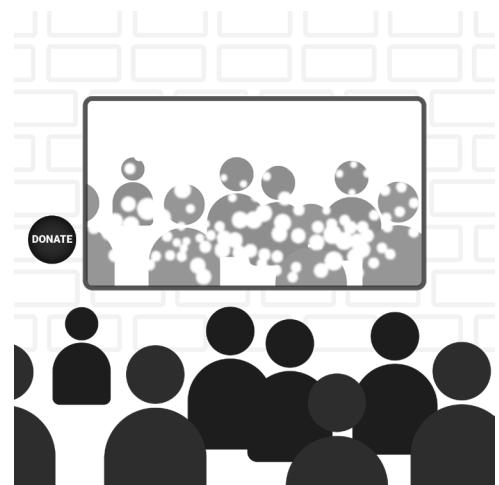
## Fleeting mirror

The installation begins as a large 10m<sup>2</sup> black surface displaying the statistic 'one in three women have experienced gender-based street harassment'(Reference for 1 in 3 harassed more than once a month). As passersby cross the surface, a trail of silhouettes of men whistling, calling out from their car and cat calling get painted behind them. Each silhouette repeating phrases associated with gender based harassment and attention seeking. The lettering changes to read "one in three were first harassed between the ages of 11-15"(Reference for 1 in 3 harassment begins between ages 11 and 15.) as the display fills with more and more silhouettes. 10 metres back is a panel that features text "Tape to make a \$2 donation to raise awareness for gender based street harassment". As an interested user taps their card the silhouettes on the display disintegrate away leaving it blank again.

Bearing in mind the four key themes outlined above, the goal of this display is both to place the user in an environment where they reflect on their experiences, and to maximise the number of impressions through direct contact as well as social media. With One advantage of this display is that donations are not required to interact but instead unlock more functionality, allowing the display to interact with and as a result affect more people. Additionally the act of donating can be performed in one hand, leaving the other hand free to film the interaction.

The screen would be illuminated by projecting at an angle from above and the figure detection by a sensor above the screen. The donation panel would be situated 7ish metres back from the screen and be low enough for users to see and comfortably record themselves clearing the screen.

If the display is outside, this display would best be suited for silhouette or feature based motion tracking using OpenCV and a camera. The alternative, a Kinect V2 sensor, would be easier to implement on our end but does not work outside as the sun interferes with the sensor.



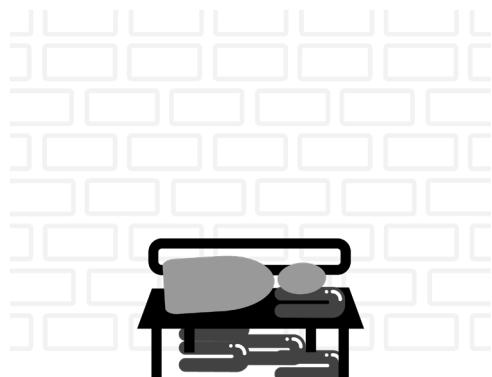
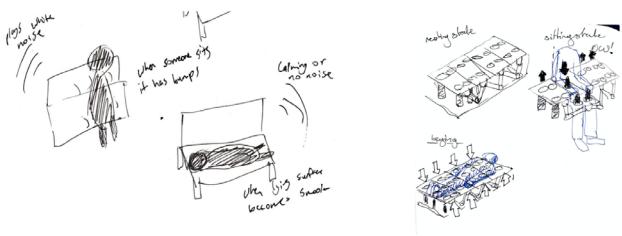
# Anti hostile architecture

This piece of anti-hostile architecture is a public bench that is only comfortable for the user when they are lying down. The idea is to create the opposite experience to what homeless people every day face out on the streets. With armrests and spikes splayed along public benches and the homeless being literally designed out of our cities, it would play at reversing this experience. When a person is sitting, bumps will protrude from the surface making the seating experience uncomfortable. Once a person lies vertically, the bumps will move away, and the user can rest comfortably. Furthermore, we could implement a timer so this interaction could only take place at night, as keeping uncomfortable benches in public places would not be realistic. By making the bumps occur after a certain time you could keep people from loitering in places, while at the same time allowing the homeless to have a place to sleep.

The seat is divided into four segments. There are holes in each segment. The pressure of a person sitting on one of the segments lowers that segment and pushes the other three upwards, the bumps will then protrude through the holes as the seat lowers. If weight is placed evenly on all four segments i.e. a person is lying horizontally, that weight distribution will allow no bumps to protrude and in turn, the user can comfortably lie down.

For the user to understand what it's like to not be able to use an object for one of its potential uses. Hostile architecture is an arbitrary obstruction to one of the possible valid use cases of a bench that could really benefit a marginalised group of people. This forces the user to empathise with what it may be like to have limitations or to feel unwelcome to a space that they are usually comfortable with.

The seat will use pressure sensors across each segment of the bench to determine whether or not a person is sitting or sleeping. We match the recordings of pressure across the whole bench against a profile of someone laying down and if it matches we lock the mechanism that drops the bench. As for the lowering mechanism, we will be able to repurpose the cylinders of adjustable office chairs as they are already calibrated to lower under the weight of its user.



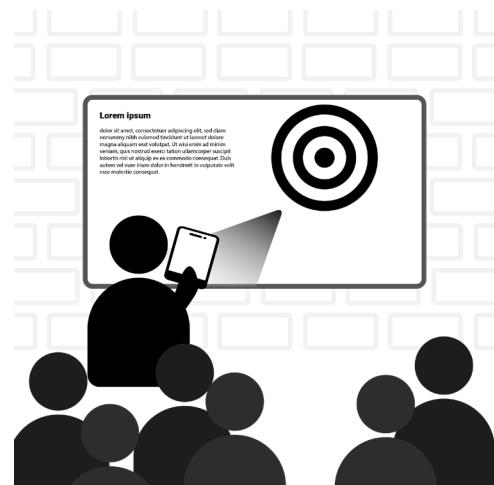
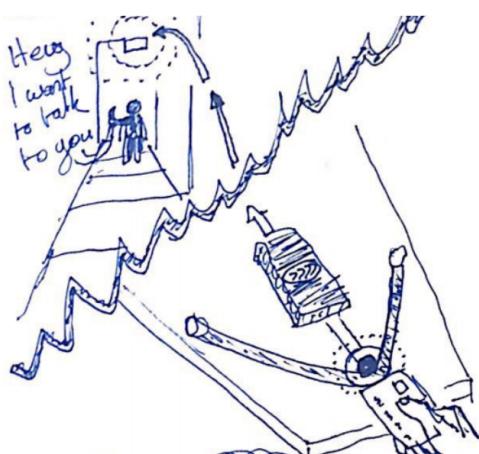
## Slingshot

The installation manifests as slanted surface leading up to a vertical project screen featuring a silhouetted man under a turned off street light repeating gender-based street harassment rhetoric. On the table is a tap to pay interface as well as the text “1 in 3 women experience gender-based street harassment more than once a month”. Below the tap to pay interface is an explanation that a user can tap to donate \$2 to an organisation providing aid to women’s rights organisations. As a user taps their card on the slanted surface, a pellet is projected over their hand and a line drawn across it. The vertical screen illustrates that a user can pull back to aim and lift to shoot the pellet, like a slingshot and the streetlight gains a glowing blue circle around it. The user pulls back and shoots the pellet, hitting the street light illuminating the man below. In a cartoonish way he gets flustered and runs off. A message is superimposed over the scene, ‘Call out street harassment’.

The idea for this installation is to illustrate a couple of key points: to break apart the idea that street harassment is harmless and to encourage others to regulate their peers if they witness such behaviour. We can use the characterisation of the silhouette to highlight the range of personalities who are guilty of enacting gender-based street harassment, from business men to tradies to chuggers (charity muggers) to highschoolers. The result is an installation which forces users to reconsider and be made aware of the extent of gender-based street harassment as well as the range of people who cause it.

The two surfaces would be illuminated by two projectors, a small computer would control the tap to pay system triggering the start of the interaction. This would start the proximity and motion detector to process the location of the user’s hand to use as input for controlling the slingshot.

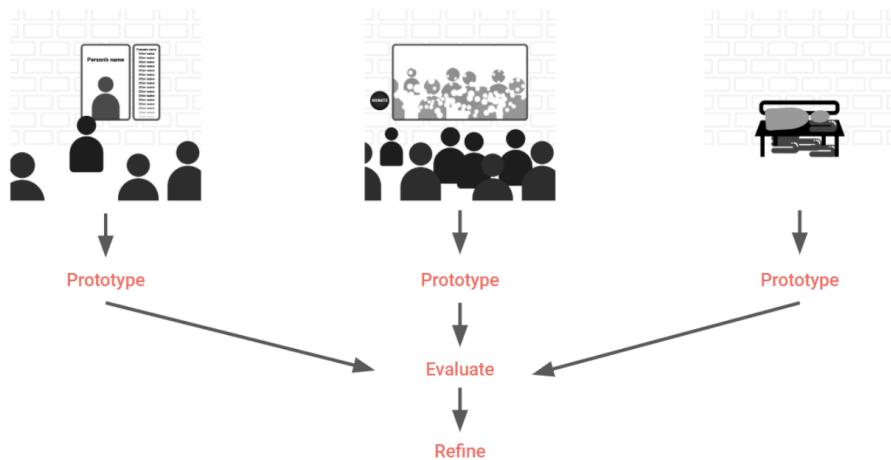
Credit or debit cards could be interfaced with a SQUARE paywave tile and the donation transacted by using a node.js server with the square-connect package. By using a callback and OSC we can trigger any event and pass the data to a creative coding toolkit such as openFrameworks or Processing. Our creative coding toolkit would interface with a projector to render the display as well as receive input from our Tactile User Interface or motion sensors to enable the user to interact with the slinashot.



## Next Steps

The next step is to reach out to the marginalised communities behind each of our concepts for evaluation on the effectiveness of our message, the integrity of our intent and the tactfulness of our implementation.

We plan on taking a participatory design approach and depending on the level of correspondence that we can organise from these groups, we will solicit the aspects of the problems that they feel should be emphasized as well as iron out any issues in our concepts that we may not be aware of. Once developed, we will compare each concept by evaluate each of the factors outlined above and, with the most promising concept, layout a plan to build it into our final concept.



# Group charter



THE UNIVERSITY OF  
SYDNEY

Architecture, Design and Planning

## GROUP CHARTER

Project Group | Interactive Product Design Studio

Group Name: BNB & CO

Stream: Augmented Urban Cities

| Members:         | Name & Unikey | / role      |
|------------------|---------------|-------------|
| Benjamin Fleming | bfle6726      | UX research |
| Bethany Koulyras | bkou2095      | IxD         |
| Nathan Judges    | njud0858      | IxD         |
| Connor Meehan    | cmee7240      | Development |

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