Design Research for Architecture:

Understanding the people you design for

by

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Abstract

Design research has grown in popularity in industries that require deep understandings of the people they design for. One industry that would appear to benefit greatly from design research, but that does not embrace the practice across its industry, is architecture. Design research itself was employed to understand practicing architects – how they currently obtain design requirements and how they would ideally like to do so – in order to identify value that an approach to 'design research for architecture' could provide. Outcomes of this research included the development of principles 'design research for architecture' should be based upon. From these principles, a highly participatory approach – one that includes both users of the designs and the clients that commission them – was adapted to provide the foundations for architects to better understand their users, to innovate themselves, and to strengthen relationships and trust with their clients.

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<u>Preface</u>

The following report is written for a hybrid audience – both those within the strategic foresight and innovation community at OCAD University and the design research community in general, as well as those architects, their clients and others with stake in the architecture industry. Because of this diverse audience, this project report is framed to appeal to both crowds, hence the further explanations and definitions that might otherwise be unnecessary.

Also, this project is exploratory in nature. Primary research was conducted in order to examine a segment of practicing architects in order to further understand their approach to designing for people. Of course, statistically speaking this is not completely representative of the entire industry. And though this report includes only those specific findings collected in the primary research component of the project, the report itself is a culmination of months of work and discussion with numerous academics, architects, designers and researchers with wide ranging perspectives on the subject matter.

Finally, the author of this report is a design researcher himself not an architect, nor does he claim to have particular or representative knowledge

of the architecture industry. Rather, the author's focus remains on the study

of design research approaches and building capacity for innovation. The

purpose of this project was to provide an outsider's perspective on what ails

a particular industry, and how the practice of design research might

contribute to treating it.

Introduction

Design research – the practice of understanding the people you design for –

in its various forms has made advancements both within the design

community itself, as well as in those industries embracing the value of design

such as business, health care, and even governments. A rigorous, reliable and

holistic understanding of the people you design and plan to innovate for –

those who ultimately use the design – has increasingly becoming the cost of

entry into any project affecting multiple stakeholders and demanding

numerous resources. By obtaining the depth of understanding and insight

that design research achieves, these projects stand a better chance of success

both financially and from a personal standpoint for all stakeholders involved

– including those bearing the cost, those that the design affects directly, and

those responsible for the designing itself. One realm that paradoxically does

not appear to have embraced this practice of understanding the people they

design for across their industry is architecture.

The architecture of the places people visit and reside within profoundly

affects their wellbeing – often in ways they are not aware of. Given the

opportunity, and proper set of tools to understand the people they design for,

architects have the ability to create surroundings that positively affect mood,

can increase levels of productivity, contribute to a greater sense of happiness and generally achieve the intended objectives the environment was originally designed for. For instance, when designing a hospital for sick kids, it would of course be important to understand what it is like to be a sick child having to spend extended periods of time in a hospital away from school, their friends and their home. It would be important to understand the sick child's parents and family so one can reduce the amount of stress the child feels when receiving visitors. One should also understand how it is the doctors, nurses and even the surrounding communities understand their roles in the process. When afforded the tools and opportunity to acquire such insight, architects can design hospitals that reduced recovery times and produce healthier patients (Dunmall, 2011). That said, architects are rarely afforded this opportunity. Consequently, the places they design often fail to deliver the experience the environment was designed to attain in the first place – like dark, sterile, unfriendly hospitals that inhibit rather than promote healing.

Though many progressive firms employ various methods of engaging their clients and those people who visit and inhabit the environments they create (with varying degrees of rigor, depth and success), most architects and architecture firms operate without actively engaging those people they design for. Architecture is traditionally a staid industry. For the most part, those within it maintain a strict adherence to entrenched principles – not

necessarily regarding aesthetic preferences or particular genre culled from its past, but in the value and meaning architecture remains responsible for both in its function and its role in culture. Interestingly, the architecture industry is currently going through a transformation. There has been an escalation of size and complexity of projects, number of people collaborating on projects, and diversity of stakeholders being affected by these projects. As complexity – and scrutiny – increases architects' role in the design process is further cast into doubt, with project leadership and objectives becoming progressively more ambiguous (Cobb et al., 2010). In the work that follows it is argued that an approach applying the principles of design research to architectural projects – what will be referred to as 'design research for architecture' – can significantly aid architects reclaim their status as the design lead best positioned to accomplish those complex objectives for the numerous places, people and communities involved.

This argument will be based on an approach to 'design research for architecture' that is participatory in nature (including designers, clients and users together in the process), and focused both on functional needs as well as insights into the latent hopes and desires of those being designed for. The outcomes of such work are foundations from which to support design decisions and build capacity for strategic innovation, as evidenced in people. This type of work is not new. In fact, design researchers like Elizabeth

Sanders – an accomplished researcher, academic and industry cartographer herself – have been practicing established methods of design research and participatory engagement in the field of architecture for a while (Sanders, 2009; Brandt & Binder, 2010; Szita, 2009). The issue does not reside with whether or not some approach to understanding the people you design for can help, but rather, why it currently does not help, and how it can be modified to do so in the future. As Elizabeth Sanders said in a 2009 talk in Delft, the challenge design research faces is "getting a seat at the table" in architectural projects (Sanders, 2009).

Because of this difficulty "getting a seat at the table", 'design research for architecture' will be examined as an innovation itself yet to diffuse. This is not to say that design research practices are not already being employed, but rather that architects and firms have yet to adopt the practice of actively engaging the people they design for across their industry. To that end, Rogers' *Diffusion of Innovations* model – which details the necessary elements innovations must possess in order to spread across an industry or community – will be applied to the practice of 'design research for architecture' in order to reveal how to best frame the offering to architects. Specifically, Rogers' concept of 'relative advantage' will be sought in order to establish what value or utility the offering could provide to architects in the future. It is not enough to claim: "responsible architects should do design

research." An in depth look into whether or not value in fact resides in the practice is required, and if so, how that value is best realized (Rogers, 2003).

To establish this value, primary design research will be conducted and analyzed in detail to examine the challenges and opportunities architects face when designing for people - how it is architects come to know the people they design for. By gaining an understanding of those people dealing with the problems and challenges in architecture today it is presumed that a more appropriate approach to 'design research for architecture' can be tailored to the needs and desires of those practicing the profession. Persuading only those who possess a 'user mindset' – those who view the world of design and architecture through a lens that requires deep understanding of the people being designed for – would fail to properly position 'design research for architecture' as a useful approach for those architects that might benefit most from its application. In order to successfully frame 'design research for architecture' as something that provides utility to people of all mindsets – both user oriented and otherwise – a deeper understanding of architects' process of designing for people is required. Essentially, to do this design research will be applied to 'design research for architecture'.

Once this understanding of the problems, challenges, needs and desires of architects is achieved existing design research approaches, methods and

techniques will be reviewed to determine which to adapt and apply most appropriately. It is thought that the 'tools' within design research already exist to aid architects better understand the people they design for. This project is not meant to create new tools, but rather to understand how these designers currently navigate this component of their work, and investigate which existing approaches to design research can be modified, adapted or evolved to better fit within the practice of architecture. Of course, an eye towards Rogers' 'relative advantage' and other elements necessary for the diffusion of innovations will endure throughout.

Finally, with evidence established from practicing architects, along with support from existing design research methods and techniques, principles for the ideal approach to 'design research for architecture' will be established and a potential approach will be created.

A note on clients and users

Before proceeding, a note on the definition and delineation of clients and users appears necessary. Many of the architects engaged in this research categorize clients and users together when discussing whom their work serves. Indeed, much of the popular literature pertaining to the process of understanding design requirements reiterates a catchall term of 'clients' in

order to denote stakeholders ranging from developers, building owners,

businesses and the individuals that interact with the environments built –

whether they be employee, resident or visitor (Franck & von Sommaruga

Howard, 2010). However, from this point forward the term 'client' will

exclusively refer to those groups and individuals commissioning

architectural projects (i.e. developers, building owners), and the term 'user'

will refer to those individuals who directly interact with the environment

physically on a regular basis – the people who use the environment. This is to

acknowledge the very different motivations, needs and desires of the two

groups – something that can be too often confused by the application of a

single catchall term for these disparate stakeholders. It is true that at times

clients are in fact users, but for the purposes of this project clients and users

will be considered unique individuals.

'Design Research for Architecture' as Innovation

To gain understanding into how 'design research for architecture' can be of

value to both those designing environments and those experiencing them

directly, the practice itself will be framed as an innovation – one that has yet

to spread across the architecture industry. By doing so, one can examine

which elements this approach brings to the industry, and whether or not it

provides enough value for it to spread. To further orient oneself to this framing a fundamental definition of innovation will provided, and how exactly 'design research for architecture' qualifies as such will be detailed. Then, Everett Rogers' five factors for innovation diffusion will be examined to illustrate which elements are necessary for such an innovation to catch on.

Defining innovation: a process for people

Innovation is a popular term today. It has gone through the grinder of political sloganeering, been lauded as savior to any and all economies, and has seemingly settled atop a large list of business buzz words meant to differentiate consultancies of all sorts. Its definition and perception often includes highly complex – and at times superfluous – technologies. For the purposes of this project a more prosaic definition will be drawn upon from the past (before it reached near ubiquity in annual reports), one from an academic that has endured the unremitting fads of the business world. Peter Drucker's idea of innovation includes concepts more substantial than the next music-playing device or kitchen appliance. His definition of innovation simply focuses on the "*systemic examination of the areas of change that offer entrepreneurial opportunity*" – whether it be for business or public service (Drucker, 1985, p. 35). While this definition of innovation can include new gadgets and technologies, it is broad enough to consist of larger movements

that have the potential to change cultures at multiple levels. Drucker's

definition of innovation includes ideas such as universal schooling, mass

produced news (i.e. the newspaper), insurance and the concept of installment

buying, so it is more economic and social in concept than technical. His is a

definition of innovation that changes society or cultures (Drucker, 1985), and

one that will be applied to 'design research for architecture'.

Everett Rogers, whom will be called upon shortly to examine how

innovations diffuse, shares a similar sense of innovation not limited to being

a new thing, but rather a novel concept or idea providing value to someone

who had previously not embraced it. Rogers (2003) writes:

> *An innovation is an idea, practice, or object that is perceived as new by*
> *an individual or other unit of adoption. It matters little, so far as human*
> *behavior is concerned, whether or not an idea is "objectively" new as*
> *measured by the lapse of time since its first use or discovery. The*
> *perceived newness of the idea for the individual determines his or her*
> *reaction to it. If an idea seems new to the individual, it is an innovation.*
> (p. 12)

There are no known studies indicating which architects and architecture

firms do or do not engage clients and users in depth, but from conversations

across the architecture industry and a scan of the environment, it is clear that

authentic engagements meant to elicit a deep understanding of users'

functional needs *and* latent desires is not happening across the industry.

Though the general concept of applying design research to architecture is

nothing "objectively" new – many firms practice some approach already (Franck & von Sommaruga Howard, 2010; Salant, 2011; Szita, 2009) – a novel approach has yet to diffuse across the architecture industry.

This project particularly frames innovation as an activity performed in the service of people that provides new, valuable solutions in response to their existing needs and/or latent desires. This is to say, innovation will be examined as a bottom-up process – one that starts with a deep understanding of people and how to better achieve their objectives. This particular frame for innovation does not seek the creation of new consumer needs (for instance, the process of seeking out or constructing a non-existent consumer need for some new technological breakthrough), but rather a more efficient, effective way of fulfilling people's existing and latent needs today and in the future in order achieve an adopter's personal or organization objectives.

Rogers' five factors: what makes an innovation of use, and how does it spread?

Further examination of Rogers' work reveals insight into what makes for successful innovations and how they spread – essentially building upon Drucker's definition to examine not just what makes an innovation, but what

makes an innovation work. Rogers details the adoption of innovations

exceptionally in his book *Diffusion of Innovations*, breaking up the process

into five stages: knowledge, persuasion, decision, implementation and

confirmation. These stages reflect the decision-making process one

experiences – through a series of communications channels, over a period of

time, and among similar members of a social system – during diffusion that

determine an innovation's potential. However, according to Rogers, before an

innovation gets to this point it must possess five elements:

1. **Relative advantage** – the level of perceived superiority over the
   idea or approach that the innovation is to displace.
2. **Compatibility** – the level of perceived fit within the potential
   adopter's existing process or approach.
3. **Complexity** – the level of difficulty involved in understanding the
   innovation.
4. **Trialability** – the level of ease with which the innovation is
   experimented.
5. **Observability** – the visibility of a successful outcome the
   innovation provides to others.

For 'design research for architecture' to successfully spread throughout the

industry, it must perform favorably on each factor. And, according to Rogers,

the innovation must perform particularly well on the first: providing relative

advantage (Rogers, 2003). Accordingly, the primary research component of

this project attempts to better understand those architects who would

potentially adopt such an innovation and looks to gain insight into how each

of these factors – particularly the element of relative advantage – could best

be addressed in an approach to 'design research for architecture'.

Defining 'Design Research', 'Architecture' and 'Design Research for Architecture'

Design research

Design research, like innovation, has many definitions and interpretations.

Quite simply, the definition of design research used in this project is:

understanding the people you design for. This is a broad definition that

acknowledges the many ways one might come to understand those people

they design for.

To get a handle on the landscape of design research – and to show the variety

of approaches employed – Elizabeth Sanders' (2006) map from the inaugural

issue of *Design Research Quarterly* will be used as a basis for understanding:

Figure 1. Topography of Design Research
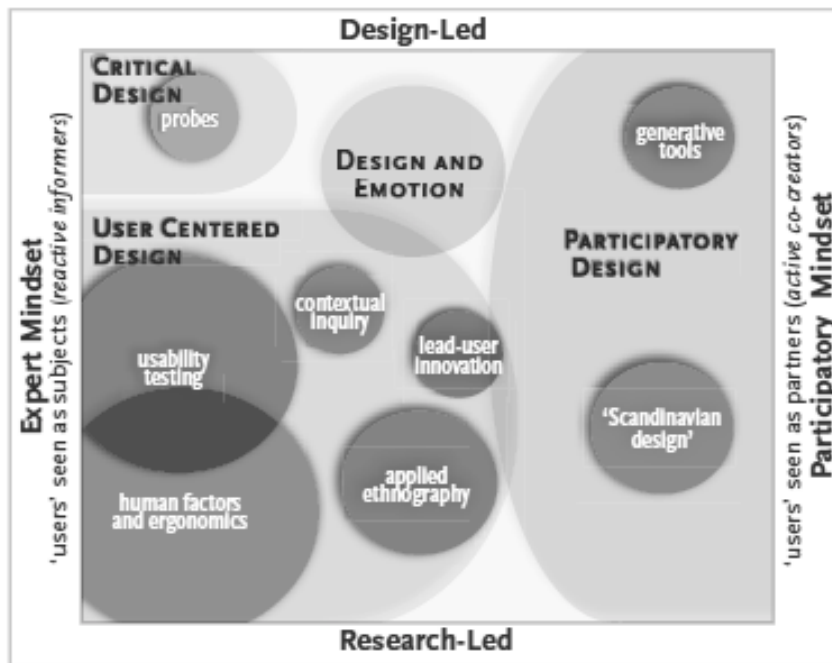
In this map Sanders breaks down design research on two axes: the impetus of design research approaches; and the mindset of those practicing and teaching design research approaches. The north-south impetus axis indicates the degree to which design research methods and tools have been introduced from a design perspective (i.e. from professional designers themselves and the design community at the top), or a research perspective (i.e. professional researchers at the bottom). The east-west mindset axis indicates the degree to which the approach to design research is led by experts (be those expert researcher approaches located at the bottom left of map, or expert designer approaches found at the top left), or lead by those being designed for (the participants found on the right side of the map). Essentially, approaches

found on the left involve experts going away to do their work by themselves, whereas approaches found on the right embrace the people being designed for and include them in the process of design research itself – they actively engage users (Sanders, 2006).

The large 'participatory design' bubble on the right side of the diagram represents a wide range of approaches within the participatory mindset – one where design research is lead by those being designed for. This is not to say participants are making design decisions themselves, but rather that they lead the process of revealing what is important to them experientially in the context at hand. By putting participants in the drivers seat – again, regarding what is important to them in the context at hand, not what a design should be – designers, design researchers and clients gain access to more insightful, reliable, and helpful information than traditional approaches provide. By engaging in participatory design teams are afforded access to user interpretations and expectations that would typically go unnoticed by conventional approaches or assumptions about how users will ultimately interact and understand the environment.

Again, this participatory design bubble represents a large part of the design research landscape, and because of this offers many different applications. Participatory design approaches can range from those that continue

throughout the entire design process (including many iterative and inclusive

engagements at each every milestone), to those that engage users in-depth

for only portions of the project (say, at the initial stages of project

development before any design decisions are made or project objectives are

set, or later on at an important evaluative phase). Participatory design can

also be taken more literally (with users actually taking up design and build

duties in concert with professionals), or – as will be the case discussed later

on in this project – participatory design can be used more for its ability to

deliver evidence based insight grounded in users at the 'fuzzy front end' of

projects. No matter the *type* of participatory design, all such engagements

take the lead from those people that ultimately interact with the

environments created.

Architecture

Any quick scan of architectural literature will provide technical definitions

regarding structure, space, form, function, style, method, etc. Good definitions

of architecture acknowledge the art and science of the practice. Great

definitions speak to the potential architecture has to change people – how

they feel, their mood, their ability to achieve objectives and even how it

affects their outlook. Popular architectural writer Alain de Botton eloquently

stated, *"architecture is premised on the notion that we are, for better or for*

worse, different people in the different places – and on the conviction that it is

architecture's task to render vivid to us who we might ideally be" (de Botton,

2006, p. 13). Like a good book or film, architecture can evoke strong feeling

and emotion through carefully crafted cues or triggers that directly affect

people both viscerally and behaviorally. Yet, of course, a good (or bad) book,

or film goes away after a while – architecture endures. Subtle differences in

architecture can produce monumental changes in people's behavior and lives

– for better and worse. Again, Alain de Botton (2006):

> *…if our happiness can hang on the colour of the walls or the shape of a*
> *door, what will happen to us in most of the places we are forced to look*
> *at and inhabit? What will we experience in a house with prison-like*
> *windows, stained carpet tiles and plastic curtains?* (p. 13)

Like it or not, architecture directly affects the psychology and well-being of

the people who visit, work within, and inhabit its space. Architecture signifies

a culture's values. It reveals how people feel about themselves, their family

and their neighbors. Once one accepts that people are simply and

significantly affected by their surroundings, it becomes clear that a deep

understanding of those people affected should be a prerequisite to designing

architectural environments.

Design research for architecture

The landscape of design research discussed previously provides a framework

from which to orient 'design research for architecture', but exactly where to

locate the approach on this map is currently uncertain. What is currently

certain is that any approach to 'design research for architecture' is one that

must provide: insight into the people architecture is meant to achieve certain

objectives for and some indication as to how to obtain these objectives; value

to those practicing architecture (i.e. Rogers' concept of relative advantage);

as well as value to those stakeholders funding the project itself (i.e. building

owners, developers, institutions, business, etc).

For instance, a successful approach to 'design research for architecture' in a

retail setting would be one that provides:

- **Insight into consumers** – their existing understandings and frames
  of reference for shopping in the relevant context – what their
  current behavior and motivations are, and what they fundamentally
  want to achieve through their engagement with the environment
  both functionally and emotionally.
- **Value to owners of the retail environment** – perhaps increased
  consumer traffic to store, increased time spent in store by
  consumers, increased price per consumer purchase, strengthened
  consumers' brand understandings, etc.
- **Value to architects designing the retail environment** – the
  acquisition of these insights into retail consumers in ways that are
  actionable, efficient, and allows architects to accomplish both the
  goals of those commissioning the work as well as their own personal
  goals.

Similar benefits could come to environments such as health care facilities, educational institutions, museums and arts based facilities, public and private housing, places for public assembly, and any other environment where people spend their time.

When and where 'design research for architecture' is *applied* within the architectural design process is wide open. Ideally, an approach to 'design research for architecture' would be engaged before any design decisions are made – before there is any agreement about what (if anything) needs to be built. Though, many other applications of the process could be applied throughout the design process. For instance, the basic principles of 'design research for architecture' could be applied after initial design concepts are completed in order to not only reveal user insights but also to receive feedback on previous thinking. The approach could be applied after the completion of projects (in a 'post occupancy evaluation' application), or in an ongoing basis for firms looking to maintain and build understandings of users in unique project areas (i.e. for firms specializing in a particular field – say medical care – the ongoing application and documentation of 'design research for architecture' could contribute to their proprietary knowledge of their specialized area and contribute to their differentiation from other, non-specialized firms). The diagram below outlines some of the potential

areas/timing of application for 'design research for architecture' along a

design timeline.

Figure 2. Potential points of application
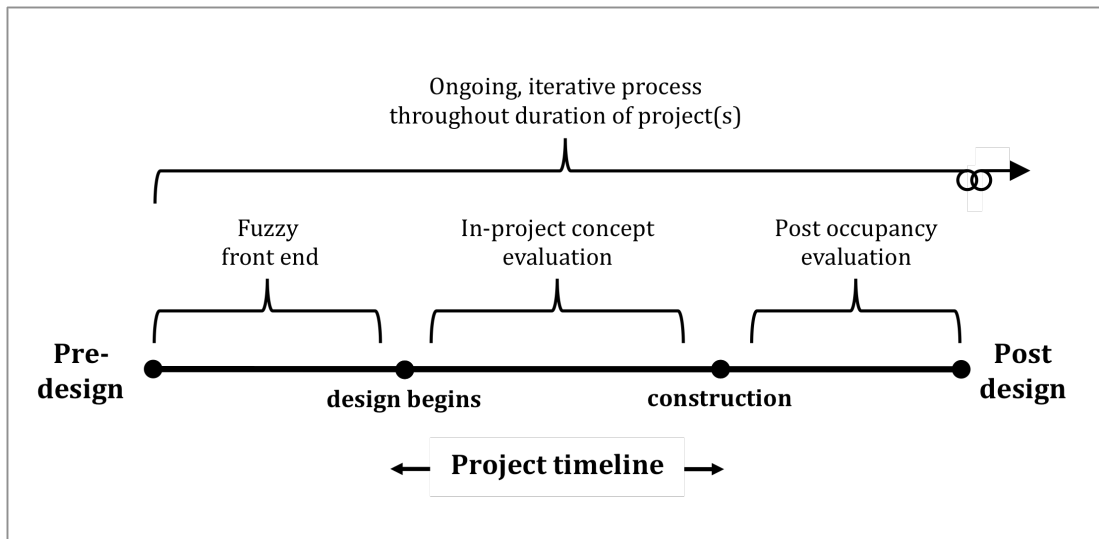
Fundamentally, 'design research for architecture' is an innovation that

potentially provides value to architects and architectural projects by gaining

a deep understanding of the people being designed for.

Innovation + Design Research for Architecture: Why?

Why attempt to innovate in the realm of architecture with tools from design research at all? Why approach architecture with, at best, a layman's level understanding of the industry? The answer lies in the condition the architecture industry currently finds itself in, and the unique abilities contemporary design research approaches provide.

Architecture is currently in a state of change. There is an escalation of size and complexity of projects, number of people collaborating on projects, and diversity of stakeholders being affected by these projects. As complexity – and scrutiny – of projects increase architects' role in the design process is further cast into doubt. Other, non-architectural trades (be that construction management, engineering, etc) are usurping the decisions made by architects who lack evidence and proper value propositions for the designs they create. Project leadership and objectives are becoming progressively more ambiguous, and as a result architectural environments are less successful at delivering their intended experiences. There is a need for architects to reclaim the control they once held over design. To do this, many currently look to grow their in-house capabilities. By increasing interdisciplinary capacity – for instance, adding landscape design or duties like planning, project management and development (Livesey, 2011) to their traditional design services – some firms attempt to gain further control over other aspects of projects. Others look to different models of collaboration like

'integrated project delivery' that are meant to improve working relations, risk structures and decision making through consensus – though with mixed results. And some go the other way, establishing smaller, more nimble firms that can more rapidly adapt to the shifting landscape. Regardless of firm size, structure or existing method of dealing with change, the current reality is one that has created uncertainty for many within the industry (Cobb et al., 2010). With this uncertainty comes opportunity.

As Drucker (1985) points out, "*systemic examination of the areas of change that offer entrepreneurial opportunity*" is the essence of an innovation. He goes on to write, *"Most successful innovations…exploit change"* (p. 35) – not in a negative way, but one that embraces transformation and leverages opportunities. Many within the architecture industry are currently faced with incongruities. And while incongruities are often clear to those within the industry, potential solutions or positive interventions are frequently overlooked or taken for granted by those practicing within it (Drucker, 1985). One of the goals of this project is to examine how these incongruities can lead to opportunities for architects, and in turn, lead to more successful design for all stakeholders involved – including both clients and those using the design directly.

'Design research for architecture': an innovation that helps architects innovate

So, as 'design research for architecture' is aimed to be an innovation itself – one that provides opportunity in a time of change – it is also meant to help architects innovate themselves. As design industry writer Helen Walters states in a recent article from Fast Company, innovation itself is not a predictable process: "*A codified, repeatable, reusable practice contradicts the nature of innovation, which requires difficult, uncomfortable work to challenge the status quo of an industry or, at the very least, an organization.*" (Walters, 2011). This is true, but tailoring an approach that provides the foundations from which to innovate – the deep insight and understanding into the people you intend to design and innovate for – firms can very much rely on a reusable practice. By standardizing a process (that can adapt to different types of architects/firms, as well as maintain the integrity and principles that underlie their profession) to acquire such foundations, successful innovation is more likely (King, 2011). Of course, this depends on the practice of acquiring the *right* insight and understanding, but under the right conditions and with the right factors the practice of 'design research for architecture' could very plausibly provide those foundations in a consistent, effective way.

Any approach to 'design research for architecture', no matter how appropriate or successful will not resolve all architects' problems, but it can

contribute to their work in a positive and valuable way. In order to achieve this, that deep understanding of how architects currently work and gain insight into the people they design for is required. To explore this a primary research program was designed and executed to attain this understanding.

Primary research design

The primary research component of this project was developed to better understand those architects that might benefit from deeper insight into the people they design for. As previously stated, this project examines innovation from the bottom-up. 'Design research for architecture' is not meant to be a solution looking for a problem, but rather a response to the issues, challenges and opportunities that architects face in their unique and rapidly evolving profession. The goal of the research was to illuminate which elements of architects' process must be addressed in order to best tailor available tools from the design research community to serve architects, and in turn, better satisfy their clients and those people directly experiencing their work.

This research is exploratory in nature. It is qualitative, not quantitative. It is meant to look into what could be, rather than attempting to be statistically representative of an entire community. To this end, the primary research was designed to act as a platform to grow 'design research for architecture' from. To attain this, a series of expert interviews were scheduled with architects

practicing in varying contexts and across a variety of firms. The interviews were similar to how Schensul, Schensul and LeCompte (1999) describe semi-structured interviews, in that they were guided by a structured set of questions in an interview guide, but conducted in an open-ended manner, combined with non-directive probing of the participants' responses. This was done with an eye toward the framework that would eventually be used to organize and analyze the raw data.

Establishing research parameters: two questions

When designing any qualitative research program two main questions require consideration: 1) Who to understand (who are the participants to be interviewed) and, 2) What to understand (what subject matter will be examined in the interviews). This becomes the backbone of the research program, and dictates which data will be collected. The following reflects the most suitable answers to achieve the primary research objectives:

1. **Who to understand** – Practicing architects who design environments that are required to achieve human objectives.

2. **What to understand** – How it is these architects design for the people affected by the environments they create.

Creating an interview guide: structuring how the data is collected

A carefully constructed interview guide considers the many analysis frameworks available for organizing the data collected from the field, and allows for emergent themes to present themselves organically (which would then be probed into upon discovery). The final product provides structure initially, and flexibility later on.

Ethnographic frameworks like the 'P.O.E.M.S.' ('People, Objects, Environments, Messages, Services') and 'A.E.I.O.U.' ('Activities, Environment, Interactions, Objects, Users') serve many researchers well by establishing categories to which their observations can be broken down into smaller, more manageable – and thus knowable – segments for analysis (Kumar, 2004). Schensul et al. (1999) suggest using computer software to similarly organize the data collected in one-on-one interviews to further clarify their data. Regardless of the desired approach, an analysis framework must aid in the organization and presentation of data in a way that allows for analysts to see emerging patterns and themes above and beyond the basic responses to an interviewer's initial questions.

With this in mind, the interview guide's structure borrowed from an Elizabeth Sanders' framework. In "*From User-Centered to Participatory Design Approaches*", Sanders reveals the need to identify what people consciously

say and think (*their explicit knowledge*), what they do and use (*their tacit knowledge*), and finally, what they hope and dream for (*their latent needs and desires*) (Sanders 2002). These elements provided a foundation from which to build an analysis framework from, and in order to populate it, the requirements for the interview guide. Though the categories were not defined exactly as such, these three realms of analysis provided the necessary base from which to create initial interview questions. The six main questions created to elicit this data include:

What architects say/think:

- *Q1 – How they say they obtain design requirements*

- *Q4 – Where architects say they've learned this approach*

What architects do/use:

- *Q2/Q3– What architects do now/examples of projects currently executed (combined in analysis documents)*

- *Q5 – What source material/information do architects currently draw upon to make design decisions*

What architects hope/dream:

- *Q6 – The ideal, what architects wish they could have access to/what they could do without current constraints*

The sequence of these questions was reordered for better flow within the interview. A copy of the final interview guide can be found in Appendix A: Interview guide.

Fieldwork: executing the research

The expert interviews were conducted with twelve practicing architects in the Toronto area. Participants came from a variety of firms ranging from small independent shops (approximately 10 employees) to large international organizations (100+ employees). The type of architectural work engaged by participants ranged from those who exclusively focus on specific areas of design (i.e. health care), to those who accepted and pursued more general project work. Each interview lasted approximately one hour, taking place at the participants' place of work. A trained design researcher – with over eight years experience in the field and hundreds of interviews completed to date – conducted the interviews.

Expected outcome

As this research was exploratory in nature, no specific responses were predicted. Instead, the expected outcome was an in-depth understanding of:

- How architects currently *think* designing architectural environments for people should happen.
- What architects currently *do* in order to accomplish their objectives, and the objectives of their clients.
- What architect *wish* they could do in order to accomplish their goals and the goals of their clients.

By obtaining this information, an analyst could then interpret the issues and challenges architects face when attempting to accomplish their design goals, while eliciting both their needs and latent desires required to successfully design for people.

Analysis and research findings

Preparing analysis frameworks

The data collected in the primary research component included the interview discussion, responses to specific questions, and non-directive probes into emergent issues relevant to architects. These data alone are essentially useless. Until organized and presented in a way that allows analysts to see patterns and the key themes emerging, the data lacks any power to inform (Polanyi, 1967). Developing rigorous analysis frameworks allows for one to begin seeing the value of the primary research, and identify insights – the knowledge previously unknown before beginning the initiative – into the

people 'design research for architecture' is meant to aid. The following section explains the rationale for developing the analysis frameworks as constructed.

As mentioned in the 'primary research design' section of this report, the interview guide was designed with analysis frameworks in mind, while allowing for key themes to emerge from the data (meaning, much of the evidence collected was not overtly asked for, but rather organically pulled out as the interviewer probed further into participants' initial responses). To organize these results, all evocative quotes and representative discussion from transcripts and notes were compiled into an excel document categorized by each of the six interview questions, as well as categories for each emergent theme.

Again, these key themes can be viewed through the lens of the 'say/think - do/use - hope/dream' categories established by Sanders. Additionally, by allowing for these themes to identify themselves (i.e. creating new categories matching consistent mentions/discussions of key concepts, ideas and issues across participants, rather than mechanically dropping instances into predefined categories) an analyst can more freely observe what appears to in fact be essential to the architects' experience in a less bias way.

The key themes emerging in addition to the responses from the original six interview questions were labeled and categorized as such:

- **Client relationship issues**

- **Control**

- **Definitions of success**

- **Programming limitations**

- **Benefits of engaging users**

- **Desired form insights could/should arrive**

- **Tools employed**

Analysis and discussion of findings

The following section will identify and attempt to define the prominent

findings revealed by each primary interview question (Q1 through Q6), and

within the additional themes that emerged (listed above). Where

appropriate, participant quotes and paraphrased responses will be

referenced to support findings. These quotes and paraphrased responses

were chosen for their representativeness and brevity.

> *A note on references to interview data/quotes: indented text in
>
> *italics* denotes verbatim or slightly edited (for length) quotes from
>
> interview participants, whereas indented text not italicized denotes
>
> participant responses which have been paraphrased (where
>
> participant was not being recorded or where content comes from
>
> interviewer notes).

Q1 – Obtaining design requirements

Responses to how architects obtain design requirements – what they *say* and *think* about the process – fell roughly into four categories: a) **meetings and conversations with clients/then speculates on own**; b) **more formal workshops, engagements or public consultations**; c) **functional programming**; and, d) **outside source/source other than from users**:

1. **Meetings/simple conversations/speculates on own:**

   Much of the design requirements identified by study participants involved traditional, back and forth conversations with clients, followed by a period where the architect would then speculate own their own, or within the confines of their firm. In this case, unless the end user of the environment/design happened to be the client as well (i.e. in the case of a home owner), there was no interaction with users:

   > *"It is a little detached…it's filtered…the institution is the filter…sometimes it's a little easier to design in that scenario* [with a filter] *because you have more leeway…you're not tied to what the end users wants…*[otherwise] *you're designing for committee."* 10

   > *"You have to ask…you have to communicate…you can't figure it out alone…you have to go back and ask 'why do you want to do this in the first place.'"* 11

   > Obtain design requirements from client, but *"we speculate"* as to what will work for the client…we come up with ideas and are very hard on them internally to decide whether they are right for the project or not (no user engagement). 4

This method of obtaining design requirements – without the direct participation or insight gained from end users – was reported to be the industry norm:

"Very few firms engage in 'design research'." 8

Though the participants involved in this study (some admittedly more open to actively engaging users than the norm, perhaps a recruitment bias on behalf of the researcher) do tend to express concerns:

"That's a bit puzzling...how can anybody think that they'll design something for another culture without really diving into that culture...the best is to talk to people, and let them talk." 1

On the Royal Ontario Museum: "*...didn't anyone talk to maintenance?*" 7

2. **More formal workshops, engagements or public consultations:**

Emphases here on 'more' formal as engagements tend to be less rigorous than found in other industries actively and formally engaging end users. Though, as mentioned above, the participants that were engaged for this study seem to be open to user engagements with some relying heavily on active engagements:

*"Unless you meet these people, you don't really understand"...*their needs, etc. 5

"We didn't take a heavy-handed approach...we kind of led the conversation"..."what would you like to see". 3

Obtains design requirements through user engagements – though user engagements only include 'front line staff', not end-users like patients. 13

"If you completely understand what it means to be a nurse then you'd know why putting something somewhere is a good idea...you could never become that person...but if you could somehow gain all of that insight you'd be set to go." 2

Many of these engagements are less intensive, and the collection of data and/or insight takes a back seat to architects' other goals and objectives like obtaining client 'buy-in':

Many firms are already doing it – public engagements – though they don't offer much insight. 9

Public consultations – we don't like to do obligatory consultations...will never win if goal is consensus...not insightful, but achieves buy in...public consultations/engagements are about *"bridge building"*...to *"navigate buy-in".* 7

Runs workshops/charrettes/pre-design engagements with clients so they develop an understanding/appreciation for architecture and the decisions they're to make regarding architecture. 8

Engages clients through proxies...a single representative was deemed sufficient...allowed them to do something – design wise – that they might not have done without the representative...was more about allowing access or giving permission than revealing insight (claimed he had the insight regardless of the input). 4

3. **Functional programming/programmers**

Many participants fall back on the technical procedure for acquiring design requirements like those found in a 'functional program' (the document communicating the specific tangible use of a space including

the number of expected occupants, the square footage required to

perform particular activities and house specific equipment, furnishings,

etc – absent of the intangible/emotional elements required for a space to

achieve human/non quantifiable objectives). The program is often

developed by experts who specialize in the programming of specific

environments (i.e. hospitals, museums, etc), simply by the client, or by the

architect his/herself:

> *"General design objectives are set up by functional programmers…they look at the demographics of an area…the kinds of illnesses then translating that into square footages and sizes and number of beds…but they're not involved in how it all fits together."* 2

> *"…so then, I've got a list of things that people need – so what, that's not a design. That's a list of requirements…those are the blocks you're to try to build something out of…you're going to try and make sense of the space…to me, program is always something that's fascinating…the more you know about it up front, the better your design will be later, as it develops…"* 11

Participants were clear to indicate the limitations of functional programs,

indicating that they are helpful from a technical standpoint, but lack the

qualitative details required to design environments that work for the

people they design for:

> *"Functional programmers don't know how a building works…they just know approximately the space needed."* 2

> *"I think that's the mistake of programming…there's quantitative programming…there's all that…but there's also the qualitative analysis…we develop it…if we're given a program by a client, it's usually a quantitative program – like "I need a room 10x14"…but the*

*qualitative stuff…they say "it should be high end"…I really don't know
what that means."* 11

*"Take your best guess…you've kind of got a functional program…and
you imbue that with some spirit and life."* 3

The functional program of an environment is indeed characterized as a
'building block' for architects designing for people, but falls short of
providing a deep understanding of the needs and desires of the people
they design for.

4. **Outside source/source other than directly from users**

Finally, other sources of obtaining design requirements came from
sources outside engaging the client or user, or directly from the functional
program. These sources included domains such as 'industry precedent'
and 'evidence based design' in which evidence is gained in users *outside*
the specific project at hand:

Precedence in the industry – she calls upon what has happened
elsewhere…knowledge sharing. 5

"Those kinds of evidence based research questions…experiments." 2

Draws very much upon ideas from travel to different cities…other
cities as example*…other* political/cultural structures in a different
context. 4

Q4 – Where architects say they've learned this approach

To better understand architects' approach to designing for people, the interviewer probed into where they learned their approach. It appears this area is a much less formal component to their acquisition of professional skills and abilities. There was little to no evidence indicating that participants developed any knowledge of how to obtain design requirements from the people they design for (either clients or directly from users) in their formal academic education. Three categories emerged for how participants did learn their approach: a) **perceived innate abilities**; b) **on the job/in-field**; and c) **continuing education**:

a. **Perceived innate abilities**

For some, the ability to actively cull and act upon key information in this context is believed to be innate – an ability that they posses instinctively:

> *"The engagement was very dear to my heart...when something is so important to you it is natural; you pick it up very quickly...maybe it's a female approach...getting people's opinions...to me, it feels there is no other way."* 1

> Believes listening to clients and determining design decisions comes naturally. 7

b. **On the job/in-field**

For others, the process was learned on the fly – in projects, from their peers, and through trial and error:

"I didn't learn it in school...maybe kindergarten...I certainly didn't learn it in university...I learned it through trial and error with clients...trying to get things out of their head." 3

Architects/designers not taught "*organizational psyche"* in school...don't understand what it's like for decision makers to make decisions – what they need. 8

c. Continuing education

Conferences, workshops and industry publications are another source of knowledge for this work:

From evidence based science (though limited)...and industry manuals...learn from guidelines...some learn off the last project they worked on. 13

At conferences and knowledge sharing events, though, "*we need to be doing more* [user] *engagements."* 5

Q2/3/5 – What architects do now/examples of projects currently executed/source material architects draw upon

By asking architects to take the interviewer through their current process of designing – what they *do* – as well as what sources the draw upon – what they *use* – one can better understand their practice in reality, how they perform their task under real-world conditions. In this case, architects are up front about what resource constraints shape much of what they do. Approaches to user engagement and research appear to be the first to go:

> *"We don't have the time to develop things to a certain point…what we need to grow"* [because of time/money, the government]. 10

> He'd like to do research on what designs evoke what meaning to people, but he's not afforded the opportunity with the way client relationships work/how his firm's compensated. 4

And because of the constraints they face with their clients' understanding of architecture/their process, architects reveal a need to use core tangible frames of reference:

> *"We need to go in with some frame of reference to start…open ended session might not work because of organizational structures, constraints…"* 5

> *"Bubble diagram…proper scale, where things will occur in building…size and adjacency."* 1

> *"I don't think any kind of client can lead the process…you invariably have to put something in front of them for them to react to."* 3

Though again, some architects actively engage users no matter the project constraints.

> *"How did you get such good insight? Patience and inclusion and openness* [with users in engagements]*…genuine desire to get their input…it's not my building, it's yours* [the user]*."* 1

> *"You can't possibly go ahead without consulting the people who'll use the space – it's just an irresponsible thing to do."* 2

As for the source material that participant architects prefer to draw upon – those things architects use to *inspire* and feed into design solutions for people

– the main areas discussed included: a) **site characteristics/tangible qualities**; b) **consciously stated stakeholder needs**; c) **other environments/other industries/other realms of design**; d) **other architects and industry precedent**; e) **a 'core metaphor' for the project**; and, as alluded to above f) **evidence based design**.

a. **Site characteristics/tangible qualities**

These include taking the lead for design decisions from given qualities of the project site. For instance, the physical dimensions of a site:

> *"Design decisions are multiple…they start with by positioning a building on site…positioning an entry…the organization of the building."* 1

b. **Consciously stated stakeholder/user needs**

Emphasis here on *'consciously'* stated needs as participants refer to those needs overtly mentioned by client and user stakeholders. What many architects draw on in their practical work is the surface level, top-of-mind needs stated by those they are engaging. It will be shown later that there is a desire to access the unconscious/latent needs and desires of users, though in practice and due to perceived constraints architects are currently only leveraging those consciously stated needs and desires:

> *"You gotta take your best guess at what they're wanting through your conversations with them, through your visiting with them, through*

interacting in various ways.....[We asked] *"What would you like to see?"*
3

"You get to know by this continual conversation back and forth." 11

"I might not be good at getting information out of a client...I tend to be a little more reserved." 10

c. Other environments/other industries/other realms of design

In practice, architects are actively seeking insight into how to obtain

design objectives for people in other unrelated realms or industries. Ideas

from outside architecture are often called upon to aid in the design

process:

"I talk about hospitals not being building...hospitals need to be design more like nuclear submarines...or cars...it's this whole integrated experience...same way a hospital should be designed." 2

d. Other architects and industry precedent

Of course, many design decisions are made based on other architects and

the decisions they made prior to the specific project at hand. Industry

precedent and conventions are a strong source as well:

The source drawn upon is an existing master plan or previous architect's work...we then speculate and "*impose values upon"* them*. 4*

Precedence in the industry – she calls upon what has happened elsewhere...knowledge sharing. 5

e. A 'core metaphor' for the project

Similar to how architects use core frames of reference to orient clients to particular concepts and ideas, they also mention using 'core metaphors' to orient themselves and their design teams around central ideas to design *from*:

> Bases core idea on a metaphor…the *"general idea"* of a project is decided upon and we create around this idea. 4

> *"What is a big idea?...An organizational element of a project…it's kind of deconstructing right down to the bone of it…it's a concept…like structure for a book…framework…it allows you to be very rigorous because you can go back to it all the time."* 10

f. Evidence based design

Finally, participant architects speak of instances where they rely upon 'evidence based design' from third party research as a source for making design decisions regarding the people they design for in their own projects:

> *"Anything thing that I can prove…any design decision needs to be based on something even if it's just a small piece of what we do know…evidence based design – design decisions…are made after having been shown they effect that they will have."* 2

> We'll start with assumptions – i.e. carpet is assumed to improve the quality of the room. 13

Q6 – The ideal: what architects wish they could have access to/what they could do without current constraints

By requesting participant architects to project what *could be* or what they would do in an *ideal* world without constraints, and probing appropriately upon these projections, the interviewer was able to collect those latent needs and desires unavailable through traditional questioning. This also helps to understand how architects currently frame their industry, and what the major challenges they face are.

The main findings from question six (the 'ideal' section) can be organized into five categories: a) **control of projects and of client perceptions/understandings**; b) **access to, and information from as many people/stakeholders as possible**; c) **a more efficient design process/additional projects constraints**; d) **additional resources**; and, e) **access to the end users unconscious.**

a. **Control of projects and of client perceptions/understandings**

A key desire for participants, the control of projects (i.e. the architect is able to make design decisions as they see fit), and specifically increased agency over client perceptions and understandings of architecture in general, as well as the project in question specifically, were quite important to participants. While increased control of design decisions might be predictable, the degree to which architects desire control of how design is understood stands out.

Ideally he'd have a client that doesn't tell him what to do, but one who asks, "What it could be". 4

"It's tough because we can see the value of having nice spaces, and it's very tough to not have that recognized." 2

"I don't know if there's enough support for the profession…just realize the person is a professional and they're there to help you…Your flexibility can be limited by the control you client is opposing on you." 10

Core issue in architecture: losing control over projects…need process for resolving conflict. 9

"It's a control mechanism [working outside the normal process with clients]*…they barely understand the process of building."* 11

"They have respect for the kind of work you do…there is a certain amount of respect that needs to be there for the professional…you respect a doctor or lawyer because they are things you don't easily access. For some reason people think design is much more accessible to them – they think they can do it. So I don't know if it's a visual perception…it's like looking at an abstract painting and thinking 'I can do that'." 10

"The public is oblivious to the power and effect of design"…helps/educates clients by developing criteria they are to judge architecture with. 8

"Clients who don't micromanage…they're the ones with respect for the kinds of things you go…there needs to be an amount of respect for a professional." 10

This desire for control, the kind of control that is characterized as *ideal* yet currently unattainable, permeates the interviews. Further examination of this area will be addressed in the 'client relationships' category of the key themes section.

b. **Access to, and information from as many people/stakeholders as possible**

Another ideal requirement participants mentioned consistently was the desire for direct access to hear the client/users stated needs. Interestingly, this desire is held separately from 'access to the end user's unconscious' found below – perhaps indicating contentment with surface layer understandings of users (i.e. those needs and desires users can consciously access), or a lack of awareness/distinction between surface layer understandings and those deeper needs and desires that reside below a user's consciousness:

> *"Sending a researcher wouldn't work…need to see it face-to-face in order to understand"*…has to be personal, interactive. 5

> *"The best listener is ourselves"* though might need special consultants for specialized projects like hospitals or large groups. 7

> *"You have to ask…you have to communicate…you can't figure it out alone…you have to go back and ask 'why do you want to do this in the first place.'"* 11

c. **A more efficient design process/additional project constraints**

Project efficiency – even at the cost of additional constraints – is a desire as well:

> *"You can accomplish a lot in pre-workshops…there's not much to gain in extending the time…it needs to be efficient…and let's go forward…not much to be gained to elongate this too long…it should be four months."* 1

d. **Additional resources**

Of course, the flip side of desiring additional constraints is a clear hope

for additional resources to properly tackle design challenges:

> *"We don't have the time to develop things to a certain point...what we need to grow* [because of time/money, the government]." 10

> *"We've been requested and forced to do design development in much less time...and they inevitably suffer."* 1

> "[The best way to gain information...] *is over time, and talking about it...with clients and people in the office."* 11

e. Access to the end users unconscious

Finally, for many participants there was keen interest in knowing that

which they currently perceive to be unknowable or inaccessible – the end

users' unconscious understandings of concepts and ideas integral to how

they experience the environments architects design. Many architects

believe that in an ideal world that allowed access to users' unconscious

they could better achieve their clients' (as well as their own) design

objectives.

> *"My main factor...is things that are subconscious...things that you wouldn't be able to find in an interview...you might be able to say "what's the biggest thing that stresses you out" and they'll tell you what they think, but they might not actually know...I'm interested in cognitive research that informs the best way to design a space for someone to work in whether they know it or not...that's the toughest stuff to come up with and some of the most interesting stuff to design with...I'm not sure how much research has been done into this...the subconscious stuff that they wouldn't necessarily know themselves."* 2

"[The visuals help us with]…*the functional aspects there as well as the feeling and mood…the meaning behind 'why' you like this…a way to get something out of someone's head….without only using words.*" 3

"*More of a psyche…how do you get to somebody's real desires, what they really want…it would be so neat to have somebody go through a space and…understand how they feel about a space way deep down inside…that maybe it could reach our psyche our unconscious so that it does change the way we perceive and our reality…what I would like to know about the people I design for is…the unconscious reactions to the environments they inhabit…so when they're moving through the space, what is the deep down reaction they're getting from that…not the surface.*" 10

"*You have to know who they are and what they really want…*[How do you find that out?]...*I have to put myself in the position of being them…like "where I am going to put my jacket? Do I got to briefing?"* 11

Key Themes

Explicitly asking the predetermined interview questions yielded a reasonably orderly set of responses as organized above. As the interviewer allowed for participant architects to further lead discussion to issues important to them, additional areas of interest arose and were subsequently probed into further. The following section examines the key themes that revealed themselves organically within the interviews. Many are related to, or consistent with, the analysis of the questions above. The intention is to further explore and gain a richer understanding of what is important to architects when designing for people.

Client Relationship

A key area of interest, frustration and concern for architects, much of the discussion came back to the architect-client relationship. Related to issues of control and autonomy, at its core this issue concerns a perceived lack of trust and respect for the profession:

> "[Trust] *is really crucial...I think it liberates people...it takes away some of the fear* [of clients]*...they think their visions aren't going to be realized...*[they're terrified] *they're going to be ripped off...*[they think this because of] *media, it's what's being put out their...because of a handful of architects...bad seeds...I don't know if there's enough support for the profession...just realize the person is a professional and they're there to help you...*[support] *comes down to trust and flexibility...it's like being in a marriage...like being in any kind of relationship."* 10

> Wants a client that "*trusts"* him/his firm/his work...that is his main goal with clients. 4

There is an understanding on behalf of the participant architects that this issue goes both ways – they often fail to understand their clients' needs as well:

> Don't understand each other...need to *bridge the two-way gap*...neither side understands the needs/desires of the other...expected value/expectations of projects are misaligned...neither side trusts the other. 9

> [What indicates that someone will or won't respect your work?] "*I think when they're not listening to what I'm saying...it's reciprocated."* 10

> "*I would lose the benefit of the research if I'm not there in person"...*Not referring to insight gained, but using the engagements to build trust with her clients. 5

Much of an architect's time is dedicated to overcoming this knowledge

barrier through various approaches:

> *"Open-ended engagements might be really useful in building the trust; building relationships with clients"...*User engagements with patients help rationalize and validate design to clients...they require both tangible ($) and intangible evidence. 5

> We spend a lot of time educating the client...spend a lot of time trying to find the problem (one the client might not know – consciously – that they have). 7

> *"I have to be completely up front about everything in order to get their trust...I have to tell them* [clients] *everything, even if it's grim."* 11

> Helps/educates clients by developing criteria they are to judge architecture with. 8

Participants were quick to communicate the need to develop client

relationships in order for any project success to be realized:

> *"Without that trust...we wouldn't have achieved what was achieved."* 3

> *"Success depends on the vision of the client."* [Goes on to talk about how you have to help clients understand and build this vision]. 12

Building client relationships, specifically gaining their trust, is of paramount

importance to the participants involved. Healthy, strong relationships allow

for architects to gain a degree of control and autonomy over projects and

design decisions. In the minds of participating architects, trusting

relationships also allow for the development of creative solutions to

problems. The success of entire projects hinge on this relationship, and

though they might not have foolproof methods for how to achieve it,

architects spend much of their time and energy attempting to obtain this

positive relationship.

Control

As mentioned previously, control is a core issue. Control of both design and

project decisions, as well as the client's understanding of the process:

> *"At one time the architect was all those different things…like project manager…and so again the siloing in our society trying to breakdown all those things into specialties…you got all these people that you either treat them as part of the larger team that actually does the design."* 11

> Kick-off meetings with experts help "*get a handle on the process*". 5

> Core issue in architecture: losing control over projects…need process for resolving conflict…managing risk and capital…architect feels ego is enduring – there aesthetic is part of the merit of the building/project – in their mind. 9

Definitions of success

On the one hand, many participants state that a successful project equates

directly to a satisfied client – their satisfaction being the only important

metric:

> " *If my clients are happy, I'm actually happy."* 11

At other times, it is clear that there is a disconnect between what defines

success for the client versus what defines success for the architect/designer:

"In the industry, the definition of making things work well is – "does it all meet the numbers"…[my definition of success] *is it mentally simple, is it a pleasant place to be, and those things go hand in hand…you should still be able to back-up why some things are better than others."* 2

Core issue: clients and architects have different definitions of success…these need to be better aligned for successful projects both parties. 9

Interestingly, there was less discussion regarding how the end users of the environments – those visiting, working within or inhabiting the structures – define success. Though, there were some who keep their focus on those users:

"It's how much of a building is used, and how little it is abused." 1

"Efficiency, motivation and keeping people happy with where they're working." 2

When the right users and stakeholders are engaged, you get better internal operations and users that feel the building is '*worth being in'*. 5

Programming limitations – lacking the human element

There is no question that 'programming' (the process of determining the specific tangible use of a space including the number of expected occupants, the square footage required to perform particular activities and house specific equipment, furnishings, etc) and a 'functional program' (the documentation architects are held to when addressing this process) is a standard building block for architects, one that provides the necessary

quantitative benchmarks and technical specifications required to complete a

job. Having said this, many point out the limitations of a functional program

when undertaking the process of designing environments with people in

mind and how they experience the space. Participating architects felt the

nature of programming as it exists within project development today (limited

to the tangible and the countable) falls short of their desire to understand the

requirements of those people meant to interact with the environment (the

intangible, emotional, or qualitative elements):

> *"I think that's the mistake of programming...there's quantitative programming...if we're given a program by a client, it's usually a quantitative program – like "I need a room 10x14"...but the qualitative stuff...they say, "it should be high end"...I really don't know what that means."* 11

> *"General design objectives are set up by functional programmers...they're experts of how much square footages are needed to make a hospital work, how many beds you're going to need...but they're not involved in how it all fits together...*[functional programmers] *don't know how a building works...*[they know] *less about what are there mental support needs going to be...*[those] *specifics are not in their realm."* 2

> *"Take your best guess...you've kind of got a functional program...and you imbue that with some spirit and life."* 3

Benefits of engaging users

No exploration into people and how they make decisions is complete without

looking into the salient emotional elements involved. Below are examples of

the emotional benefits personally experienced by those architects engaging

users in order to better understand design objectives:

> *"This* [engaging the end users] *is one of the most exciting parts of the project...my challenge."* 1

> *"That engagement of the community and their respect for each other is a large part of what keeps me going back... I'm getting personal satisfaction...I went into architecture to help people live their lives better, and I'd like to think when I deliver a project, that's what I deliver."* 3

> I personally benefit from the engagement with clients (patients with mental illness)...it helped me understand "*what ails society*"...illuminated the stigma for me. 5

> "*If we give in to mediocrity, we become boring...boring doesn't allow me to become inspired...*[inspired] *is the only thing that allows me to grow...I need that to live."* 10

And the business benefits enjoyed from user engagements include increased pace of design development, referrals and less time spent chasing business.

For instance:

> *"Architects who don't practice that* [describes his approach to user engagement]*...what they're missing out on is that they're not delivering client satisfaction that they could...and they're not getting referrals...so then they spending a lot on paid advertising. ......it's going to reduce your expenses in attracting new business...our firm does not make one response to a RFP...because we don't have to....those RFPs are a colossal drain on resources."* 3

Desired form insights could/should arrive – receiving insights from users

Whether receiving insights regarding the design objectives of a project directly from clients, from users themselves, or from other outside sources, the form architects desire to receive these insights in were rather consistent.

Responses have been separated into two categories of symbolic

representation: a) **visually based representations**; and, b) **story, narrative**

and other symbolic frames of reference.

a. **Visually based representations**

Visually based representations of key concepts and ideas acquired from

clients and/or users were advocated by many of the participants. Given

the nature of their profession, this is not entirely surprising, but the way

in which architects desire to use this form of communication is evocative:

> *"Not sure 'what' I want, but I am sure of the 'how' I get it...I ask them to put together images* [scrapbooks]*...images of what you do like, and images of what you don't like...*[the visuals help us with...] *the functional aspects there as well as the feeling and mood...the meaning behind 'why' you like this...that 'kind' of information is so quick...that old adage that a picture is worth a thousand words – very much true in this business..."* 3

> "[Visuals from users area] *a way to get something out of someone's head...without using words...it really speeds up the process...it gives us some clues into how this can translate into a three dimensional reality...how you can translate concept into reality...we're very visual people. Visual images transmit both functional and emotional things."* 3

> "[Using visuals] *will express adjacencies...what are the spaces? How big they are? And where are they in the building?"* 1

> *"Probably as architects we have a higher sense of spatial reasoning...that allows you to visualize things and draw things...and see things that are not there...you've got to flip it around and ask your client 'what do you see in this space'...you know, instead of being the one who's telling them about the space, as a salesman would."* 11

b. **Story, narrative and other symbolic frames of reference**

Narratives regarding previous experiences, environments and future

desires - be that in story or some other form – dominated the discussion.

This could easily be considered the 'mental imagery' extension of the

visually based representations mentioned above:

> *"You make a story up about people – how do they get there? How long*
> *are they there? When do they leave?"* 11
>
> *"We will put it together on a piece of paper and three dimensional*
> *pieces to scale…we'll start manipulating pieces…this will uncover a*
> *whole bunch of preconceptions, desires and wishes and objectives on*
> *parts of the clients…the engagement and their active participation…will*
> *unleash all sorts of information."* 1
>
> *"We need to go in with some frame of reference to start."* 5
>
> Uses *"doll house models"…*concepts meant to convey ideas to
> clients/users, and elicit responses back. 5

Tools employed – delivering stories and frames of reference to users

and clients

Finally, there were some 'tools employed' discussed by participants that

merit further acknowledgement. Along with the varying approaches to client

and user engagements practiced by some as mentioned, two other significant

and telling tools were frequently discussed: the practice of a) **bringing**

tangible frames of reference *to* the users/clients (as opposed to eliciting

them *from* users/clients); and, b) the **building of scenarios**.

a. **Bringing tangible frames of reference to the users/clients**

In this instance the frames of reference are those that architects bring to

client and user engagements in order to: instigate discussion, get '*on the*

same page' with clients and/or users, and demonstrate where previous

thinking resides:

> *"You invariably have to put something in front of them for them to react to…this is why I meet with people in their houses…they can talk about how they want that experience different…if we sit around the office, we're not going to get this…it's based in reaction to their current situation."* 3

> Creates entire books to show design 'possibilities' to get disparate stakeholders on the same page…i.e. sliding scales of potential design on a couple axis to show what options are available at what 'cost'. 6

> Able to take drawing, something on paper that could provoke some reaction…fingers on paper, tracing workflows…enables a language, a toolkit to critique concepts…without a tangible frame of reference, discussion becomes one way…leads to faster process. 13

b. Building scenarios

Very much an extension of their activities that provide tangible frames of

reference, the building of scenarios (and stories) was a tool employed to

affect the mental model clients use to make sense of a project. For

instance, when architects were looking to communicate the implications

of particular design objectives of a client, or even just in an attempt to

better communicate their own design concepts and ideas, scenarios were

actively built in a way meant to increase the fidelity of communications

and steer or guide clients' conceptualization of projects:

"So you make up a story…that's the only way I can get at what they need…everybody understands design completely differently…then you can understand what your clients understands what you're doing…most don't." 11

"But I think if you give people another way of looking at something another way – whether they accept it or not – is a good thing. Because is broadens them…makes you look at the larger picture. It's not your own little world." 10

Ideal outcome is one that "*bridges the gap"* between client and architect understandings. 9

Build *'scenarios'* in order to get people on same page…to 'see' the implications of their decisions on the design of things. 6

Summary of research findings

What architects currently *do* to establish design objectives, how they *think* this process should be carried out, and what they *wish* they could access or obtain to best accomplish their goals in this area have been documented in the analysis and findings section of this report, and summarized bellow.

Obtaining design requirements: a variable experience

The architects interviewed indicate a variety of approaches currently employed to acquire design objectives. These activities range from several highly engaged, formal design development stages (that at times can lack rigor, and routinely appear to bias those engaged) that include clients *and* users, to processes that rely primarily on internal peer review and speculation within a firm – without any input from users. Approaches can

begin and end with a simple conversation with a client, or continue on for

months with multistage workshops including a variety of stakeholders. Every

firm represented appears to have their own approach, either developed on

the fly by individuals, or molded over time through company precedent.

The two-way gap: a lack of understanding in the architect-client

relationship

Regardless of the type of architectural firm – whether it be multinational in

organization or a small, independent shop – all architects participating in the

study communicated issues and challenges regarding their relationship with

clients. Whether these issues specifically concerned control over projects and

processes, regarded trust and respect for what architects fundamentally

provide, how their work is valued, or how and when to validate design

decisions, there was a clear problem with how architects feel their clients

understand their profession and what they do. Of course, this lack of

understanding goes both ways with architects reporting difficulty

understanding what it is their clients need and want. At times, desired

outcomes and definitions of success are reported to vary widely between the

two sides, which leads to compromise that dilutes effectiveness or fails to

satisfy all stakeholders involved. This widening gap in understanding

between architects and clients results in inefficient, unclear work that does

not accomplish design objectives for users, clients or those architects responsible for the work.

Attempts to bridge the gap: indicative of architects' hidden needs and desires

In order to strengthen these relationships – and in effect shrink the gap in understanding – architects perform activities aimed at providing further evidence, support and/or validation for their design decisions all in an effort to build trust and gain respect for their work from clients. These activities include workshops, charrettes and clinics designed to educate and grow the vision and architectural acumen of their clients (with varying degrees of success and frustration). They build scenarios and provide both conceptual and tangible frames of reference in an attempt to "get on the same page" together.

These activities always include the development of a functional program, and at times include evidence-based design. Though a necessity, the functional program (the consciously stated quantitative requirements that include elements like the number of rooms required, the square footage required to house necessary equipment in each room, etc) has its limitations. Many architects openly point out the emotional, intangible elements – those qualitative elements that are not included in a functional program – that need to be identified and understood in order to successfully design an

environment that works for those visiting and inhabiting the structure.
Acquiring these insights is an area much less comfortable to architects, with
in-depth user engagements designed to do so remaining the industry
exception rather than the rule.

Accessing the users' unconscious

Even those attempting to achieve this deep, human insight into user
experiences express a desire for better ways to explore '*what could be*' – the
latent needs and desires that few (if any) architects claim access to – in order
to create innovative solutions, and a rationale for their necessity. Ideally,
these insights would come in the form of visuals and tangible frames of
reference representing this deep user insight to the architect. And, though
some participants demonstrate a progressive approach to engaging the
people they design for, issues with rigor, reliability and the practical utility of
such engagements were revealed. At times this was because of the lack of
resources afforded by clients, and at others times, it was due to a lack of
know-how or expertise in the process of understanding users by architects.

Architects covet ways of getting to, in their words, the end users'
"*subconscious*"; "*psyche or unconscious*"; "*who they are and what they really
want*"; and, "*a way to get something out of someone's head*" all in order to
better demonstrate their ability to design what is best for the end user, and

as a result building the architect-client trust required to do what they do best.

Implications of research findings:

Based on the findings from the primary research a set of principles has been created to act as a guide that any approach to 'design research for architecture' should adhere to. Essentially these principles are meant to ensure that the value, or 'relative advantage', Rogers calls for is present and remains grounded in architects' existing approach as well as their profession's core issues and challenges. Collectively these five principles are meant to strengthen architects' relationship with clients by establishing evidence with users, deepening clients' understanding of why design decisions are made as they are, and by establishing a core frame of reference the entire team can orient themselves around to ensure collective focus and a shared understanding of project objectives. The following five principles will act as target objectives for the development of potential approaches to 'design research for architecture'.

Principles for 'Design Research for Architecture'

'Design Research for Architecture' should…

1. …**Engage users directly**
2. …**Provide access to users' unconscious understandings**
3. …**Work within and leverage architects existing approach**
4. …**Be actionable, without being prescriptive**
5. …**Provide a core frame of reference for projects**

1. **Engage users directly**

Architects participating in the primary research indicate a keen desire to acquire insight into users directly. For many, this is something they attempt now; while others feel they are not afforded the opportunity or have the expertise to do so effectively. An approach to 'design research for architecture' should encourage the direct engagement of architects with users where appropriate. This engagement should include clients in order for them to gain first hand knowledge of why architects make the design decisions they do – to help clients '*see*' the value of both establishing evidence directly with users and creating informed architectural solutions as a result. When direct architect-user engagements are not feasible (i.e. a brokered engagement is necessary), those responsible for representing the user should ensure findings are communicated as authentically and evocatively as possible – essentially recreating an experience as close to a real user engagement as possible.

2. **Provide access to users' unconscious needs and desires**

   Many of the architects interviewed report a desire to know those
   unconscious understandings – and their consequences – that so
   profoundly affect the experiences people have in the environments they
   inhabit. To provide real value, any approach to 'design research for
   architecture' should provide architects with insight into users' deep
   needs and desires – especially those that may be consciously unavailable
   to users yet so important to how they make sense of the environments
   they find themselves in, what their motivations within those spaces are,
   what feelings those experiences trigger, and how they make decisions and
   behave in such environments as a result. 'Design research for
   architecture' should provide architects with insight that enables their
   design to achieve both the functional and emotional goals of those within
   it.

3. **Work within and leverage architects' existing approach**

   There are many effective practices and activities architects already
   engage with in order to achieve the people oriented design objectives
   they are tasked with achieving. Approaches to 'design research for
   architecture' should build upon these conventional activities (i.e. the

development of the required quantitative elements in a functional

program), yet disrupt these conventions when necessary (i.e. by

potentially including components of a functional program that consider

the intangible/emotional meaning and function an environment must

deliver in order to be successful for those using it); increase the rigor and

expertise in the acquisition of requirements (both functional and

emotional), and offer ways to manage the process, all while ensuring a

less biased perspective on the implications of its findings.

4. **Be actionable, without being prescriptive**

   Insights resulting from 'design research for architecture' should be

   acquired, documented and delivered in a form practical to architects,

   without constraining their ability to creatively solve design challenges.

   Design research should provide a platform from which architects can best

   demonstrate their expertise. This platform should be specific enough to

   provide what is fundamentally required and desired from users in order

   to accomplish their goals on a conceptual level, yet broad enough to allow

   the design of unique environments without stifling any possible solutions.

5. **Provide a core frame of reference for projects: bridge the two-way**

   gap

A core issue the architecture industry faces is a lack of understanding. Clients often lack an understanding of what architects do, and architects can admittedly fail to understand their clients. For 'design research for architecture' to be of most use, it must aid architects bridge this gap. If successful, 'design research for architecture' will provide a core frame of reference that orients all stakeholders involved – one that gets everyone "on the same page". A core frame of reference – established with evidence in the user – can help rationalize and steer design decisions. If done properly this can build trust and strengthen relationships with clients. Ideally, this core frame of reference strengthens the architect-client dialogue, increases an architect's agency over the design process, makes it more efficient, profitable, and ensures all stakeholders' – the architect, the client and the people being designed for – objectives are obtained.

Individually these principles address key challenges architects currently face that any rigorous approach to 'design research for architecture' should be able to help overcome. When all five principles are delivered upon together, they are meant to culminate in a stronger client-architect relationship based on first hand evidence (established directly with users), a deeper understanding of why architects make the design decisions they do (through

clients' participation in the process), and a shared understanding of they core

project objectives, all while working within architects' existing approach to

design.

In order to deliver on these principles, a phased approach that is

predominantly participatory in nature will be framed. That is, all

stakeholders are to engage directly at appropriate times in the project –

including clients. Unlike many participatory design research engagements

that focus on bringing together user, designer and design researcher alone, it

is vital for 'design research for architecture' to include clients in the process

itself. In both the primary and secondary research conducted in this project it

has been shown that the two-way gap between architects and their clients

exists for many reasons, but at its core endures due to the lack of insight and

understanding clients have into the process and reasoning behind design

decisions and why they are made.

Theoretical basis and design research to be drawn upon

With the findings put in perspective and a set of principles to guide a future

approach established, theoretical foundations for design research, existing

approaches to design research, and specific methods and techniques

employed in design research can be reviewed for relevance. The following section briefly points out both the theoretical bases for moving forward, and those existing elements from design research that will be drawn upon to further develop 'design research for architecture'.

Grounding in theory

The general approach, methods and techniques 'design research for architecture' will borrow from must be grounded in existing knowledge. Like most good design research, 'design research for architecture' will call upon various disciplines, including: cognitive psychology, sociology, cognitive linguistics and anthropology, as well as business and design. This work will be drawn on both theoretically and methodologically to ensure the user understandings (how users frame concepts central to architectural environments and successful experiences within them/how they make sense of their world) required to accomplish the goals set forth by 'design research for architecture' are both attainable and based in rigorous evidence. This is not meant to be an exhaustive exploration into these rich and complex disciplines, but rather create context for how 'design research for architecture' will take shape.

Cognitive psychology, sociology and mental models

Cognitive psychology is concerned with the mental processes that trigger

behaviors like decision-making, learning, perception and memory (Groome

and Brace, 2006). Within this domain lies the study of how knowledge is

constructed and processed. Jean Piaget's work within this field proposed the

idea of schema, the 'mental models' or 'frames' that represent people's

understanding of concepts and experiences. These mental models allow us to

quickly make sense of things by categorizing experiences into known entities

– without having to build an understanding from scratch. Mental models are

like shortcuts for understanding. They also greatly influence our expectations

and interpretations of new experiences (Piaget, 1952). Gilles Fauconnnier

and Mark Turner refer to a similar process of understanding as 'conceptual

blending'. They argue that the way people think and learn is by blending new

information with concepts and ideas they are already familiar with.

Essentially, they claim that people come to understand or make sense of their

world by comparing something new to that which we already know – the

metaphoric process (Fauconnier and Turner, 2002).

Those in sociology are similarly concerned with mental models and frames,

but focus more on what part of the social world activates them. They say

frames enable us to make sense of both the physical and social (McCarty,

2007). Sociologist Erving Goffman's (1974) defines a frame as a way of

interpreting that enables people to find, perceive, identify and categorize our experience of the world in a knowable way.

Important to 'design research for architecture' is this notion that people bring their existing understandings to new experiences – including architectural environments. These new experiences are made sense of, or understood, through the activation of particular mental models or frames. In order to provide insight into users' needs and desires (what their goals and motivations are) for a particular architectural experience, these mental models will need to be brought forth and understood.

Cognitive linguistics, metaphor and accessing the unconscious

Of course, much of the basic process of understanding or 'conceptual blending' that occurs with the aid of these mental models happens at an unconscious level. In fact, in his book *The User Illusion*, science/psychology writer Tor Nørretranders (1998) indicates one might only consciously process about forty of the millions of bits of information that the senses are inundated with every second. Importantly, it is the unconscious understanding of things that drives most behavior (Zaltman, 2003) and dictates the experience and the meaning created within architecture. In order for 'design research for architecture' to gain a complete and insightful look

into users it will need to mine these unconscious understandings so pivotal to architectural expectations and interpretations.

Turning to cognitive linguistics can illuminate how one might fundamentally gain access to the unconscious and the understandings so important to experiences with architecture. In *Metaphors We Live By* prominent cognitive linguists George Lakoff and Mark Johnson (2007) write of metaphor's pervasiveness in language (we often use it prolifically in speech without realizing). Further, they indicate that metaphor in fact forms our conceptual system – it indicates how we think and consequently how we act as a result of this thinking. The metaphors people use to communicate concepts, ideas and desires provide a glimpse into how it is we unconsciously construct our understandings of these things fundamentally (Lakoff and Johnson 2007). Cognitive linguists have proven that metaphor and the metaphoric process can illuminate much of how it is we come to know (Fauconnier and Turner 2002; Kövecses, 2000; Kövecses, 2002; Siegelman, 1990). As James Geary (2011) puts it in his book on metaphor "*Metaphoric thinking – our instinct not just for describing, but for comprehending one thing in terms of another – shapes our view of the world, and is essential to how we communicate, learn, discover and invent"* (p. 3)*. By eliciting the metaphors people use to make sense of experiences – including the needs, desires, expectations and motivations relevant to architectural experiences – one can access and

understand the unconscious factors so important to achieving peoples' goals (Cameron and Low, 1999; Fiumara, 1995; Kövecses, 2000; Lakoff and Johnson 2007; Zaltman, 2003).

Borrowing design research approaches, methods and techniques to gain the desired insight

As mentioned previously, design research applied to architecture is not an objectively new concept. Several architects and firms – including some interviewed for this project – are performing similar types of investigation with their users already. And of course, many design researchers are currently engaged in work related to architectural environments (Sanders being a pioneer herself). 'Design research for architecture' is being framed as an innovation for this project due to the fact that directly engaging users to better understand their needs and desires has yet to catch on throughout the architecture industry. Again, one of the focuses of this project has been to better understand how existing design research methods and techniques could be better framed in order to provide value, or 'relative advantage' as Rogers would say, to practicing architects. Based on the findings revealed in the primary research, and the guiding principles developed as a result, existing approaches, methods and techniques of inquiry and insight

collection will be drawn upon in order to prepare a novel approach to 'design research for architecture'.

The core area methods and techniques will be drawn from will of course be the design research field itself, but techniques and approaches from related fields will also be borrowed. Some of these general approaches include: generative design research, participatory design research, activity based research and arts based research. And the techniques that will be modified to draw out insights include: the ethnographic interview, non-directive and laddering interviewing, the use of various generative tools, photography and phototherapy techniques, metaphor elicitation as well as the projective process. The following brief overview will define and provide rationale for the application of these approaches, methods and techniques.

General approach:

Participatory design research

> **Definition:** Participatory design research describes the general approach of engaging the people meant to use what is being designed throughout the design development phase, along with designers and design researchers. The process is collaborative. In participatory design research the roles of each stakeholder (user, designer, design

researcher, client) become blurred, resulting in more organic discussions and unfiltered dialogue. Participatory practices often employ 'thinking tools' for users to express their thoughts about concepts and experiences and symbolize meanings that they are often unable to articulate. In the end, designers remain responsible for the physical design themselves – yet participatory design research allows ways to gain insight into those they design with (Kensing, 2003; Sanders and Strappers, 2008; Schuler & Namioka, 1993).

Rationale: First and foremost, participatory design research endeavors to engage users directly – a core methodological goal of 'design research for architecture'. In order to gain the desired insight and understanding into those whom architects design for, direct access to users is essential. This approach also requires designers and researchers to 'get in the room' together. As seen in the primary research component, some architects feel they need to hear from users themselves in order to gain value from any engagement (rather than second hand or relayed data). A participatory environment that includes all stakeholders – even clients – also helps to further orient the entire design team to the goals and objectives of those being designed for. By including clients in the process, substantial steps are

taken toward bridging the aforementioned two-way gap of

understanding that exists between architects and clients.

Generative design research

> **Definition:** Generative design research – and the use of generative
>
> tools – is a sub domain of participatory design research that describes
>
> the process of creating physical and symbolic representations of
>
> users' thoughts, feelings, needs and desires. These manifestations are
>
> both visual and tangible in nature and can represent elements both
>
> functionally and emotionally important to users. These creations are
>
> often compiled from a set of ambiguous objects preselected by
>
> designers and design researchers before the engagement. For
>
> instance, one might ask a user to create a small, simple model of an
>
> architectural space they would like to perform a particular task. The
>
> resulting creations help serve as common ground for participants,
>
> designers and researchers to achieve a shared understanding of the
>
> concept at hand. The creations themselves are less important than the
>
> meaning the creations hold for their creators. Generative design
>
> research employs the projective process (see below) that – when
>
> performed adequately – can access both the users' unconscious,
>
> unknown and unanticipated needs, as well as their latent desires. This
>
> process is usually performed at the beginning of projects during the

design development phase. (Sanders, 2000; Sanders, 2002; Sanders, 2006).

Rationale: Generative design research is one way of getting at those insights users don't know they know – a way to access their unconscious. This process is similar to metaphor elicitation (see below) – it leverages metaphoric thinking – but provides a more tangible outcome that would appear to fit better with physical design projects designed by architects (like those participating in this project) whom operate more visually and think predominantly in spatial terms. Generative design research also helps create a design language that can be shared both between designer and user, as well as with the clients the design is being commissioned by. This helps all stakeholders get 'on the same page'.

Activity based design research

Definition: Activity based research, an approach that falls under the realm of applied ethnography, describes the process of examining how users attempt to achieve particular end states in their everyday lives. This is done by empowering users to document what they do in order to achieve their goals (say, with cameras, through creating scrapbooks, journals, collages, etc). The focus is not necessarily on a

design that would eventually be created to fulfill these goals, but the activities that surround the design. For instance, activity based design research used to understand the ideal workplace experience would examine a core goal users want to accomplish in a work environment – say, the ability to focus – and focus on the set of activities and the overall experience that surrounds the goal (rather than focusing on the workplace alone). Users would be tasked with collecting and documenting instances in their lives that provide this feeling of focus – how they achieve this end state elsewhere. These representations would then be brought by users into an environment where researchers could probe into their meaning and significance (Kumar, 2004; Kumar and Whitney, 2007).

Rationale: Along with revealing the frames of reference for how users achieve certain goals in the context of their own lives, and receiving the benefit of data collected before participants even reach the engagement process, researchers gain access to users' thoughts, feelings and activities in a very unobtrusive way. By empowering users to collect this data on their own (with the help of some very precise directions), researchers gain a level access and comfort not usually afforded in intimate situations.

Arts based research

Definition: Arts based research is a general approach to qualitative research that adapts the tenets of the creative arts in order to access social understandings in a holistic way. By drawing on literary writing, visual arts and other traditional creative mediums, arts based research leverages peoples' creative expressions, and the meaning represented by them, in order to access user understandings that traditional methods often lack the tools to reveal (Leavy, 2009).

Rationale: By employing an arts based research approach, design researchers can further develop tangible representations of important meanings and understandings users' possess in relation to successful and/or ideal architectural experiences.

Techniques to be employed:

The ethnographic interview – Engaging users directly requires more than conversational skill. Authentic and unbiased (or at least minimally biased) engagements with users that unearth salient information require a skilled interviewer. 'Design research for architecture' will employ in-depth interview techniques borrowed

from ethnographic studies that accurately elicit the events, relationships, linguistic terms, activities and the meanings participants make of their lives (Spradley, 1979; Schensul et al., 1999).

Non-directive exploration and laddering techniques – Non-directive exploration is a research technique derived from the psychiatric interview. Its aim in this context is to gain insight into concepts and ideas users have without influencing or 'leading' their discussion. With this learned interview skill, the interviewer exerts minimal direction in order to allow participants' greater freedom and spontaneity of thought, hence relaying a more authentic representation of what is contextually important to them (rather than what researchers *think* would be important) (Cohen, Manion and Morrison, 2007).

Laddering techniques refer to a way one can obtain the attributes, consequences and values a design may produce. Attributes of particular experiences generate both functional and emotional benefits or consequences (Reynolds and Gutman, 1998). It is in the researcher's best interest to obtain these elements when attempting to understand what users need and desire in an architectural environment.

Generative tools – What is referred to here as 'generative tools' include all those techniques for creating expressions and representations of users' thoughts and feelings. These tools could include tools like cameras (for users to capture images of personal meaning in their individual lives), sketching and drawing instruments, physical objects or building blocks, diaries, etc. The intent is for these tools to make it easier for users to create things that represent important concepts and meaning (either on their own before design research engagements, or during the engagements), while affording designers, design researchers and clients a medium from which to establish understanding from (Kumar, 2004; Sanders, 2006).

Photography – As a result of findings in the primary research component of this project and architects' emphasis on visual modes of understanding, photography will be drawn upon heavily in the development of 'design research for architecture'. As photographer Richard Kalvar from the famed photojournalism agency Magnum Photos said, "Photography is based on reality, it looks like reality, but it's not reality" (as cited in Bigge, 2007). Like any of the tools used to elicit information from users, photography will be used to establish a conduit from which to build understandings of the 'reality' that exists

in the mind of users as represented through the photography they create and/or collect.

Phototherapy techniques – In order to understand this subjective reality users attribute to the photographs, and things they create with the use of generative tools, phototherapy techniques will be drawn upon. In particular, ways of questioning and eliciting information from the photographs created and collected, as well as the metaphors, and symbolic references produced by participants prior to and/or within the engagements will be borrowed from phototherapy (Weiser, 1999).

Metaphor elicitation – Drawing heavily on the field of cognitive linguistics, it has been found that the elicitation of metaphors, analogies and other figurative language in the context of a focused research initiative can effectively surface unconscious thought (Fauconnier and Turner 2002; Kövecses, 2000; Kövecses, 2002; Siegelman, 1990). Actively eliciting metaphor reveals cognitive processes that go beyond literal expressions of needs and desires, enabling design researchers to reveal important understandings otherwise inaccessible (Zaltman, 2003). By repeatedly bringing forth the metaphors participants use to describe and frame concepts relative to the realm of inquiry, and later coding and categorizing

these metaphors with other participants', design researchers can begin to see those deep, unconscious ways people make sense of experiences relevant to architectural projects and objectives.

The projective process – Employing projective processes within discussions and interviews benefits design researchers in multiple ways. The process involves encouraging participants to project meaning onto the symbolic or metaphoric representations they use to express their understanding of important concepts. This enables design researchers to break users' understanding down into relevant units, allowing for further study and examination. Projective techniques help people to focus on ideas often unconscious to them. The projective process also allows participants to more freely express themselves indirectly, creating a less judgmental, more comfortable environment for sharing and discovery (Weiser, 1999).

In summary, by working with the knowledge acquired in the primary research component of this project, the guiding principles that resulted from this research, the knowledge based in the interdisciplinary theory referenced above, as well as the relevant approaches to design research (along with the techniques and methods of collecting information within them) an approach

to 'design research for architecture' can be further tailored to bring real value to those architects tasked with understanding the people they design for.

An approach to 'design research for architecture'

The following outlines a general phased approach to 'design research for architecture', based on the findings so far, that looks to establish relative advantage for architects and firms tasked with designing for people.

This attempt is meant to further explore ways of accomplishing the goals of 'design research for architecture', not to proclaim a definitive solution. Rather, this approach should be thought of as a starting point – or base prototype – from which design researchers and architects can further evolve the process of understanding the people they design for. Even if this particular attempt to obtain the desired goals was deemed adequate, any innovative process or idea such as this needs to allow for 're-invention' by those applying an innovation in order for true adoption (Rogers, 2003). The following approach to 'design research for architecture' should be examined for its ability to deliver on the principles previously established, and capacity to evolve based on the needs of those potentially practicing it.

Design research for architecture – set up

For 'design research for architecture' to be successful, it must deliver on five

principles. It must:

• Engage users directly

• Provide access to users' unconscious understandings

• Work within and leverage architects' existing approach

• Be actionable, without being prescriptive

• Provide a core frame of reference for the project team to orient themselves

    around

These five principles provide a foundation for the development of any

approach to 'design research for architecture', and ensures the main

challenges architects face today are addressed in the process: architects gain

a deeper understanding of the people they design for; the two-way gap that

exists between architect and client is bridged; and as a result, architects gain

further agency over the essential design decisions so crucial to successful

projects.

This following approach is participatory in nature (specifically, it not only

brings users into the design development process, but clients as well), and

focuses on creating symbolic representations with users, designers and

clients in order establish knowable frames of references, that access both the

functional and emotional needs and latent desires of those being designed

for. Each phase includes four sections:

- **Phase objectives**: outlines what any approach to 'design research for
  architecture' should accomplish in the phase
- **Achieving objectives/tools to employ**: how one might achieve the phase
  objectives
- **Example**: an example that provides a real world frame of reference in
  order to put the phase and objectives into context
- **Ideal outcome**: what results from the phase

-Prior to engagement-

Phase 0 – Project setup

Phase objectives: In this phase, the project team – for instance, the architect,

clients and design researcher – meets to set or reiterate objectives for the

engagement (including both the general goals for the design itself, and more

specific goals for the 'design research for architecture' project), and agree

upon the parameters of the research design (including a sample size

appropriate to the magnitude of the project and range of users to be

engaged). Particular attention should be paid to *who's* needs and desires the

team needs to understand (who is this architectural environment being

designed for?), and *what* needs to be understood (what is it the team needs

to understand about their users in order to develop a design that successfully achieves the team's design goals as well as the users' experience objectives).

Achieving objectives/tools to employ: The meeting itself is the first step toward building a common language and understanding of the design objectives. Ideally this process is collaboration with all team members stating their own objectives for the engagement. Previous research, business and/or organizational elements can be factored in at this point.

When developing a research question, team members are required to fine tune their desired outcome and articulate exactly how one would elicit such an outcome. A good research question is general enough not to bias or lead participants in a particular direction, yet focused enough to draw out the salient meaning relevant to the project at hand. This question should 'inject' or call to mind just one realm of inquiry, but do it in a way that allows various types of participants to respond in their own unique and expressive way. Good research questions focus on the concepts, ideas, or understandings pivotal to successful experiences – the knowledge that dictates whether or not the project team's objectives will be attained or not. Questions should be informed by previous work or knowledge developed in the area of inquiry, or in the absence such knowledge, by the project team's careful deliberation as to the core understanding required.

At this time, any tools that will be brought into the research engagement can be created and decided upon (for instance, generative tools such as a site map and three dimensional objects that would define the space and experience, as well as the activities that take place within it). These tools will be manipulated by the users within the engagement to represent their ideal layout/design/experience in the context at hand.

Additionally, any 'homework' activities – tasks users are to carry out and create documentation for prior to the engagement – can be established at this point.

An engagement protocol can be created to provide architects, clients and design researchers a guide for the engagement. This guide would include the main design research question, how to interact with and understand the homework activities, how to use the pre-determined tool kit in session, as well as areas the team feels it needs specific probing into (i.e. specific areas of interest or where particular knowledge gaps exist). The guide should not be a list of predetermined questions, as the engagement is primarily non-directive. The guide should indicate a structure and chronology of tasks or steps, while allowing for free flowing discussion with users.

Finally, a recruitment letter can be drafted that both ensures the right people are invited to the engagement (the *who*), and those people are primed to enter the engagement having thought about – and ready to discuss – the subject matter at hand (the *what*).

Example: The setup phase of a 'design research for architecture' project meant to examine how to best design an environment for kids in a children's hospital might include the following elements:

• Team meeting on location, in existing children's hospital.

• Determination of three user segments to be engaged: sick children; sick children's family; nurses/doctors/support staff.

• Development of the design research question (the main subject area the team needs to understand based on predetermined goals) – i.e. for a team that previously establishes that kids in hospital recover quicker when their stress levels are low: *"What makes for a calm, comfortable space?".*

• Creation of a toolkit that includes the physical space available for the environment (i.e. the empty floor plan), three dimensional objects that can represent necessary equipment/furniture (i.e. beds, monitoring systems, etc) as well as ambiguous objects (wild cards, so to speak) that could represent unknown elements kids might want to include in their ideal environment.

- Creation of a homework activity that requests kids to take pictures (with

  disposable or inexpensive digital cameras supplied by the design team) of

  places/experiences/objects that represent calm, comfortable environments

  (to be later probed upon in subsequent steps).
- Creation of the engagement protocol that structures the order in which the

  research team probes into the homework task, when they get the kids to

  create model environments with the toolkit provide during the

  engagement, etc.
- Drafting of the invitation letter that outlines the process, provides

  homework instructions, and primes participants for the engagement.

Ideal outcome:

Along with the creation of the physical document/toolkits mentioned above,

the core outcomes of this phase include:

- The establishment of a participatory environment with all team members

  (including clients), resulting in a sense of ownership and inclusion not only

  during the setting of objectives for the engagement, but the active gathering

  of insights and understanding that will determine what the ultimate design

  is to achieve.
- A guiding design research question that unites team members on a

  particular goal.

Phase 1 – Recruitment

Phase objectives: The recruitment phase is important to both ensure the correct users are being invited to participate, and as a first prime/point of interaction for the engagement.

To ensure the proper users are invited it would be advisable for the project team to use a professional recruiter (in cases where there is no internal access to users and an unbiased sample is desired, like when recruiting for a large publically accessible environment like a museum or retail spaces), or to recruit from an internal source where appropriate (in cases where a specific segment of users of the environment is know, like when designing a museum and internally recruiting the museum's curators/exhibit designers).

The first point of contact should also be carefully crafted to get participants thinking about the core subject matter, with as little bias as possible. To be successful, engagements need to allow participants to communicate the important elements of their experience and understanding of a subject area without the input or biases of those recruiting (and eventually questioning and probing within the engagement). Also, the initial prime – for instance, the instructions given that are meant to bring forth thought and activity that will represent the participants' experience and understandings of the subject

matter – will help participants get to the in-person engagement in a more prepared state than if they were invited without preparation.

Achieving objectives/tools to employ: To achieve the above stated objectives, a script should be created for those recruiting participants – whether internally or externally. In addition, recruiters should be briefed on the project and protocol in order to answer any questions that might arise without further biasing potential participants.

Finally, the wording of the design research question – the initial prime – should be carefully crafted at this stage. The question should be clear and concise – injecting as little as possible from the design research team, while succinctly evoking the necessary subject matter in the mind of the participant.

Example: The recruitment phase of a project designed to understand the needs and desires of both those visiting museums and those designing the exhibits found within might include:

• The contracting of a professional recruiter responsible for scheduling participants that fall within the museums targeted visitors (i.e. people who visit galleries and culture venues a certain number of times per year).

• The internal recruiting and scheduling of in-house exhibit designers.

- A briefing meeting with all recruiters to establish goals of the recruit as well as how to handle any questions pertaining to the activities involved.

- A final draft of the design research question.

Ideal outcome: The ideal recruit leads to a set of participants that fit the profile of those users the architectural environment is meant to serve, while priming them in a way that triggers both their conscious and unconscious contemplation of the elements key to their experience with the core subject matter. This allows for team members to better access users' deep understandings in an efficient manner during the primary engagement.

--Day of engagement--

Phase 2 – Discussion and exploration of homework

Phase objectives: This phase represents the beginning of the direct engagement with users along with the design development team (including architects, clients and design researchers). In this phase the team's objective is to explore the homework exercise participants were asked to complete prior to the engagement (be that by taking symbolic photographs, keeping a journal of activities, collecting objects representative of an ideal experience, etc), and reveal the meaning behind why they chose to complete the tasks as

they did. For instance, in the homework assignment mentioned in phase 0, kids were asked to take photographs of places, experiences or objects that represent their idea of calm, comfortable environments. In this phase the team has the opportunity to explore and probe these photographs in order to establish which frames of reference the kids use for the key concept at hand. When done effectively, team members can come to understand how the kids 'make sense' of calm and comfortable – or whatever key concept the team desires to understand. The photographic representations themselves trigger thoughts of the key concept for kids. Skilled team members can probe effectively to identify what *about* their photographs delivers the desired concept – how they currently understand the subject area, what tangible things trigger these understandings, what these understandings lead to on an emotional level, and what they fundamentally require in order to achieve these end states. This is the first step toward uncovering users' deep needs and desires relevant to the experience at hand.

Achieving objectives/tools to employ: In order to achieve the phase 2 objectives (as well as those in any other of the 'day of engagement' phases) a working knowledge of interviewing – similar to the ethnographic interview – is required. Fortunately, with the team engagement approach a design researcher (or someone with the adequate interview skills) can lead or facilitate the process, as well as teach other team members the procedure for

interviewing participants without leading participants (or in the least minimizing the level of bias introduced), while bringing forth those deep needs and latent desires related to the core experience/subject matter at hand.

Tools employed to achieve the objectives in this phase include:

• Ethnographic interview skills – the ability to question and explore participants' homework assignments along with the deeper meaning such symbolic work represents to participants in the context of the project goals.

• Phototherapy techniques – phototherapy techniques aid team members in the way they extract information from the photographs participants bring to the engagement. These techniques focus on identifying the metaphoric or symbolic meaning the images represent, as well as how and why this meaning is significant to the participant in a project context.

• Projective techniques – employing such techniques allow participants to project the emotional content of their symbolic representations (i.e. the photographs kids took to represent their understanding of calm/comfortable environments), and allow team members to explore the representation's associated meanings.

• Metaphor elicitation – the act of bringing forth and exploring the metaphors, analogies and stories participants use to describe their conception of the core subject matter. Phototherapy and projective

techniques are used in concert with metaphor elicitation to provide an in-depth understanding of the meaning behind how participants frame key concepts in context.

- Non-directive interviewing and laddering probes – these techniques also aid team members in their attempt to establish salient meaning with users, while probing (or laddering) further to examine the higher level (social, psychological and emotional) significance to participants.

Example: Returning to the 'hospital of sick children example', the day of the engagement with kids might include the following:

- Participants and team member are split up into groups of 4-5 (2 or 3 participants along with an architect/designer, client representative and design researcher/facilitator).
- Each participant takes turns describing their photographs: what they are, where they came from, why they chose to photograph what they did, what they left out of the photograph and why, etc.
- Team members (led by the design researcher) take turns carefully exploring and questioning each photograph and their descriptions, increasingly revealing the contextual significance of each.
- For instance, if a participant brought in an image of the sea to represent their concept of 'calm/comfortable' team members might explore:

-*Why this particular image of the sea?*

-What in particular cues or triggers calm/comfortable in the photograph?

-What qualities of this particular image represent calm/comfortable?

-Where would the participant place himself or herself inside the photograph to

indicate a calm/comfortable state?

-Are there any other places/experiences in the world that provide a similar

sense of calm/comfortable? Where/what would that look like? How is it the

same/different to the sea photograph?

-Etc…

• Each response from a participant would be followed up with laddering

  probes. Special attention is given to what their responses lead to on a social,

  psychological and emotional level. For instance:

-"You say this image of the sea feels 'expansive'…"

> *-…what does expansive give you?*

> *-…how does expansive relate to your concept of calm/comfortable?*

> *-…what does expansive feel like to you?*

> *-…what image would represent the opposite feeling of expansive to*

you?

> *-…what is the consequence of being in an expansive environment?*

> *-…what else in life is expansive? Why?*

> -etc.

• This process would be completed for all photographs brought into the

  engagement by each participant (capped at around 4-5

photographs/participant to keep engagement times manageable and

participants alert).

Ideal outcome: Quite simply, this is the first step toward actively delivering

on the five core principles of 'design research for architecture', and

constructing those mental models so essential to understanding the people

being designed for. Here, users are engaged directly, and the team begins

mining both the conscious and unconscious understandings users apply to

make sense of the project's core concepts (in the example case above: what

makes for a calm/comfortable environment for children in hospital). When

effective questioning is employed, team members begin to reveal the

foundations of users' needs and latent desires relevant to the environment

and experience in question.

Phase 3 – Creating the ideal environment

Phase objectives: In this phase team members work with users in order to

create physical models of ideal environments they require in order to

accomplish their goals. Emphasis here is on what users' ideal model

environments represent – *why* they create what they did/the reasoning

behind their creations – rather than how their thoughts and feelings about

the environment actually manifest within the engagement. The objective here

is twofold: 1) establish some of the functional elements required by

participants (similar to those established in a functional program, yet further strengthening the process by including the intangible/emotional elements required by users), and 2) create further symbolic representations (this time physical models) of users ideal environments in order to reveal their deep needs and latent desires related to the experience. This phase establishes both what is important behaviorally to participants, and builds on the previous phase by providing the team with frames of reference that indicate what participants want to achieve experientially.

Achieving objectives/tools to employ: This phase calls for the use of generative tools – found in the toolkit previously developed in phase 0 of the project. Participants can work alone, with fellow participants, or with team members in order to create a three-dimensional model of their own desired experience. Here, participants design environments with ambiguous tools (i.e. referring back to the hospital for sick kids example, a kit could include a site map along with ambiguous three dimensional shapes meant to represent the potential furnishes, amenities, equipment, etc) in order to represent their ideal physical environment. Through discussion and careful probing, participants imbue the objects – and hence what their creations represent - with meaning specific to their desired experience. How participants anticipate interacting with this ideal environment and how they project to feel within it provide team members with further insight into both existing

interpretations and future expectations. Other types of generative tools can be applied as well, with tools ranging from simple (i.e. pencil and paper sketches and maps) to complex (digital manipulations of three dimensional environments).

Example: For instance, in the case where museum space was being examined with in-house curators as participants, team members would work with the curators to identify how they would design exhibit space and the museum going experience with their specific requirements in mind. The resulting creations would then be explored and probed similarly to how phase 2 objectives are achieved. The key is to reveal elements of the experience designers and clients might not normally be aware of (i.e. in the museum/curator context the preferred relationship exhibits have to natural and/or artificial lighting might arise), and how these elements affect participants' experience within the environment.

Ideal outcome: The ideal outcome of this phase builds upon those outcomes in the previous stage, while developing more practical requirements as well. Further insight into what people need and desire of a space is revealed with appropriate probing, while the basic functional elements are established as well. This builds on the first two principles of 'design research for architecture' (engaging users and accessing their unconscious

understandings of experiences/environments), while also actively seeking to leverage architects' existing approach. The development of a functional program can go hand-in-hand with this phase, and delivers on architects' desire for programming activities to go beyond the purely measurable to obtain some of the intangible and emotional elements required in a project.

Again, the outcome desired when creating environments with participants is not to agree on any specific solutions or particular design decisions, but rather to further understand what it is those participants want to achieve from visiting, working within or living inside an architectural environment. Here, team members further their understanding of users' hopes and expectations for the final product.

Phase 4 – combining homework (phase 2) with creations (phase 3)

Phase objectives: In this phase of the engagement the participants are asked to tell team members where, how, and why the photographs and images collected in the homework phase of the project fit into the physical models they have since created. This is a conceptual exercise. The objective is to reveal in what way the intangible meaning behind those visual images of places, experiences and objects relate to their physical models of their ideal environment. Here, team members can begin the process of connecting the

intangible to the tangible – understanding how users' want physical objects or spaces to communicate, behave or perform for them.

Achieving objectives/tools to employ: At this stage, participants will be asked to discuss and reflect on the two previous phases together. Similar tools used in phases 2 and 3 would be employed.

Example: In the 'hospital for sick children' example, kids could be asked where in the physical models they created would they like to experience the feelings/moods/experiences/etc they represented in the photographs they collected. For instance, a photo of an outdoor jungle gym meant to represent her desire for play could mean vastly different things depending on where the child chooses to 'place' the image. Placement in a communal area might indicate a need to socialize, whereas placement in a more secluded area – such as her room – might indicate a desire for more private activity. Keen team members would probe further to understand the significance of place and desired experience.

Ideal outcome: Ideal outcomes for this phase would be the increased depth of those objectives obtained in the two previous phases, while bringing team members further understanding into users' expectations of how the tangible and intangible elements of a space interact.

Phase 5 – presentation to group

Phase objectives: This final phase of the in-person engagement is designed to bring closure to the group, and summarize all participants' creations and discussions. Clarifications can happen, and the process of sharing can help team members 'see' what happened if other groups were meeting at the same time. Reiterating key concepts can also help team members further understand which elements were most important in the users' mind.

Achieving objectives/tools to employ: A simple, casual show-and-tell type performance could take place at the end of a session. To aid more reserved participants, team members could support their mini-presentations, but hearing straight from users remains essential.

Ideal outcome: All team members confirm what they believe were the key elements revealed in the previous stages.

*Optional phase – design researcher continues on

Phase objectives: Though the ideal 'design research for architecture' engagement is fully participatory, reality often dictates that architects and clients cannot attend multiday sessions. In order to design an approach that both engages all team members as much as possible while maintaining an adequate sample of users, design researchers could continue engagements with users in further one-on-one sessions. The previous phases would be repeated, but possibly in a shorter, more streamlined manner (it is feasible that engagements would be shorter with less team members involved in the exploration and probing stages).

Achieving objectives/tools to employ: Again, the same tools would be employed as in previous phases, but with emphasis placed on the documentation of the engagements. Through audio/visual recording and the collection of both the visual and physical representations users create in session, design researchers can compile and present findings in a brief, efficient and highly evocative manner for members of the team at a later date.

Ideal outcome: Ideally, this phase would produce further insights, provide additional evidence and further visual stimuli for architects and clients to understand the people being designed for, all while ensuring an adequate number of participants are engaged.

-Post Engagement-

Phase 7 – Analysis of findings and reporting

Phase objectives: In the analysis of findings phase of a project all data collected during the engagements – including visual stimuli, user created models, audio transcripts and their content, etc – are organized, examined rigorously, codified, and structured in a way that best captures and presents the deep needs, desires and fundamental understandings users hold in the context of a particular project.

Achieving objectives/tools to employ: To successfully analyze and report on the findings collected during a 'design research for architecture' engagement, rigorous examination of the symbolic artifacts created and language used to frame needs and desires for the subject matter is required. In isolation these findings fail to inform, but when a large enough group of users are engaged patterns within the data begin to be revealed by analysts digging deep into their meanings. On the individual level, users are likely to use varying types of symbols, physical models, and language to express how they understand concepts and experiences. But, when these metaphoric representations are examined for their deeper meaning, similarities arise.

In order to achieve this understanding, analysts could employ analysis techniques similar to those found in ethnographic projects as well as activity-based research. By drawing on these approaches, analysts can tightly structure and orient the findings in analysis frameworks meant to categorized and clarify the data most appropriately. When proper analysis frameworks are prepared, all team members can begin to see where the seemingly disparate expressions of meaning coalesce.

Example: For example, in the aforementioned museum project analysts could adopt a framework that structures findings similarly to those found in Spradley's nine dimensions or the AEIOU framework. The combined data produced during the engagement phases of the project could be organized into categories related to how users see spaces being used, how they envision people behave within them, how objects are interacted with, and more. The language – including the symbolic references, metaphors, analogies and stories – users employ to communicate their particular understanding can also be categorized throughout the sample to reveal how the group predominantly frames their experiences and their roles within the project context.

Ideal outcome: Ideally, the outcome of the analysis and reporting phase would be both a tangible document that visually communicates the key

findings in a concise and evocative manner, as well as an ongoing dialogue with all team members and extended project stakeholders regarding these key findings that best illuminate the essential experiences users require to achieve their objectives within the architectural space. This product must be delivered in an evocative manner – high on representative visual expressions of users' meanings – that serves as the next best way to understand users outside the actual engagements from previous phases. Stakeholders exposed to a final document and/or dialogue with team members regarding the findings should feel as if they obtained intimate knowledge of the intended users.

Finally, these insights should be structured and organized in a way that focuses on the meaning desired and objectives required by users, not the specific ways in which to achieve these things. If successful, this phase would produce a foundation for architects to understand the users' experience – their expectations and interpretations of architecture experiences – while allowing for those designing the environments to bring their own unique solutions and expressions of desired meaning to projects. Success comes from the delivery of the fourth principle of 'design research for architecture' – be actionable, not prescriptive.

*Optional phase – Prototype/pre-build evaluations

Phase objectives: Depending on the nature of the project, and the stakeholders' desire for validation, design prototypes can be evaluated with representative users. Here, the objective would be to examine whether or not the prototype design evokes the desired and/or required meaning and experience the design development team agrees to focus on. This optional phase would be completed to achieve further validation from users, while also providing an opportunity to tweak designs before costly construction decisions are finalized.

--Post Design--

Phase 9 – Post Occupancy Evaluation

Phase objectives: Finally, without fully understanding how an architectural environment performs under real-world conditions – and whether or not it delivers the meaning and achieves the goals intended by the design development team – no project is complete. A custom 'Post Occupancy Evaluation' can be built upon traditional methods of carrying out the process supplemented with the findings and objectives as defined in previous phases of the project.

Embracing and applying this or any further approach that engages users and clients directly will inevitably necessitate additional thought and potentially effect resource allocation. This approach could fundamentally disrupt how architects and firms acquire design requirements and develop design strategies. It could easily result in delays and/or other prohibitive elements if applied dogmatically (though when designed properly and proactively, an approach such as the one outlined above should coincide with existing design development and programming phases of projects). It could also require extra training or education for those architects hoping to properly deliver on the five principles and goals of 'design research for architecture' on their own. Even those wishing to employ the services of trained researchers and/or facilitators would likely have to endure some investment of time and energy to become properly acclimated to the process. In order for this or any other approach to 'design research for architecture' to be successful, the 'relative advantage' it provides must outweigh these constraints and provide further value to architects previously unrealized.

Examining the relative advantage of 'design research for architecture'

In order for or this approach to 'design research for architecture' to aid those architects designing for people and to spread across their industry, Rogers' five factors must be met – particularly his concept of relative advantage.

Where does the value reside?

Rogers (2003) simply defines the relative advantage of an innovation as the degree to which it *"...is perceived as better than the idea it supersedes"* (p. 15)*, and notes that what matters most is the perceived advantages of the innovation in the mind of the potential adopter.

Through the primary engagements with architects it was found that 'design research for architecture' must supersede both how architects currently obtain the design requirements needed to obtain project objectives (including the functional as well as emotional and unconscious elements architects revealed as essential), while at the same time strengthening relationships with their clients in order to gain the trust and authority required to take leadership of the design and make the design decisions necessary to attain project goals. In effect, to provide value to architects and architectural projects 'design research for architecture' must:

- o Substantially improve current methods of programming.
- o Bridge the two-way gap in understanding that exists between architects and their clients.

    o   Deliver on all five of the principles developed as a result of the interviews with architects.

The five principles for 'design research for architecture': how they are realized

For relative advantage to be created for architects, 'design research for architecture' should:

1. **...Engage users directly**
2. **...Provide access to users' unconscious understandings**
3. **...Work within and leverage architects existing approach**
4. **...Be actionable, without being prescriptive**
5. **...Provide a core frame of reference for projects**

The following reiterates how each principle is addressed through the general approach to 'design research for architecture' as it now stands:

...Engage users directly

The approach in its general form above is founded on deep, multilayered levels of direct engagement with users. A highly participatory approach was originally chosen to increase the architects ability to come to fundamental understandings of those

people they design for, based on rigorous and reliable evidence established directly with users.

Also, after revealing the two-way gap in understanding – and its significance – that exists between architects and their clients it is believed that further inclusion of clients in the process (something seldom written about specifically in the participatory design research literature) is both a core requirement (in order to build a client's trust and understanding of designers' work) and a complimentary benefit of participatory approaches.

...Provide access to users' unconscious understandings
The architects engaged largely indicated a desire to further understand the users they design for, but often felt some constraint (time, access, ability) kept them from properly doing so. Many further indicated a desire to get at users' understandings of experiences that they believed were unavailable – like those unconscious ways people make sense of environments. The approach to 'design research for architecture' was carefully crafted to access those unconscious understandings in multiple ways deemed relevant to architects' existing process.

Through the application of methods meant to elicit symbolic representations of users' conceptualizations and interpretations of key experiences in context, combined with techniques designed to draw out the significant meaning of such experiences, 'design research for architecture' provides access to users' unconscious which has previously been unavailable to most architects. Founded in proven disciplines such as cognitive psychology and linguistics, and further elevated by employing existing design research tools, this approach provides access to user insight in a reliable, repeatable way that affords architects the ability to deliver user experiences that fulfill both function *and* those traditionally difficult to articulate emotional requirements.

...Work within and leverage architects existing approach

The approach also generally seeks to work within architects existing approach to design development. 'Design research for architecture' would be ideally suited to supplementing a functional program as many firms currently accomplish the task, but with further attention paid to those intangible, emotional elements that must be present in an environment for users to deem their experience within successful. The approach is also structured in a multistage format in order to

accomplish the different *types* of information architects desire access to (i.e. ideal functional layouts vs. desired mood of environment)

Finally, the ways users' expressions are physically manifest in the engagements were particularly designed for architects and how they come to understand both those tangible and intangible elements at play. All phases of user creation – be that the creation of physical models or image-based representations – are very visual. As revealed in the research component of the project, architects are a group that depends on visually based stimuli and benefit greatly from exercises that put desired experiences into spatial contexts.

...Be actionable, without being prescriptive

All findings from 'design research for architecture' are collected to be both illustrative of required and desired experiences, yet representational rather than specific. This type of design research indeed attempts to create with users, but as a tool to receive insight rather than generate actual designs. The foundations built from the findings are meant to guide potential solutions by providing evidence in desired end states and experiences – how architects manifest their own unique solutions depends on their specific skills and abilities.

...Provide a core frame of reference for projects

If 'design research for architecture' achieves nothing else, establishing a core frame of reference for key stakeholders to orient themselves around would be a success in itself. The benefits of getting those key stakeholders 'on the same page' are far reaching, but primarily serve to focus the core team's attention on attaining the same goals – achieving the design objectives for those people being designed for. By establishing this core frame of reference 'design research for architecture' can provide insight into those users' fundamental needs, latent desires, expectations, interpretations, motivations and behaviors essential to successful architectural experiences.

Encouraging reinvention

Also, for 'design research for architecture' to successfully spread, these principles not only need to be addressed, but also delivered in a format conducive to adaptation by architects'. Diffusion scholars define reinvention as *"the degree to which an innovation is changed or modified by a user in the process of adoption and implementation"* (Rogers, 2003, p. 17)*. Architects need to be able to adapt and evolve any approach to 'design research for architecture' to the unique projects they undertake, and to how they work in particular. This is both why the five principles were created, and why 'design

research for architecture' was structured as a general approach. The deployment of specific or rigid processes is not the point (and if fact could harm its chance of diffusion), but rather it is the creation of a foundation built from rigorous theory of how to understand people, and proven ways for eliciting this understanding.

Enabling further innovation

This report has attempted to frame 'design research for architecture' itself as an innovation, but a core goal of the process is to enable architects to innovate themselves. To achieve the objectives of those people being designed for, under the many constraints they face, architects need to be in constant discovery mode. By providing users' fundamental needs and desires – both reliably and efficiently – in the context of particular architectural challenges, 'design research for architecture' can provide architects the evidence to base innovative design solutions on – solutions that achieve human objectives.

And though a *"codified, repeatable, reusable practice contradicts the nature of innovation"* (Walters, 2011), a process for gaining the requisite insights in order to guide innovation is very much a possibility, given the correct approach. In fact, many of the worlds more significant innovations were

made possible through standardized processes. For instance, the standard, the shared and the common were strong drivers of such social innovations as universal schooling, language, and modern health care (Drucker, 1985; King, 2011). By standardizing, or providing a foundation from which to gain such transformational insights, an approach to 'design research for architecture' can afford architects those building blocks required for the novel creation of meaningful, valuable solutions for the people they design for.

This innovation is crucial to architects attempting to solve complex human problems while maintaining their profitability and business viability. In order to innovate, architects require the support of clients. In order to gain the support of clients, architects need to bridge the two-way gap in understanding that exists between them and their clients.

Further bridging the two-way gap: building trust and perceived value
Based on the findings from the primary research component of this project, the entire approach to 'design research for architecture' has been formed to further allow clients to gain first hand knowledge of the issues and challenges architects face when designing for people, and advance their understanding of the value architects and their solutions bring to architectural environments. This is why the approach suggests the direct inclusion of

clients in a participatory capacity, and in the very least, documents and reports on findings from users in an evocative and deep manner.

The creation and communication of value is very much at the heart of this argument for architects' adoption of 'design research for architecture', but it is also a concept architects require assistance with themselves. As previously stated in the research findings, architects are troubled by the lack of respect and faith given to their profession. They feel as though many of their existing and potential clients lack in-depth understanding of why their work is effective and important. In their minds, architecture has lost its leadership role to a degree, as well as the reverence it once possessed. Many feel that architecture in general has become so accessible that respect for those who have studied and practiced it for years has dissipated. Professionals in other creative industries have endured similar experiences recently. Journalists, musicians, photographers and designers have all experienced an abrupt change in their industries and how they are valued. Clients often do not understand the value of the work architects bring to the table. Without this understanding, clients increasingly default to the less expensive option (Merrick, 2011), and inevitably receive work that fails to achieve the results desired. 'Design research for architecture' is based on providing insight into how architects can best achieve the requirements necessary to achieving these results, while educating clients as to this value through direct

participation in the discovery of these insights. It is thought that by providing this opportunity to engage with architects and the users they serve, clients will build empathy and respect for what both sides are attempting to achieve. The evidence founded in user engagements can further provide a medium to strengthen the trust and validation clients require in order to embrace architecture that works.

Returning to Rogers: the remaining factors

'Design research for architecture' creates relative advantage by providing architects with a deep understanding of those people they design for, providing the building blocks necessary to innovate for these people, and providing the evidence necessary to bridge the two-way gap in understanding that exists between architects and their clients. As planned, 'design research for architecture' can help deliver this relative advantage to architects and their clients, but it was also designed with the Rogers remaining four factors in mind:

> **Compatibility** – 'Design research for architecture' is ideally constructed to fit within architects' existing approach to building a functional program. This is a natural part of the design development phase, and could be incorporated into existing timelines. The manner

in which the insights are elicited – through highly visual representations of users' deep needs and desires, along with physical models embodying spatial reference points – has also been purposefully incorporated to fit with how architects come to understand project requirements and opportunities.

Complexity - 'Design research for architecture' is a simple, participatory approach. It is designed to leverage those everyday expressions and representations people use to communicate their perception of the world, but with expert methods of exploring salient meanings. With minimal training, architects can learn to perform some of the methods and techniques themselves. With the aid of a qualified design researcher, 'design research for architecture' can be executed in a manner easily accessible to architects and clients alike.

Trialability – Many practicing architects are already employing elements of 'design research for architecture'. Anyone using sketches, computer renderings or physical models to create a shared understanding with clients and/or users are already practicing the first steps of the process. The approach itself extends this process in order to attain even deeper shared understandings. The process and

the methods of application can be piloted with curious practitioners

with themselves as a participant in a couple hours.

Observability – The best way for architects to observe the outcomes

of 'design research for architecture' could be as simple as a visit to an

environment created with the help of the practice. As mentioned from

the outset, no new design research tools were created in the

development of this approach, and there is evidence that some firms

already embrace direct user engagements, so a simple field trip to

environments leveraging this type of work could sufficiently illustrate

the potential of such an approach.

Conclusion

This project set out to better understand how design research might help

architects create and guide designs that provide fulfilling experiences to the

people they design for. There are in fact areas where design research can

provide architects value. By engaging practicing architects directly, an in-

depth understanding of what lies between them and successful design was

achieved. In order to overcome these barriers, a set of core principles, and an

approach to 'design research for architecture' crafted to deliver them, was

developed. This was done with a focus toward helping architects access

insight previously unknown and unavailable to most. With this, their existing

work is leveraged and their capacity to innovate is increased. And perhaps

most importantly, with this approach architects bridge the two-way gap that

exists between them and their clients and that stands in the way of success

for all stakeholders. Through the adaptation and formation of a participatory

framework for obtaining the functional as well as emotional requirements

needed for project success, 'design research for architecture' endeavors to

create the insight and evidence in users, and resulting trust that comes along

with it, to aid architects and project teams to design environments fulfilling

to all stakeholders, at all levels necessary for success.

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Appendices

Appendix A: Interview guide

Expert Interview – understanding architects' approach to design

Interviewer_____   **Date_____**

Participant_____

Research Question

How do architects approach the process of designing for people?

What do they base their design decisions on?

How would they ideally make these decisions?

Introduction

Today I would like to speak with you about your approach to designing

environments that effect people. We will be speaking for up to two hours. If

at any time you would like to withdraw from this interview, please feel free

to do so. You may also request that any data from the interview be deleted at

any time if you so wish.

Q1. Objectives

How do you determine the design objectives of the projects you work on?

With whom are these determined?

How do you know when these objectives have been met?

Is there a current method of evaluation you employ?

Who determines whether or not the objectives have been met?

Q2. Process

Tell me about the process of determining the requirements for a project?

What are the steps?

With whom do you do this?

If at all, how do you categorize these requirements?

(i.e. are there tangible as well as intangible requirements?)

What is the most difficult part of this process?

(i.e. are there difficulties in communicating requirements? Or understanding requirements? Or indecision on behalf of a client/collaborator?)

Is this an ideal approach to this process?

If not, what would be an ideal approach in your mind?

What information or insight do you wish you could have access to?

What role do the people you design for (those people who will be visiting or residing within your design) play at this point?

Do they have a role at all?

Once the requirements have been established, what happens next?

What does your workflow 'look like'?

What are the next steps you take once basic requirements are met?

Is there continued dialogue with those persons whom you received the requirements from?

What is the nature of this dialogue?

How would you ideally like this dialogue to continue (if at all)?

How do you know when you have fulfilled the requirements sufficiently?

Do you know?

Q3. Storytelling/previous example

Now I would like for you to take me through a recent project where you

designed an environment that people would interact with…

Please take me step-by-step through this process

What worked well in this example?

What did not work well?

If you could, how would you change the way this project went?

Tell me about how you made decisions that effected they way people…

…felt wihtin the space

…behaved within the space

…interacted with the space

…moved within/throughout the space

where/how were these decisions based?

Q4. Where learned?

Now I'd like you to think about where these decisions are grounded?

Where did you acquire the knowledge to make these decisions?

Do you believe the practical decisions you make came from…

…school (high school, undergraduate, graduate?)

…apprenticeship/job experience/from more senior colleagues?

…from your colleagues/contemporaries?

…your own independent study?

…other professionals/other architects (from the past of present)?

…from professionals in other disciplines?

…or perhaps from somewhere else? (please specify)

What do you think influences the decisions you make when it comes to designing for the people your work will affect?

Q5. Inspiration

Where do you get the insight/information you require in order to make

design decisions that affect the people who interact with your work?

Have you ever conducted fieldwork with the people you design for?

(i.e. engaged the people who will visit/reside within the environments you create?)

Why/why not?

If yes, what did you want to get out of this?

Were you successful?

Why/why not?

Tell me what inspires the design decisions you make when planning environments for people…

Why that?

What does that give you?

Tell me about the nature of this inspiration/describe it to me please.

Q6. The Ideal

Now I'd like to speak with you about what insight/information/knowledge or access to the people you design for you would ideally have if project funds and timelines were not an issue…

What would you like to know about the people you design for that you might not in a typical project?

Ideally, how would you like to gain that information/insight/knowledge?

What's keeping you from gaining this insight in existing projects?

What barriers do you experience in this realm?

What would be most helpful to you (outside your existing approach) in your attempt to achieve the project objectives concerning the people who visit and reside within the environment you design?

Are there tools you would like to have access to?

What might they be?

How might you ideally use them?

What information/insight might these tools yield?