THESIS

A FRAMEWORK TO GUIDE ECO-CULTURAL INTERIOR DESIGN IN ADAPTIVE REUSE

Submitted by

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ABSTRACT

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As the current efforts of sustainability in the built environment shift in focus from the environment to including aspects of health and wellbeing, equity, diversity, and inclusion, there is a need to understand how these aspects connect to the concept of eco-cultural design and the role of the interior designer. This qualitative study explores the ways in which interior design has potential to contribute to eco-cultural design especially within the context of adaptive reuse. The conceptual framework for this study is informed by the concept of eco-cultural design and the coinciding assessment framework proposed by Qtaishat et al. (2020). The indicators within the main categories of the original framework were adjusted to focus on aspects that relate specifically to interior design. Purposive sampling and the content analysis of design firm websites were used to identify professionals working at the intersection of adaptive reuse, interior design, and sustainability. Nine professionals participated in open-ended, semi-structured interviews to discuss their lived experiences with interior design and adaptive reuse and how sustainability and aspects of ecocultural design are understood in the industry. The qualitative coding techniques of open coding and a priori themes were used to explore the applicability of the conceptual framework for practice, and the ways in which the roles of the interior designer relate to the different categories of eco-cultural design. The participants' experiences and insights informed the refinement of the conceptual framework toward a guideline for Eco-Cultural Interior Design, including the roles interior design professionals might play from pre-design through project administration. The findings suggest there are already efforts being made in the industry regarding aspects of eco-cultural design. However, due to the overwhelming number of terms and concepts that exist relating to sustainability, interior designers lack the language to clearly communicate with clients the value of considering

aspects of eco-cultural design. The findings also suggest that the framework is more impactful when used to guide interior designers as they move through the design process, rather than as another building rating system. Instead, it may be better used to provoke critical thought regarding how to consider all dimensions of sustainability during interior design and adaptive reuse. In addition, there is potential for interior designers to have the most impact on the eco-cultural sustainability in the pre-design phases of the design process, demonstrating the importance of involving them from the start. The main contribution of this study is therefore the development of a framework to guide eco-cultural interior design in practice.

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TABLE OF CONTENTS

Introduction

Despite sustainability efforts across the globe, emissions, pollution, and issues of inequality continue to rise (Design Council, 2021). Impacts from the COVID-19 global pandemic continue to be felt in communities and have heightened awareness of the effects human development has on people and the environment, including how these are interconnected (Design Council, 2021). Cities are pushing to be more resilient, connected, flexible and supportive (Gensler, 2022), with a stronger focus on environment and human health (Design Council, 2021). In response to ongoing societal issues such as political unrest, racism, ableism, homophobia, environmental racism, many industries are beginning to focus on social sustainability and principals of diversity, equity, inclusion, and justice. Design that is focused on well-being and inclusivity and its tangible benefits for users is becoming increasingly researched and understood, which is encouraging owners and developers to create more healthy, socially sustainable buildings that address equity and inclusion (Gensler, 2022).

This thesis examines the role that the built environment, and interior design in particular, can have in creating equitable, inclusive, diverse, culturally sensitive, and place-specific environments for its users and community. It begins by introducing and defining sustainability in the built environment; focusing on cultural sustainability and the concept of eco-cultural design, its accompanying assessment tool, and how this relates to sense of place and Environmental, Social Governance (ESG). It investigates how cultural sustainability can be connected to design strategies such as adaptive reuse and building certification systems such as LEED, WELL or eco-cultural design. It then explores how interior design, and its defined areas of contribution and impact on users, may have the potential to be a driver of eco-cultural design through the application of adaptive reuse, despite the lack of use of the term in interior design literature. Finally, it proposes a framework to guide Eco-Cultural Interior Design and investigates its

usefulness and application for professionals working at the intersection of sustainability, adaptive reuse, and interiors.

Cultural Sustainability in the Built Environment

It is generally agreed that sustainability consists of three pillars (or dimensions): Environmental, Economic and Social (Soini & Dessein, 2016), which have been the primary focus of most sustainability initiatives. More recently, the concepts of culture and cultural sustainability and the connections between them have been explored (Soini & Birkeland, 2014). Cultural sustainability is a phrase that is widely used, but rarely defined (Soini & Birkeland, 2014). Each place has its own complex and unique context that plays a significant role in understanding and defining culture, therefore making it hard to define (Soini and Dessein, 2016). However, we can understand it as: meeting the needs of the present without compromising the needs of the future, while including and prioritizing human's "values, behavior, and ways of life," (p.3) into the analysis. Culture matters in sustainable development due to the way people's behavior, cultural values, and decisions are reflected in their social and economic activity, thus motivating sustainable solutions to be based in culture (Qtaishat et al., 2020).

Eco-Cultural Design & Logic

Eco-Cultural Design was a term first used by Chris Abel (1993) to describe a stronger socio-cultural approach to sustainable design that was based on climate, culture, and context. It can be defined as:

> "The physical interpretation of the culture of a region based on ecological principles that are economically viable," that "adapts, uses and maximises the technological performance for locally specific needs. Eco-cultural architecture thus requires a hybrid mix of local culture, material, and resources, combined with modern ideas and technologies adapted to local conditions that were once available in vernacular architecture," (p.3) (Qtaishat, et al., 2020).

According to Qtaishat et al. (2020), using an eco-cultural approach to environmental design requires the acknowledgment of the many indicators that shape a region, society, or community,

such as cultural, social, historical, environmental, political, economic, and religious. The coinciding eco-cultural assessment tool proposed by Qtaishat et al. (2020) attempts to motivate design aspects that fall within all pillars of sustainability. It includes indicators within the following categories: Site & Context, Energy & Materials, Flexibility & Adaptability, Indoor Comfortable Environment, Social Relationships, and Cultural & Perceptual. The framework's focus on cultural sustainability suggests there may be implications relating to diversity, equity, inclusion, and justice. Qtaishat et al., (2020) stresses that, "buildings developed without socio-cultural considerations threaten sustainability and potentially introduce risks which could lead to disruption of life and sense of place," (p.2). *Sense of Place* is a key factor in contributing to cultural sustainability (Maranov, 2020). Within environmental design, sense of place is defined as a "concept of emotion and attachment to the human environment" (Hashemnezhad et al. (2013) p. 110). It is created from people's experiences and interactions with physical places. According to Richard Stedman (1999), sense of place has potential to be an indicator of community sustainability as well but has long been neglected as such.

Assessing Eco-Cultural Sustainability

Frameworks such as Environmental, Social, and Governance (ESG) have been developed and used to address environmental, economic, and social challenges in business and governance. ESG has primarily been used as a means to evaluate corporate behavior to ensure responsible decision-making and provide insight into an enterprise's future financial performance and social influence; ESG can also be an important driver for a company's sustainable development (Li et al., 2021). Similarly, within the environmental design fields, numerous guidelines, frameworks, and building certification systems are used by interior designers, architects, and developers to measure, assess, and provide guidelines for the sustainability of building projects. Some of the most commonly used building certification systems in the United States are LEED (Leadership in Energy and Environmental Design), WELL Building Standard, Living Building Challenge, BREEAM (Building Research

Establishment Environmental Assessment Method), Green Globes, Passive House Institute US, and Fitwel (Vierra, 2023). These certification systems have primarily focused on environmental performance indicators such as water and energy efficiency, number of sustainable materials, and air quality. In addition, social and cultural aspects of sustainability are beginning to be incorporated, both within these building rating systems, and through the development of new ones. Often, their metrics lack the flexibility to fit a variety of contexts and locations (Qtaishat, et al., 2020), which was the primary motivator for Qtaishat et al., (2020) to develop an Eco-Cultural Assessment tool to accompany their concept of Eco-Cultural Design. However, it is unknown whether this framework and assessment tool is widely used or understood in the United States, despite the growing interest on socio-cultural aspects of sustainability, such as ESG. The Gensler Design Forecast for 2022 mentions how principals of ESG will continue to influence and drive innovation in design in the coming years and that its influence may even make it easier to finance buildings that are socially and environmentally responsible (Gensler, 2022). In addition, a new focus on place-making and belonging is emerging as a way to bring people back into cities and cultivate diverse interactions, collaboration, and communities, and developers are thus being encouraged to prioritize building reuse as a key resilience strategy (Gensler, 2022).

Building Adaptive Reuse

Bottero et al. (2019) defines adaptive reuse as a “change of building from one use to another according to new needs, with the aim to achieve environmental, economic, and social sustainability.” (p.2). The environmental and economic benefits of adaptive reuse have been heavily discussed in the literature, mainly focusing on the viability of reusing buildings, the barriers of reuse, and what environmental, economic, and social benefits may exist (Bottero et al., 2019; Bullen, 2007; Bullen & Love, 2010, 2011; Foster, 2020; Ijla & Broström, 2015; Mohamed et al., 2017; Rezaei et al., 2018; Tam, Fung, & Sing, 2016; Wang, 2011; Yung & Chan, 2012). The social benefits are discussed to a lesser degree and are most closely connected to cultural sustainability and sense of place. Many sustainable benefits exist with

building reuse; however, the act of utilizing existing infrastructure can be a challenge compared to building new and requires creativity, problem solving, and/or extra funds which fuels the divided opinion regarding its value (Bullen, 2007; Bullen & Love, 2010, 2011). According to Mısırlısoy & Günce (2016), the existing methodology to aid in decision making for adaptive reuse is based on “environmental, physical, and functional aspects,” with the socio-cultural aspects being left out (p.92). The definition and associated benefits of adaptive reuse seemingly share similarities with eco-cultural design, and though it is encouraged as a resilient and sustainable design strategy in the industry (Gensler, 2022), and despite its direct impact on its users, the literature fails to mention its connection to cultural sustainability, eco-cultural design, and interior design. Investigating this relationship could provide insight into why it may be worth the more complicated design process to reuse a building instead of demolishing it, and why socio-cultural factors need to be considered in the debate.

The Potential Role of Interior Design in Eco-Cultural Sustainability

The relationship between people and their environments is an important driver for the interior design profession as the “environments people inhabit and experience have the power to enhance the wellbeing of individuals and their communities,” (Smith et al. (2014), p.2). Interior designers have been part of the sustainability initiatives in the built environment for a long time, but recently responsibilities have expanded from simply specifying sustainable materials and lighting, to embracing inclusive design, designing for health and wellbeing, and approaching interior design from a more holistic perspective (Pilatowicz, 2015). Interior Design is given the following definition by the Council for Interior Design Qualification (CIDQ).

> “the analysis, planning, design, documentation, and management of interior non-structural/non-seismic construction and alteration projects in compliance with applicable building design and construction, fire, life-safety, and energy codes, standards, regulations, and guidelines for the purpose of obtaining a building permit, as allowed by law. Qualified by means of education, experience, and examination, interior designers have a moral and ethical responsibility to protect consumers and occupants through the design of code-compliant, accessible, and inclusive interior environments that address well-being, while considering the complex physical, mental, and emotional needs of people,” (p.1).

According to CIDQ's extended definition, interior design responsibilities involve the following phases: "Project Management, Project Goals, Data Collection, Existing Conditions, Conceptualization, Selections and Materiality, Documentation, Coordination, Contract Admin, Pre-Design / Post-Design Services." (p.2) (Table 1.)

Table 1

Phases of Interior Design, as Defined by CIDQ (2019)

PHASES	DEFINITION
Project Management	"Management of project budget, contracts, schedule, consultants, staffing, resources, and general business practices. Establish contractually independent relationships to coordinate with, and/or hire allied design professionals and consultants." (p.2)
Project Goals	"Understand, document, and confirm the client's and stakeholders' goals and objectives, including design outcomes, space needs, project budget, and needs for specific or measurable outcomes." (p.2)
Data Collection	"Collect data from client and stakeholders by engaging in programming, surveys, focus groups, charrette exercises, and benchmarking to maximize design outcomes and occupant satisfaction." (p.2)
Pre & Post-Design Services	"Tasks intended to measure success of the design solution by implementing various means of data collection, which may include occupant surveys, focus groups, walkthroughs, or stakeholder meetings. Collection and reporting findings can range from casually to scientifically gathered, depending on the project's scope and goals." (p.3)
Existing Conditions	"Evaluate, assess, and document existing conditions of interior environments." (p.2)
Conceptualization	"Application of creative and innovative thinking that interprets collected project data and translates a unique image or abstract idea as a design concept, the foundation of a design solution. The concept is then described using visualization and communication strategies." (p.2)
Selections & Materiality	"Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies. Selections shall be made based on client and occupant needs, project budget, maintenance and cleaning requirements, lifecycle performance, sustainable attributes, environmental impact, installation methods, and code-compliance." (p.2)

Documentation	"Develop contract documents for the purposes of communicating design intent and obtaining a building permit, as allowed by law. Documentation by phases may include schematic, design development, and construction drawings and specifications. Drawings may consist of floor plans, partition plans, reflected ceiling plans, and finish plans; furniture, furnishings, and equipment plans; wayfinding and signage plans; code plans; coordination plans; and elevations, sections, schedules, and details illustrating the design of non-load-bearing / non-seismic interior construction and/or alterations." (p.2)
Coordination	"Overseeing non-structural/non-seismic interior design scope in concert with the scope of allied design professionals and consultants, including, but not limited to, the work of architects, mechanical, electrical, plumbing, and fire-protection engineers and designers, and acoustical, audio-visual, low-voltage, food service, sustainability, security, technology, and other specialty consultants. Coordination can include, but is not limited to: Placement, style and finish of mechanical, electrical, plumbing, and fire-protection devices, fixtures, and appurtenances (i.e., accessories) with the design of the interior environment. Ceiling materials and heights; interior partition locations. Acoustical appropriateness of spatial arrangements, construction, and finish materials. Working closely with contractors to respect budgetary constraints and contribute to value engineering efforts." (p.2)
Contract Administration	"Administration of the contract as the owner's agent, including the distribution and analysis of construction bids, construction administration, review of contractor payment applications, review of shop drawings and submittals, field observation, punch list reports, and project closeout." (p.2)

CIDQ also highlights the term "contextually appropriate design solutions" which they define as:

> "An approach to design decision-making that involves consideration of environmental, social, cultural, economic, ecological, and political conditions that may influence and be influenced by the design solution." (p.3)

In addition, Dianne Smith et al., (2014) identified three key areas through the lens of social sustainability where interior designers can meaningfully contribute: "community engagement, social justice and cultural heritage," (p.2). What resonates with interior design is its emphasis on people and communities, and that interior environments should respect the history of and support the current needs and values of society around it (Smith et al., 2014). Given the defined role of the interior designer and its close connection to people and communities, there seems to be potential for interior designers to contribute to elements of eco-cultural design and cultural sustainability, especially through the application of adaptive reuse. However, despite the interior

designer's influence on outcomes for the users and community, much of the research regarding adaptive reuse and cultural sustainability exists only in urban planning and architecture fields. There is therefore a need to bring this conversation to the human scale of interiors and investigate how eco-cultural design may be related. As impacts from COVID drive renewed motivation for socio-cultural sustainability and building reuse as a resilient design strategy (Gensler, 2022), there is a need to investigate the role the interior designer might play in adaptive reuse projects and eco-cultural design.

Conceptual Framework: Eco-Cultural Interior Design

To bridge the connections between interior design, adaptive reuse, sense of place, and eco-cultural design, an adapted framework for Eco-Cultural Interior Design was created and used to drive this study (Figure 1.)

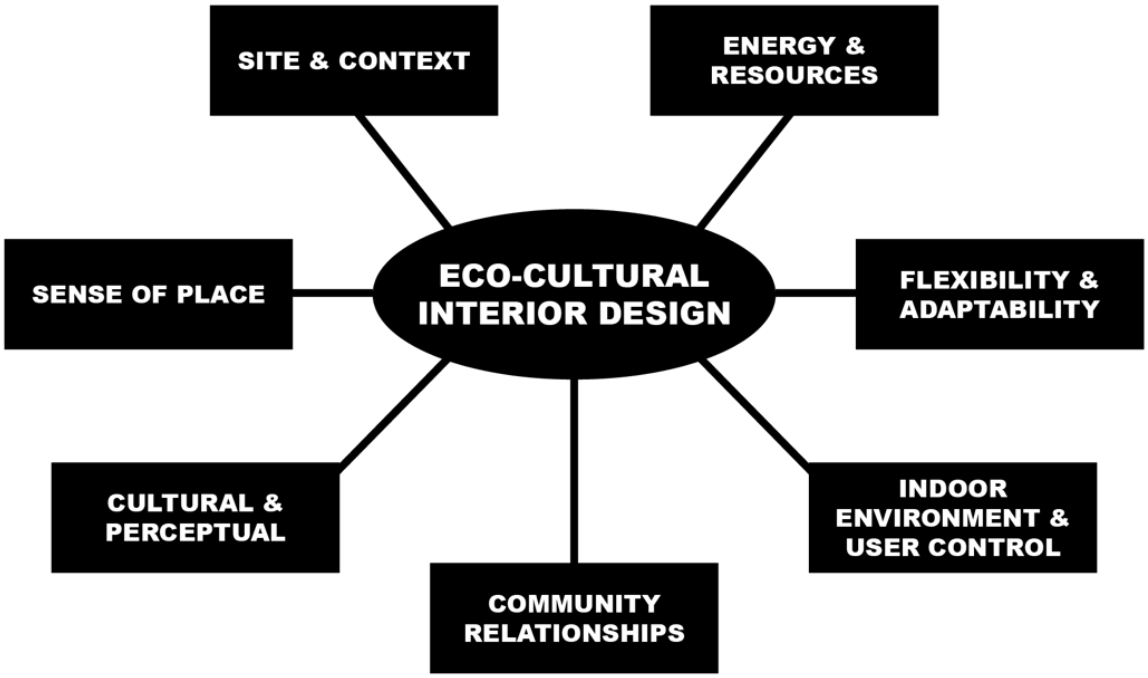


Figure 1

Eco-Cultural Interior Design

The original framework and assessment tool proposed by Qtaishat et al., (2020) is made up of indicators that primarily address architectural and urban planning aspects of design. These categories and their coinciding indicators were therefore adapted to be more specific to interior designers for the purpose of this study, and a category for sense of place was added to investigate its connection to eco-cultural design and adaptive reuse (Table 2.).

Table 2

Eco-Cultural Design: Original by Qtaishat et al. (2020) & Adapted for Interior Design

EXISTING FRAMEWORK	ADAPTED FRAMEWORK
SITE & CONTEXT	SITE & CONTEXT
- flood risk - use of vegetation to provide outdoor cooling - use of region native plants - urban heat island effect - solar access right - special site requirements	- proximity to a variety of services for socializing, health, nutrition, finance, daycare, volunteer opportunities, libraries, etc. - walking / cycling is prioritized, promoted, supported - site enhances surroundings for users, utilizing sun pathways, views, sounds, etc. - history, story, and context of site are researched, considered and respected, including variety of populations from different time periods
ENERGY & RESOURCES EFFICIENCY	ENERGY & RESOURCES
- building orientation - building envelope - shading device - use of local materials and techniques - rainwater management - typology and massing	- orientation of interior configuration - interior structure type and configuration - passive heating and cooling strategies - indoor water use and control - furnishing, appliance and material selection - construction waste recycling and diversion
FLEXIBILITY & ADAPTABILITY	FLEXIBILITY & ADAPTABILITY

- potential for horizontal or vertical space modification - maintenance of building components - adaptability to add renewable energy sources - potential for internal space modification - potential of external customization of dwelling	- potential for horizontal or vertical interior space modification - ease of maintenance of interior building components - potential for internal space modification - potential for user customization
INDOOR ENVIRONMENT	INDOOR ENVIRONMENT & USER CONTROL

- effectiveness / functionality of circulation
- appropriate ventilation
- appropriate daylighting
- noise and acoustic control
- access to private open space
	- effective, quality, comfortable, and appropriate:
	  o circulation and space planning
	  o indoor air quality
	  o daylighting and artificial lighting for variety of tasks
	  o acoustics
	  o furniture types for various purposes
	- equitable opportunity for users to control and adjust:
	  o ventilation and temperature
	  o daylighting and artificial lighting
	  o noise and acoustics
	  o Furniture arrangement and use

SOCIAL RELATIONSHIPS	COMMUNITY RELATIONSHIPS
- interactive dwellings - walkability of pathways / streets - proximity to services - provision of public open space - indoor-outdoor relationship	- opportunity for social interaction in variety of spaces - universal / equally accessible regardless of background, age, socio-economic class, residential status, etc. - equitable access and opportunity to connect with nature - equitable feelings of safety and security - involvement of local community in design process, inclusive decision making - construction waste management
CULTURAL & PERCEPTUAL	CULTURAL & PERCEPTUAL

- visual privacy
- project aesthetic
- quality of finishes, materials & furniture
- relevance to local vernacular architecture
- access to private open space
- access to exterior views
- density and crowdedness
	- connection to and respect for local history, heritage, and values
	- aesthetics respect and connect to local area, and story:
	  o interior graphics
	  o furniture and material selection
	  o sight lines throughout space

	SENSE OF PLACE
	- equitable feelings of belonging for everyone - appealing ambiance - freedom for user expression, without concern for wellbeing - supports healthy lifestyle

The main categories of the adapted framework are consistent with the categories from Qtaishat et. al., (2020) framework, but the indicators within were added, subtracted, adjusted, and rearranged to focus on the elements of projects that are often influenced by interior designers. For example, in the flexibility and adaptability category, “potential for external customization of dwelling,” was adapted to “potential for user customization, through furniture arrangement and flexible use of spaces,” to shift the focus from the building exterior to the interior, while maintaining the general focus of the category. Although ecocultural design is not referenced in the interior design literature, the framework for this study suggests where interior designers might contribute to cultural sustainability especially when applied to adaptive reuse, interior design projects. Therefore, the purpose of this research is to explore the perceptions, experiences, and opinions of interior design professionals that work in the intersection of sustainability and adaptive reuse to understand:

1. What are their understandings and experiences with the different pillars (or dimensions) of sustainability?
2. What are their lived experiences with adaptive reuse in professional practice?

3. How do their experiences with adaptive reuse and the different pillars of sustainability relate to the concept of Eco-Cultural Design and its categories and considerations?

Methods

This exploratory qualitative study seeks to understand the lived experiences of interior design practitioners working in sustainable design and adaptive reuse and examine their understanding of and experience with eco-cultural design. According to Creswell (2007), a phenomenological, qualitative approach to research is best used when the focus of the study is on understanding and describing the essence of a lived experience and phenomenon.

Participant Selection and Recruitment

The population for this study was limited to English-speaking professionals with interior design responsibilities who had earned degrees in interior design or architecture, and who have worked on adaptive reuse projects. In this study, the term “interior designer” is used to refer to practitioners whose roles and responsibilities in practice align with those described by CIDQ in their extended definition, even if their degree and/or background is in architecture and not interior design. Participants were recruited through purposive sampling to select individuals who shared the common experience of working on the interior design of adaptive reuse projects. Participants were found via the content analysis of interior design and architecture firm websites, including project profiles. The goal of the website analysis was to find participants with experience at firms that: a) have a focus on sustainability (e.g., website mentioned sustainability in value or mission statement, completed LEED-certified projects, and/or employed LEED-accredited professionals); b) take on adaptive reuse projects, primarily in the commercial sector (e.g., website references terms like adaptive reuse, repositioning, and/or historical preservation, to describe projects); and c) have an in-house integrated interior design team (e.g., website lists interior designers or includes information about completed interior design projects). The goal was to find firms that fit into these three criteria. Recruitment emails were sent to both the general contact information of the firms and to specific people if their contact information could be found publicly. Purposive snowball sampling was also used to identify participants who could

serve as expert informants. Demographics of participants and the firms in which they worked are detailed in table 3.

Table 3

Participant Demographics

Participant	Job Title	Office Location	Firm Description	Years in Industry
Par1	Architect & Senior Project Manager	Atlanta, Georgia	International (>25 Locations) Revenue: $100-500 million Employees: 100-1,000	20-30
Par2	Architect & Design Manager	Denver, Colorado	International (>25 Locations) Revenue: >$500 million Employees: 100-1,000	10-20
Par3	Interior Designer	Denver, Colorado	International (>25 Locations) Revenue: >$500 million Employees: 100-1,000	<10
Par4	Senior Interior Designer	Madison, Wisconsin	Regional (1-5 Locations) Revenue: $10-100 million Employees: 25-100	20-30
Par5	Senior Interior Design Manager	Denver, Colorado	National (5-10 Locations) Revenue: $10-100 million Employees: 100-500	20-30
Par6	Architect and Partner	New York, New York	Regional (1-5 Locations) Revenue: <$5mil Employees: 25-100	20-30
Par7	Global Interior Design Director	Reno, Nevada	International (>25 Locations) Revenue: $100-500 million Employees: >1,000	30+
Par8	Architectural Designer	Chicago, Illinois	Regional (1-5 Locations) Revenue: <$10 million Employees: <25	<10
Par9	Architect, Project Manager, Researcher	Fort Collins, Colorado	Regional (1-5 Locations) Revenue: $10-100 million Employees: <25	10-20

Data Collection

Interviews are generally used in qualitative research to gain insight into a person's experiences, opinions, attitudes, values, and processes (Rowley, 2012). Therefore, data was collected through open-ended semi-structured interview questions that were developed that fit under Creswell's (2007) phenomenological approach to qualitative research (Table 4 and Appendix A). The probing questions regarding feedback on the framework were developed based on the questions that Qtaishat et al. (2020) used to test their version of the framework.

Table 4

Interview Questions

TOPIC	INTERVIEW QUESTIONS
General Info & Background	Can you tell me about your experience as an interior designer at the intersection of sustainability and adaptive reuse? What is your understanding of the different pillars of sustainability? Have you heard of the concept of eco-cultural design?
Process of Adaptive Reuse Projects	How are you involved in the site selection of adaptive reuse projects? Do you have input on whether the project is a new build or reuse? Can you tell me about your overall experience with and involvement with the design process for adaptive reuse projects? Are there any project examples that come to mind that support your thoughts and experiences? - Is there any information about these projects published online? Or are you able to provide me with further information?
Use of Assessment Tools & Rating Systems	Does your team utilize assessment tools such as LEED, BREEAM, Green Globes, Living Building Challenge etc.? - Do you feel these are sufficient? - What, if anything, do you believe is lacking?

Eco-Cultural Design & Assessment	Do you have initial thoughts about this tool/idea and categories? - What is missing? - What components are not necessary? - Are there any other errors or problems that need to be addressed? - What, if anything, did you like about the tool, and what did you dislike? Do you have any suggestions for how to improve the tool? Do you have anything else to say or add?
Snowball Sampling	Are there any other interior designers that you can think of or know, that would be willing to provide insight into their experience as well?

Before being asked their thoughts on the framework, participants were shown the table of both frameworks, the original and the adapted and their coinciding indicators, to provide background and a stronger understanding of the eco-cultural design concept.

For phenomenological research, Polkinghorne (1989) suggests the use of 5-25 different participants to understand the different possibilities of experiences. Therefore, nine interviews were conducted via web conferencing and were recorded using the built-in meeting software. Each interview lasted 30 minutes to one hour. Participants provided consent to participate at the time of scheduling their interview via email and provided verbal consent at the time of the interview before being recorded. This study received approval through the Institutional Review Board (IRB) (APPENDIX B).

Data Analysis

Data material for analysis included interview transcripts and were analyzed using the qualitative coding techniques of a priori themes drawn from the conceptual framework of eco-cultural interior design (Figure 2) and an interior designer's areas of contributions (Figure 1) as well as open coding to discover new themes (Miles et al., 2014). Interviews were transcribed verbatim from the recordings, then uploaded into the qualitative software NVIVO for initial

organization and open inductive coding to isolate relevant themes (Strauss & Corbin, 1998). After the interviews, the content analysis of the firms' websites and their published information on project examples was used to provide a deeper understanding, and thicker description when needed, as participants used different project examples to describe their experiences.

Research Quality

Qualitative research often leads to debate regarding the quality of methods, and how they are assessed (Miles et al., 2014). However, terms used to assess quality of quantitative research, such as validity and reliability, can also be applied to qualitative research (Mays & Pope, 2000). There are four suggested concerns relating to the trustworthiness of qualitative inquiry, including: credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). The credibility of this study was addressed through triangulation of qualitative data sources (Patton, 1999). The vocabulary being used by participants throughout the interviews was compared with the vocabulary being used on the firm websites that was discovered through the content analysis. This was done to discover any alignments or discrepancies and provide a holistic view of how the industry is talking and thinking about sustainability, adaptive reuse, and interior design. Credibility was also considered through senior researcher review of analysis procedures and findings. Transferability is important for the value of the research (Miles, et al 2014). This research does not aim to be transferrable, however, the results from this study have potential to lead to theory development, which may be transferred to similar contexts. The dependability of this study is based on the research design. Lincoln and Guba (1985) suggest human subjects are unpredictable and always changing, and methods therefore need to be consistent. Expert researcher review was consistent throughout the process of method development, data collection and analysis to check for consistency and dependability, and member checking was used to ensure authenticity of the findings. The confirmability of the data regards the unbiased nature of the findings (Miles, et al., 2014). This study ensures credibility by presenting findings that are traceable back to the raw interview data.

Researcher Reflexivity

My interests in the practical application of art and science and my passion for the outdoors led me to pursue a Bachelor of Science in Interior Architecture at a CIDA accredited university, alongside a minor in Global Environmental Sustainability. As I moved through my education, I became interested in the concept of building reuse. As a white, straight woman with a privileged upbringing in the United States, adaptive reuse was first introduced to me through witnessing historic preservation in the cities which I grew up and attended university. These cities, consisting of primarily white populations, were focused on the need to preserve important pieces of culture and history of the area, which usually related to white history, colonization, and religion. As my privilege allowed me to study abroad in Copenhagen, Denmark, and take a course on adaptive reuse, I was introduced to the idea of reusing buildings for sustainability reasons instead of historic. As an interior architecture and design student with a passion for sustainability and the outdoors, I felt inspired by the way reusing buildings seemed to be the perfect sustainable design strategy that could apply to any building, despite its historical significance, and I wondered why it did not happen more often.

While my classes and professors pushed me to think about how design impacts people, I wondered how adaptive reuse, depending on what kind of building was being reused and what its relationship to the community was, could impact communities in different ways, especially regarding a person's sense of place and belonging. Moving through my degree and onto graduate school to pursue a Master of Science in Design and Merchandising – Interior Design, I knew I wanted to learn more about the relationship between adaptive reuse, sustainability, and interior design, what this looks like in the United States. In addition, I wanted to understand how reuse can impact the communities in which they take place, both positively and negatively, and influence the cultural sustainability of the place, thus driving the topic for this study.

As an interior design student, I must also reflect on my own biases towards interior designers and their roles in the industry. Earning my B.S. from a CIDA accredited university has

shaped my understanding of who interior designers are, and what they can do, which in turn has motivated the involvement of interior designers in this research. My graduate research assistantship provided opportunities to work with real stakeholders and conduct research-based design projects. In addition, working as a sustainability associate, I have spent time helping project teams go through the LEED certification process, and participated in other activities relating to sustainability such as attending visioning sessions or charrettes.

My prior experience in conducting Evidence Based Design research influenced the study's design as the methods used for data collection and analysis are those commonly used in qualitative design research, and methods I have experience with. My lack of professional design or industry experience, especially in adaptive reuse, allowed the interviews to be focused on this part of their experience and influenced the questions asked. My familiarity with design and sustainability allowed participants to freely discuss their own experiences without having to explain the terms and ideas they were mentioning. These reflective insights can also potentially influence the results, as the analysis of the interview data is analyzed through the lens of a student researcher with a passion for sustainable interior design.

Findings

The overarching themes that emerged from the initial inductive open coding were directly related to the research questions and experiences and opinions of the participants. The data was also coded using the categories of the framework for eco-cultural interior design and interior designers' areas of contributions as themes to determine how their experiences, project examples, and opinions relate to the framework for Eco-Cultural Interior Design, and an Interior Designer's Areas of Contribution, and how these may relate to one another. The findings will be discussed as follows:

1. Content Analysis of Firm Websites
2. Interview Analysis
    a. Participants' Conceptions of Sustainability
    b. Participants' Experience with Adaptive Reuse and Interior Design
    c. Connection to the Framework for Eco-Cultural Design

Website Content Analysis

The content analysis of the firm websites revealed how the architecture and design industry in the United States understands sustainability and uses associated terminology. The firms all use phrases relating to positively impacting people, communities and the environment through design when describing their missions or values. Their sustainability initiatives focused on environmental impacts, using terms like carbon neutrality/reduction, embodied carbon, resilience, and net-zero when talking about their efforts. Though the sustainability focus lies primarily in the environmental pillar, other details in the websites connected to aspects of social and cultural sustainability, such as the discussions regarding creating a better world for people, communities, and society, through their design solutions, and the importance of reuse and placemaking for communities. All the firms mentioned that design impacts the surrounding community and environment, however, the use of the terms, 'social and cultural sustainability'

were not present in this discussion. This aligned with the participants' understanding of social and cultural sustainability and their own use of terminology related to sustainability. In addition, about half of the firms mention providing LEED, WELL or other certification services, and about half of the participants had LEED or WELL credentials. Other credentials, such as NCIDQ or AIA helped to provide insight into whether the firms hired interior designers or architects, or both. Most of the firms provided both, and the participants had a variety of credentials despite their current work encapsulating interior design.

Interview Analysis

Open coding of the of the interview transcripts revealed how participants talked about and understood sustainability, such as what their use of different terminology and building rating systems looked like, and their opinions on a framework for eco-cultural design informed by their personal experiences in practices.

Participants' Conceptions of Sustainability

To better understand how eco-cultural design can apply to interior design and adaptive reuse industry, participants were asked to reflect on different concepts related to sustainability, and different building rating systems they may be using.

Concepts & Terminology. Most participants were unfamiliar with the specific terms they were being asked about, such as the pillars of sustainability (environmental, economic, social, cultural) and eco-cultural design. However, they felt like they should or did know these concepts but could not provide an explanation or definition. Due to the number of terms out there, participants expressed that it is hard to keep track of the definitions and the differences between them. A couple participants asked the researcher to provide definitions before being asked about their own understanding. Like the content analysis of the firm websites, the general understanding of sustainability was primarily focused on elements of environmental aspects of sustainability, as all participants mentioned carbon reduction, building performance or the goals of firms relating to carbon neutrality. When reflecting on their experiences with adaptive reuse,

concepts of a circular economy, like recycling and reuse were also brought up. In addition, they discussed efforts being made in sustainability using other terms, such as resilience and regenerative design. When it comes to social aspects of sustainability, three different participants brought up the idea of ESG and how it is beginning to make its way into the design industry. One participant expressed interest in how ESG can be applied in design but felt this was still unclear and developing in the industry. ESG was also used to describe the client's motivation for pursuing more sustainable design decisions, or certification such as LEED and WELL. Table 5 organizes the common terms discussed during the interviews and what the participant's understanding of these looked like, with associated example quotes.

Table 5

Themes from Interviews: Sustainability Terms and Concepts

Term or Concept	Participant's Understanding	Example Quotes
Pillars of Sustainability - Economic - Environmental - Social - Cultural	felt familiar, but unable to define	"I bet I do but there seems to be so much jargon and literature out there that I don't know [what the pillars of sustainability are]." Par2 "One question that I have for you because this is a new term, but could you define cultural sustainability?" Par1
Eco-Cultural Design & Logic	All participants but one had not heard of the term	"no I have not heard of that before your email,"

Carbon & Energy Reduction, and other aspects of Environmental Sustainability	Heavy focus on environmental aspects of sustainability : e.g., use of terms embodied carbon, recycled materials, resilient design, regenerative design, energy performance, etc.	“There's nothing in our minds more sustainable than doing repositioning work because you're taking something that already has a certain level of embodied carbon… you're getting to benefit from the structure that's there.” Par2 “One of the things that we're often asked [by our clients] is, what we can do to make a big impact and reduce our carbon and from a sustainability standpoint, improve the performance of our buildings?” Par1 “…choose recycled materials if you can and recycle whatever you can, have the contractor recycle whatever they can. And with adaptive reuse, of course there is the advantage that you're reusing a lot of stuff. So just by nature it is more sustainable than a Greenfield site where you're building from scratch,” Par7 “We do have a whole separate but related spearhead on resiliency,” Par7
ESG	Beginning to be tied to elements of design, clients are expressing interest in this	“Clients who want LEED, for instance, it adds legitimacy when they're creating an ESG,” Par4

Building Certification Systems. When asked about their use of building certification systems, participants generally shared similar experiences and frustrations. Two participants claimed to utilize “most” or “all” the common certification systems in the United States, such as LEED, WELL, and the rest of the participants were at least familiar with these systems even if they did not have as much experience with them. There was agreement across participants that these systems cover many different pillars of sustainability however, the overlap and differences between them can be confusing and overwhelming for both the design team and the clients, as explained by Par4:

> “there's a lot out there and I think that's the frustration...oftentimes with clients, we will present multiple types of certifications that they could potentially get, and they are even boggled, like what exactly is the right move for us. There's just so many different things out there." Par4

Furthermore, there is confusion about terminology, which may differ between systems. Par 2 explained:

> "there just seems to be so much out there that I think that we could all probably benefit from some standardization of things where we're all kind of speaking the same language in a way...in terms of what we do and how we track it, I think it's pretty robust at this point. But just maybe some more manageable vocabulary and stuff might be helpful," Par2

The way architects and interior designers talk about sustainability may suggest the need for a framework that ties the various dimensions of sustainability together. The difference between the building certification systems and their applications are important to understand to make sustainable impacts. A comprehensive understanding of the nuances between the different concepts and terms, and the different building certification systems, and how they are all connected or related, may push the industry forward faster.

Participants' Experience with Adaptive Reuse and Interior Design

As participants described their experiences working on adaptive reuse projects and using building certification systems, many barriers and motivations for their use were revealed. The primary themes that emerged were cost and economics (table 6), personal or organizational values (table 7), historical significance (table 8), and story and character (table 9).

Motivations for and Barriers to Adaptive Reuse. The most common theme, brought up by every participant in some way, was cost and economic value as a motivator or barrier. All participants described that a client's choice to reuse an existing building is due to monetary reasons. Sometimes, that is all they can afford, whereas some participants expressed the difficulties of reusing old buildings due to the costs of repair before the design process could begin. The state and condition of the site influenced the economics of reuse. In the experience of the participants, performing tests and analyses on existing buildings to quantify their potential for reuse can be done but is a time-consuming and expensive process. Cost and economics were both a barrier and motivator for the use of building certification systems as well. Most

participants described their clients' desire to understand the value of LEED, WELL and related building certification systems versus the cost of certification. Clients often do not want to pay for and take the time for certification or are unable to afford it. According to three different participants, if the client is interested in LEED or WELL but cannot afford certification, the design team can still design to a specific rating system without going through the documentation process required to get official certification.

Table 6

Cost & Economics

COST & ECONOMICS	SUPPORTING QUOTES
Economics are still a primary driver and consideration for the reuse of old buildings	"I think that economics, in the professional world, unfortunately drive most of the decision making, it's not about virtue so much as we would like for it to be. A lot of our clients and developers come in and care about sustainability and the communities that they're building in, and I don't doubt any of their intentions, but at the end of the day, if there's not an economic argument, it often doesn't turn into a project." Par2 "It's in their best interest to keep the existing buildings. They can't afford to build a new building. They need to keep it and we occasionally participate in doing studies with them to help them figure out how to upgrade buildings," Par2 "A lot of adaptive reuse projects you're having to work with existing conditions that are in quite a range of states… Before the clients even owned that project, they had to pay for the portion of the roof to be reinstalled, just so that the roof is covered during the winter so that we could continue working on the project, you know and that's money in itself that the client's spending just to do that before we even get into the design of the project." Par9
Reuse can be challenging due to costs of repair before design, and other issues with existing conditions	"It's in their best interest to keep the existing buildings. They can't afford to build a new building. They need to keep it and we occasionally participate in doing studies with them to help them figure out how to upgrade buildings," Par2 "A lot of adaptive reuse projects you're having to work with existing conditions that are in quite a range of states… Before the clients even owned that project, they had to pay for the portion of the roof to be reinstalled, just so that the roof is covered during the winter so that we could continue working on the project, you know and that's money that the client's spending before we even get into the design of the project." Par9

Testing and analyzing existing buildings for their reuse potential can be time consuming and expensive	“It's very expensive to have experts come in and basically simulate your entire building to try to communicate what's there and the expense of doing that makes it unattractive to most of our clients who genuinely want to make their buildings better. So, it often comes down to trust, letting go of some of the specifics and just being okay with the concept of, we [designers and architects] know how to design a better building, let us help you make it better. But then how do they figure out how to quantify the improvements that are made so that they can sort of blow their own horn and communicate to the wider world like, hey, we care about the environment; this is what we're doing and sort of celebrate that success.” Par 2
LEED or WELL certification can be expensive and time consuming. Clients want to know the return on investment from certification.	“When clients are determining whether they do LEED or not, it really is like what's the return on investment that we would get from becoming LEED certified. There's one thing about doing the LEED process or following those processes but not becoming certified and creating all that paperwork…Clients do consider how much time and effort they would have to put in just for the submission process,” Par5 “a lot of the companies who are using WELL, they have money, and they have a building that that people who are of a social economic status would be inside of. So, somebody with had a lower social economic status wouldn't necessarily be able to achieve this kind of environment… only rich people can attain WELL, and there's not a lot of adaptive reuse for people who are in a lower social economical scale,” Par5

Participants expressed that the additional effort required for performing tests, certifying a project, or prioritizing other sustainable design decisions is driven by the client’s organizational or personal values. For some clients, LEED, WELL and other rating systems are used as marketing tools to quantify and prove their sustainable initiatives. In the experience of the participants, these clients that just want to “tick the box,” referencing a requirement or mandate, often go for the initiatives that are cheaper, surface level and easier to achieve such as using sustainable materials or adding bike racks. On the other hand, participants discussed interacting with clients who want to make a large impact on their project’s sustainability and the surrounding community. Being driven by their own personal values towards sustainability, these clients often try to implement as many aspects of building certification systems as possible, despite whether they can afford the certification.

Table 7

Values: Personal and Organizational

VALUES	SUPPORTING QUOTES
Organizational: For some, LEED and other rating systems have become marketing tools to prove sustainability initiatives	"A lot of clients do a lot of advertising and feel like it's good for their PR that they're paying attention to this and it's good for their employees to hear, so they use it. I think doing anything like that is good. Even if the client says we want to do LEED, but we don't want to document it, that's fine too. There are some clients, just say I don't care about any of that, I just want to get it done and I want to do it that's cheaply as possible. They don't usually say it that way, but that's basically where they end up." Par8 "I have other clients who like the idea of LEED. They want everything LEED, but they really don't want to go through the process of LEED and the paperwork regarding LEED. They're not really looking for it to be a marketing tool like some clients are." Par5 "… some of them are truly interested in the environment and sustainability, others. Maybe they care, but as a company they do it to check the box," Par6
Some pursue sustainability due to expectations or mandates, others approach it more holistically, with a desire to make a strong impact	"I was working on not doing LEED certification but using that as a guideline to help our local Habitat for Humanity make some decisions, and then also working on a huge government project in Texas. All of those entities had different reasons behind the things that they wanted to do in terms of sustainability and how they would make those choices. For example, in TX, they were just trying to get a mandated LEED certification, so, they were grabbing at whatever was cheap, whatever was easy, not necessarily the things that were honestly best for that facility in that place. Then Habitat for Humanity didn't want the certification at all, they just really wanted to make the home comfortable and efficient for the future homeowners," Par10

Participants' experiences with adaptive reuse were often connected to historical preservation, as a building's historical significance was described as a primary motivator for reuse. According to those with specific experience in historic preservation, the numerous codes and regulations associated with landmark districts and historic preservation pose many barriers when old buildings are required to be updated and comply with modern accessibility, safety, energy, and fire codes.

Table 8

Historical Significance

HISTORICAL SIGNIFICANCE	SUPPORTING QUOTES

Codes, jurisdictions, and other aspects related to historic preservation create challenges	“A lot of our projects are in landmark districts, and so the adaptive reuse component is often ambitious… we might be asking for a substantive addition, often visible. And so, in order to make the case that it's appropriate, we have to kind of create a story or a compelling kind of argument that it is appropriate to the kind of history of the building and the kind of narrative of the building… the projects particularly that we do in landmark districts, we have to go in front of Community Board, we have to present in front of all kinds of community groups. And pretty much what binds a lot of them together is they don't want anything to change after they move into their home,” Par7

Similarly, participants often brought up the words “story” or “character” of a site as being primary motivators for reusing buildings when the historical piece was missing. The character of these buildings was often related to an industrial history, with strong, uncovered structure, tall ceiling heights, large spaces, and the quality of materials such as wood, metal, brick and stone. Participants had a general excitement when they spoke about these aspects of the projects. Character and story were also strong motivators for making extra effort to transform old buildings. However, the characteristics associated with what was considered good character, often created many challenges for interior designers throughout the design process, as they try to adapt buildings for a new use and update it for current codes.

Table 9

Story & Character

STORY & CHARACTER	SUPPORTING QUOTES
A building’s physical character or story motivated reuse when there was a lack of historical significance.	“They decided to build a hotel as part of it and then the multifamily, so apartment complex, but they wanted to keep that existing structure partially because it was one of the very first few buildings that's been built around that neighborhood and it had that character and developed the area around it,” Par6 “At one point in time there was an elevated railroad because all of these were warehouses, this was about teas, coffees and spices, and these were really warehouse buildings and what makes them great is that they have beautiful structure because they're built for heavy loading. So, you have these, very heavy loads, beautiful timber columns, exposed structure, lovely floor plates, often tall loft-like spaces,” Par7

Good character worth keeping and preserving were often related to industrial buildings, and provided both challenges and opportunities throughout the design process	"…beautiful cast iron columns and that kind of thing. Each one has very different character…their ceiling heights vary, and every apartment is different, so, it was a very unusual project in that way. And this was a really fun project to do," Par7 "We kept that revealed structure, when possible, got a special approval from the DOB to put concrete on top to provide fire proofing and then we put in sprinklers, so they allowed us to expose the structure, which is kind of a big part of the character of the building," Par7
Despite aesthetics, a building's story can be valuable to a community to motivate reuse	"There is this existing thing that was not really all that nice, but it was there, it had a story, and instead of tearing it down to build something new along this corridor, we kept it for that story." Par2 "This bank has been there since the twenties and it is a very important part of the neighborhood to the extent that when I was on the site for the first time doing a walkthrough, when we were waiting to get into the door, someone drove past and asked us if we were renovating or fixing it up because it hasn't been accessed since like the 90s, It's been closed off and vacant and they honked and asked us and were all excited when we said yes. So, getting into that cultural kind of like this means something to the community, there's a reason why we want to preserve it, beyond just keeping the building." Par9

Adaptive reuse is still heavily driven by economics and historical significance but is starting to be prioritized when the building has strong character, a story, or sense of place. In the experience of the participants, reuse continues to be challenging and costly due to varying existing conditions, but design teams are often embracing these difficulties to preserve a good story, history, or the character of a building.

Role of the Interior Designer. According to participants, adaptive reuse teams are often made up of architects, but despite this, interior design still plays a significant role. To better understand what the role of the interior designer in adaptive reuse projects looks like, the interviews were also coded to the different phases of interior design (p.1) as defined by CIDQ (2019), that make up the scope of services of interior designers. The experiences of the participants touched on all phases of the design process and covered each one in the context of adaptive reuse but were more heavily focused on the data collection, pre/post design services, existing conditions, and selections and materiality phases.

Table 10

Coding to the Phases of Interior Design

PHASES	QUOTES
A. PROJECT MANAGEMENT *References by Different Participants: 2* *Total References: 4*	“You can frame it in different ways and then even though they may not care one thing about this design direction or goals that we are promoting, however we can get to the same end result by saying it in a different way and then they get it and they want to do it and I consider that a win.” Par5
B. PROJECT GOALS *References by Different Participants: 3* *Total References: 5*	“programming of the space and working with the client with what we call the Listen discover design process, which essentially is like interviewing a client, determining their programming needs, their use needs. And so that's generally the phase that we start with a client. And that's generally when an interior designer is brought into a project.” Par4
C. DATA COLLECTION *References by Different Participants: 6* *Total References: 15*	“if there are existing buildings, and there's interest in keeping at least a portion of those existing buildings, then we would do due diligence and different types of reports and analysis at an architectural scale as well as a sort of urban design scale to factor that into the overall equation and the overall pro forma for our clients to see if it's something that they would like to pursue.” Par1 “in addition to the visioning session in the beginning, we also had a charrette with the architecture studio.” Par3
D. PRE & POST DESIGN SERVICES *References by Different Participants: 6* *Total References: 12*	“We do so much research… a lot of the post occupancy research that we do is based on workplace design. It's called the workplace performance indicator, WPI Program that we do at the very beginning where you set kind of a baseline of trying to expose some of the pain points that people have in their office. and then, you do the same survey at the end or six months after they move in and see if any of that stuff has been helped or made better. So I know we do that a lot. But I'm not sure about like some of the more social or Cultural side of things.” Par2

E. EXISTING CONDITIONS *References by Different Participants: 8* *Total References: 22*	"I did a lot of research about the history of the building, why it was built, when it was built, how doing all of the like forensics to figure out like how many additions have been put on and when, and all of that kind of work, and even to the degree of sometimes, you know, analyzing mortar samples to see where they came from and things like that." Par9 "we had like early on one site visit where we just we took a ton of photos, took a ton of measurements and those came in really handy when we were referencing just to be able to be like OK, like is there a pipe here, what is going on with the brick like it was kind of like a mixture of brick and gypsum because they had a tenant in there before." Par3
F. CONCEPTUALIZATION *References by Different Participants: 3* *Total References: 6*	"I started off with the very beginning stage of that process, so back in the concept design," Par3 "Starting at the beginning…concept.." Par6
G. SELECTIONS & MATERIALITY *References by Different Participants: 5* *Total References: 12*	"One of the things you find is a lot of times the windows are too small to support the spaces and so you have to come up with a strategy to enlarge windows." Par6 "making sure that whatever materials are used are not toxic and really designing for health in that way and then there's also in introducing proper insulation and systems, sometimes that's taken on by the architect. Depends on, but sometimes the interiors people deal with that. And mechanical systems is a big one, and how those get designed you know, making sure that during the construction the dust is filtered and that when things are designed, if you're not doing LEED, that you do a lot of the principles of LEED and try to be as sustainable as possible…" Par7
H. DOCUMENTATION *References by Different Participants: 2* *Total References: 2*	"Then scope included, you know working with client, working with consultants, preparing working drawings, doing filing drawings. the filing of these things is very particular as you can imagine as is the zoning fairly complicated…" Par6
I. COORDINATION *References by Different Participants: 3* *Total References: 4*	"recycle whatever you can have the contractor recycle whatever they can," Par 7 "also just making sure you're not damaging any of the significant portions of the building that are historical," Par9

J. CONTRACT ADMIN *References by Different Participants: 2* *Total References: 2*	“getting all those approvals and then with my team, all of this was with a team, doing construction administration, so from sort of concept all the way to completion.” Par6

In the experiences of the participants, interior designers are sometimes asked to perform different studies of an existing building to determine its potential for reuse, as well as measuring the spaces and assessing the conditions of existing materials. In addition to various predesign studies, different forms of visioning sessions took place with clients and stakeholders to understand the intentions, goals, and vision for the project. Participants had general excitement for these parts of the process, describing them as fun and optimistic for the future of the project since cost is not yet a main consideration. All participants expressed the importance of thinking about interiors and the vision for it early on. They expressed that the many challenges of adaptive reuse are interiors issues relating to health and wellbeing like light, air quality, and healthy materials. Many participants expressed the importance of the interior design of a project.

> “in my mind, the way interiors fit into all of this is...the exterior kind of makes a promise to what's going on and the interiors has to kind of deliver that promise. It can't just be this cool new screen that you put on a building and then all of a sudden, everyone's going to want to move in. People will see through that pretty quickly from a tenancy standpoint. And it has to deliver on the promise that it's something special on the inside." Par2

However, whether these aspects of the designs were taken on by interior designers or architects varied across firms and projects. There was a consensus that adaptive reuse projects typically involved architects more than interior designers.

> “We have an interiors department, but most of the adaptive reuse decisions are architectural and not interior designer led.” Par6

> “I've done some adaptive reuse in my career, but since I've been mostly working with firms that also do architecture, the architects sometimes would do that part of the project." Par7

These comments proved to have a layer of truth to them, as it was much more difficult to find interior designers with adaptive reuse project experience than architects for the purpose of this

study. Though more uncommon, there are still many firms that have their own interior designers working alongside architects on adaptive reuse projects.

When it comes to the overall design process, most participants expressed the importance of involving the interiors team right at the beginning.

> "the worst is when the interiors people are not involved until absolutely necessary, the best thing is when they are involved from the very beginning," Par7

Though interiors are expressed as being important, according to the population interviewed, most of the time the driving force of projects are the clients, and where their values and priorities stand are often what frames and motivates the project. Therefore, interior designers play a crucial role in communicating with their clients to find and drive design solutions that are economically, environmentally, social, and culturally sustainable.

Connecting to the Framework for Eco-Cultural Design

The interviews were also coded using the different categories of eco-cultural design to investigate how what was said during interviews related to the different categories. Much of what participants mentioned during these conversations fell into the categories of community relationships, and the cultural and perceptual categories, with a slightly smaller focus on site and context, indoor environment, sense of place, energy and resources, and adaptability and flexibility (Table 11).

Table 11

Coding to Categories of the Framework for Eco-Cultural Interior Design

CATEGORIES	QUOTES
SITE & CONTEXT *References by Different Participants: 4* *Total References: 8*	"every project has its idiosyncrasies and I think as a firm, we often start looking very carefully at context and narrative no matter what project we're doing." Par6

ENERGY & RESOURCES *References by Different Participants: 4* *Total References: 6*	“one of the things that we're often asked is, well, kind of bring in your engineering partners and tell us what we can do to make a big impact and reduce our carbon, and just sort of from a sustainability standpoint improve the performance of our buildings,” Par1 “Something that the developer did that most people don't do now, is he saved all the brick that was removed as part of the cut and reused it to build these new walls as the courtyard.” Par6
FLEXIBILITY & ADAPTABILITY *References by Different Participants: 3* *Total References: 4*	“Adaptability and flexibility, that one in particular is something that for developer clients, they always talk about future proofing, that's the developer word for it. And there's sort of a tendency to not overcommit to something that is super rigid and that can't be changed down the road when the market changes.” Par1 “Flexibility is an interesting one just because we are starting to see more and more work. Projects haven't really happened yet under this category, but people are really interested in testing the market for office to residential conversion.” Par2 “I like the idea of designing the buildings for vertical and horizontal modifications. Horizontal it's relatively easier, but vertical, if it's a concrete building or anything when you penetrate that, it becomes expensive depending on the structure. I'm going through that right now with a two-story office building…whenever you penetrate the concrete slab, we have to X-ray the floor and we can only make so much. Like, it's possible to make a bigger opening, but it takes so much time and money, so if there's a way to make it much easier, I'm all for it.” Par5
INDOOR ENVIRONMENT & USER CONTROL *References by Different Participants: 3* *Total References: 7*	“New York City has some of the strongest light and air requirements of anywhere in the country. And so many of these adaptive reuse projects involve cutting a fairly substantive courtyard so that you can eliminate the depth of the floor plate, get light and air to the units.” Par6 “I once did a project where we turned some basement space into classrooms and there's issues about air quality, remediation, and there was also daylight, trying to get daylight down there was a big part of the project…it’s quality of life issues, I think that are also sustainability issues these days, and those things really become a part of the project.” Par7

COMMUNITY RELATIONSHIPS *References by Different Participants: 5* *Total References: 17*	“We also sliced it up because then we were able to create these pretty cool outdoor corridors, opening up to the new sort of public realm of this Beltline corridor, which is now filled with bikes and filled with people and all of these things.” Par1 “there's plenty of depleted real estate assets that just need some, need some love and in a way it's more powerful to the community and the neighborhood to do something that has some vintage to it, then to just do some, you know, bad new multifamily building somewhere or something.” Par2 “Done a couple of projects where we focused on local artisans was actually a project that was for a not-for-profit here…but we looked to try to bring in local craftspeople, local furniture makers and all of that to have the project be a reflection of a kind of community of artisans because Brooklyn has so many different kind of makers. But you know, not every community has access to that. We're just very lucky it was fertile ground and so it's easy.” Par6
CULTURAL AND PERCEPTUAL *References by Different Participants: 5* *Total References: 13*	“we create a story or a compelling kind of argument that it is appropriate to the kind of history of the building and the kind of narrative of the building.” Par6 “let's say you were in a community that has been radically gentrified, right? And the building owner or the community is really interested in preserving not just the physical building that was there during a time that represented their culture, but they also want to preserve that piece of their culture. so there was this fading cracking old mural on plaster, but we were able to save some of that original mural and showcase that. And you can pull out those special things and talk about them in a way that gives special meaning to culture and time and history and place and all of those things by having a framework like this to draw from,” Par9

SENSE OF PLACE *References by Different Participants: 4* *Total References: 6*	“everybody talks about authenticity and connection to a place and things like that. And you can't replicate the character of an old warehouse in a new construction building.” Par1 “What you're doing on that place attachment reminds me of the some of the study and research that I was doing during COVID… I was looking at ESG and how we can incorporate ESG as part of the Interior design spaces, too, and that kind of get to that equitable feeling belonging for everyone.” Par5 “Some of the place-making may or may not already be there. But you're just enhancing that and breathing some new life into it and giving something that is maybe a depreciated asset on someone's balance sheet, new life,” Par2

Despite that the participants seemed to primarily be concerned with the environmental and economic dimensions of sustainability due to their understanding of the terminology and constant mention of carbon reduction, much what was being discussed regarding their experience with sustainability and adaptive reuse, was more closely related to the socio-cultural aspects. During the interviews, participants showed interest in ESG, equity, diversity, involving the community, preserving culture and storytelling. The categories of community relationships and cultural and perceptual had the highest number of total references, illustrating the participant’s strong interest and current efforts in the socio-cultural dimensions of sustainability, such as working to involve the community in the design process and incorporating aspects of ESG into design.

Feedback on the Framework. The primary concerns about the framework were regarding its similarity to existing building certification systems or other efforts already being made, time and money constraints that may make it hard to implement, the measurability of socio-cultural factors, and its applicability for different contexts and communities (table 12).

Table 12.

Participant Concerns of the Eco-Cultural Framework and Assessment System

THEMES	SUPPORTING QUOTES
Aspects of eco-cultural design are already being partially implemented, but under different terminology and building rating systems	“All of this is covered in WELL,” Par5 “It's a combination of resiliency and sustainability" Par8 “When you were going through the list, I could definitely like check off like that's definitely a thing we did,” Par4 “A lot of what you're discussing is stuff that is being applied in that project from a very different perspective,” Par 9
Time and Money Constraints	“There is so limited time, and we bill per hour for clients, so I have to keep track of what my hours look like for the week and what's going where and what account that goes under. So that gets tricky,” Par4
Measurability	"the kind of generalized sweeping overview of community good project, always sort of not good is a challenge of these kind of generic systems... you know, who are you inviting into your building? ...safe for who? ... they're really complicated questions and I think what we found with LEED the benefit of it was that the things they were asking you to do were quantifiable and measurable. And some of the cultural and perceptual things are not so much so. You know, like equitable feelings of belonging for everyone. That's a high bar. I can tell you there is nothing we've done that everyone felt attached to or positive about." Par7 “A lot of this stuff, it might be harder to measure than just sheer, how much carbon did you use to build this thing? Like that's a little bit easier but you know, everything's measurable,” Par3
Applicability for variety of contexts and situations due to lack of specificity in the framework and the unique nature of different communities and cultures	“The challenge here is that there's a wide variety of project types, contexts, and communities... everybody in the community should have a say in what goes, what happens to the site, which sounds great, but in New York City, they're having trouble building affordable housing and finding places to put homeless shelters and transitional housing because neighbors don’t want one in their neighborhood. And so I think the question is, who is the community? Are you bringing a new voice to the conversation?... What is even the definition of cultural. And when do you go back?... Who's there, who's making what? I think that creates community relationships, that creates cultural connectivity, and it also drives the economy of a of a place.” Par7

Participants thought existing building certification systems had significant overlap and were worried that adding another would exacerbate the confusion when deciding which building certification system to pursue. The additional costs and time necessary to pursue certifications was another concern for the success of the framework. There were contradictory feelings

amongst participants regarding what can be measured and how a framework like this could be scaled to different projects, given the unique nature of each project, place, and community. These concerns suggest the framework may not be useful as another building certification system. Instead, participants felt the framework had the most potential to be helpful as a design guideline, rather than a building certification system, as explicitly mentioned by Par6:

> "Maybe this is a series of sort of thought-provoking questions that a design team uses rather than a kind of Certification system or scorecard," Par6

The framework highlights aspects of context and uniqueness that most building certification systems lack, but this creates challenges with measurability and points. There are benefits to using a points system to achieve levels of certifications, such as providing detailed goals and initiatives to achieve and ensuring they are met. However, for adaptive reuse projects that exist in a wide variety of conditions with different contexts and history, this approach can be too homogenous, as Par9 describes, what is good for one situation may not be good for another.

> "these checklists, while they can be good for making sure you're thinking about the right things, they can also miss the point of what's unique about each space. And that's some of the stuff we're talking about in regeneration and I'm grappling with the same question right now. I'm trying to understand what regional sustainability and regeneration looks like and what kind of data we need to understand that and things like that. And yet how do we do all that while also understanding that each place is unique and special? I think one of the biggest conundrums of our time in terms of sustainability is how do we how can we really understand it and unravel the complexity without taking apart what is great about ourselves or our places," Par9

The framework can instead assist in communicating value to clients, especially in the context of adaptive reuse. It ties together all dimensions of sustainability, highlighting both the values of each pillar, and of each site's unique context and culture and provides a better framework for understanding and talking about it.

> "You can use this to help talk with a client or an owner like, OK, what are the special aspects of this building that we're hoping to emphasize or even the building in the context of its neighborhood or its city. Let's say you were in a community that has been radically gentrified, and the building owner or the community is really interested in preserving not just the physical building that was there during a time that represented their culture, but they also want to preserve that piece of their culture. This gives you a way, a framework, for talking about those things. And as far as we can figure out how to assess and measure something, then we can also figure out exactly what the important

> strategies or things are that we can do in that area to preserve the culture in this space," Par9
>
> "I think that's what's valuable to a client is to help them tell their story. So if you're involved at the beginning in site selection for example, and you help them recognize the potential and a project for whatever reason, say it's any one of these things on your list, I think that it helps them to understand what they're doing, why they're doing it and it gives them something that they can hold on to throughout the process and gives you something to hold on to throughout the process when you're in design." Par1

When aspects of character, history, and authenticity may be missing from the existing building, the framework can help recognize and assess the value that buildings may have, like their story, despite their lack of historical significance, as described by Par1:

> "Everybody talks about authenticity and connection to a place and things like that. And you can't replicate the character and authenticity of an old warehouse in a new construction building. You just can't…an 80s office building which can't deliver the same type of authenticity, what could that, offer instead? And I think that you're touching on some of them. if there's a good story to an 80s office building, then maybe that is attractive enough to the community that it doesn't matter that it might not be a beautiful and authentic building, because it's significant for whatever other reasons… like a rating on the scale of authenticity, this building is a zero, the 80s office building. But on the scale of story, it's an 8 or a nine. And maybe there's some kind of way that it could be used to sort of help assess whether or not there is justification for reusing buildings." Par1

Similarly, the framework connects aspects of storytelling, placemaking, culture and other social impacts and principals of ESG, diversity, equity, inclusion, and justice, to the built environment and provides support for their value and suggestions for how they can be incorporated.

> "This [framework] might care about the building and the space, and some of those, 'How is it being occupied and lived in', but also what is the community? What is the context of the Community and the neighborhood and the place that it's located? We have a lot of those context pieces in lifelong homes, but we don't as much have the cultural pieces which I really like about this," Par9
>
> "There was this fading cracking old mural on plaster, but we were able to save some of that original mural and showcase that and you know, you can pull out those special things and talk about them in a way that gives special meaning to culture and time and history and place and all of those things by having a framework like this to draw from." Par9

Overall, the framework has potential to be a helpful guide for interior designers and other design professionals working on adaptive reuse projects, to help illustrate the different ways an existing project can have eco-cultural value and communicate this to the client.

Discussion: Toward a Framework Guiding Eco-Cultural Interior Design Practice

The participant's understanding of terminology relating to sustainability, their use of building certification systems, and their challenges and motivations for adaptive reuse all suggest the need for a more holistic view of sustainability and a framework to help guide this. The current understanding of sustainability in the profession is strong, but heavily focused on environmental aspects such as carbon reduction, which was apparent in both the interviews and the content analysis of the firm websites. The content analysis was referenced throughout analysis of the interview data to check and supplement the information discussed in the interviews regarding their experience and the projects mentioned. This revealed alignments, illustrating that what was being said on the firm websites, supported the participants experiences and insights. In addition, there is general confusion around the numerous terms being used, along with what cultural sustainability is. The mention of community, ESG, and other aspects connecting to the socio-cultural aspects of sustainability in both the interviews and the firm website analysis suggests there is interest and effort being made here, but the connections to environmental sustainability have not yet been made clear. This underscores the need for a framework that can guide the design process in the direction of all pillars of sustainability and provide clarity in how they connect, overlap, and provide value. In addition, the thorough understanding and use of building certification systems, but frustration with the cost and accessibility suggests the need for not another building certification system, but a framework that can instead be used to motivate a project and make clients and stakeholders think about how they can make their project more sustainable, in all dimensions. Despite the defined roles of the interior designer, participants expressed that elements of adaptive reuse projects are more often taken on by architects. This aligned with the content analysis of the websites as well, as many of the professionals working on the adaptive reuse projects had American Institute of Architects (AIA) credentials, despite being involved in the interior design of

the projects. A framework illustrating the connections between eco-cultural interior design and the phases of interior design can thus elucidate the interior designer's role in the process and potentially highlight their connection and the benefits of involving them early in the design process.

Refining the Categories and Considerations

The interviews shaped the framework's refinement from a building certification system to a framework that can guide design, and help interior designers critically think about their projects and communicate to clients what can be done to impact eco-cultural aspects of sustainability. This change was due to the conversations regarding the motivations and barriers associated with adaptive reuse and building certification systems and the feedback and concerns regarding the framework. The participants concern about its specificity, measurability, cost, and time constraints motivated the framework's categories and associated indicators to have more flexible definitions, becoming "considerations" instead of "indicators", to make it less like an assessment system, and easier to use in a variety of ways, for a variety of contexts. To respond to the ongoing confusion around the categories of eco-cultural interior design and what each may entail, a definition of each category has been developed based on feedback from the interviews (table 13).

Table 13

Eco-Cultural Interior Design – Refined Categories and Considerations

ADAPTED FRAMEWORK (Table 2):	REFINED FRAMEWORK:
SITE & CONTEXT	SITE & CONTEXT

- there is proximity to a variety of services for socializing, health, nutrition, finance, daycare, volunteer opportunities, libraries, etc. - walking / cycling is prioritized, promoted, supported - site enhances surroundings - history, story, and context of site are researched, considered and respected, including variety of populations from different time periods	Consider all aspects of the site, context, and the impact that design decisions have on the surrounding environment and community. Priorities include (but are not limited to): - proximity to locally relevant services that support life (socializing, welling and health, culture and arts, libraries, volunteering opportunities, daycare, transportation etc.) - support & encourage walking, cycling, and other modes of human powered transportation - site visually, culturally, and environmentally enhances surroundings - history, context, and story of the site/building are researched and respected (including a variety of populations from different time periods, considering the historically marginalized and discriminated against)
ENERGY & RESOURCES	ENERGY & RESOURCES
- orientation of interior configuration - interior structure type and configuration - passive heating and cooling strategies - indoor water use and control - furnishing, appliance and material selection - construction waste recycling and diversion	Consider all aspects of the consumption, production and control of energy, resources and waste throughout the project (from design and construction, throughout ongoing life of the project). Implementing principles of a Circular Economy and other environmental standard and concepts where possible. Priorities include (but are not limited to): - orientation of interior configuration works with local environmental conditions - interior structure type and configuration works with local environmental conditions and culture - passive heating and cooling strategies are used when possible, to maximize energy savings - indoor water use and control prioritizes efficiency, longevity, and durability - furnishing, appliance, material selection prioritizes efficiency, longevity, durability, and responsible supply chain - construction waste, recycling and diversion is controlled, prioritizes local services

FLEXIBILITY & ADAPTABILITY	FLEXIBILITY & ADAPTABILITY

- potential for interior horizontal / vertical space modification
- ease of maintenance of interior building components
- potential for internal space modification
  o for reuse for new purpose (adaptive reuse)
  o to retrofit for renewable energy resources
- potential for user customization
  o furniture arrangement
  o flexible use of spaces
	Consider all aspects of the flexibility and adaptability of the project for both current and future use.
	
	Priorities include (but are not limited to):
	- design for the potential for interior horizontal and vertical space modification
	- support the ease of maintenance of interior building components design for the potential for future internal space modification (reuse for variety of new purpose, retrofit of renewable energy systems, etc.)
	- design for the potential for user customization:
	  o durable, easy to move or change, furniture selections and flexible arrangements
	  o flexible use of spaces with variety of lighting options and controls, supportive storage

INDOOR ENVIRONMENT & USER CONTROL	INDOOR ENVIRONMENT & USER CONTROL

- effective, quality, comfortable, and appropriate:
  o circulation and space planning
  o ventilation
  o daylighting and artificial lighting for variety of tasks
  o noise and acoustics
  o furniture, in variety of types for variety of purposes
- equitable opportunity for users to control and adjust:
  o ventilation and temperature
  o daylighting and artificial lighting
  o noise and acoustics
  o Furniture arrangement and use
	Consider all aspects of the indoor environment and user's experience. Highlighting accessibility, health/wellbeing, and control to support a variety of interior environments and populations with a variety of needs.
	
	Priorities include (but are not limited to):
	- create effective, quality, comfortable, and appropriate:
	  o circulation and space planning
	  o ventilation
	  o daylighting and artificial lighting
	  o noise and acoustics
	  o furniture and finishes
	- create opportunity to users to control and adjust their environment based on personal needs:
	  o temperature and ventilation
	  o daylighting and artificial light
	  o noise and acoustics
	  o furniture and finishes

COMMUNITY RELATIONSHIPS	COMMUNITY RELATIONSHIPS
- opportunity for social interaction in variety of spaces - universal / equally accessible regardless of background, age, socio-economic class, residential status, etc. - equitable access and opportunity to connect with nature - equitable feelings of safety for all populations - involvement of local community in design process, inclusive decision making - construction waste management	Consider and involve the community surrounding the site, and what can be done to foster a healthy, caring relationship with them during the project's design and construction and throughout its life. Priorities include (but are not limited to): - create opportunity for social interaction in a variety of spaces - utilize universal, accessible, and inclusive design principals when possible - provide equitable access to connect with nature provide equitable feelings of safety for populations regardless of age, socio-economic status, race, gender, sexuality, etc. - involve the local community and local economy in the design process where possible - provide equitable feelings of safety for populations regardless of age, socio-economic status, race, gender, sexuality, etc.
CULTURAL & PERCEPTUAL	CULTURAL & PERCEPTUAL

- connection to and respect for local history, heritage, and values
- project aesthetics respect and connect to local area, and story:
  o interior graphics
  o furniture and material selection
  o site lines throughout space
	Consider how the history reflects the local community, and what can be done to positively contribute to it, paying extra attention to principles of diversity, equity, inclusivity, and justice.
	
	Priorities include (but are not limited to):
	- foster a connection to and respect for the values, mindsets, history and culture of the local area project's designs and aesthetics connect to local area and context through design selections
	  o interior graphics, signage, and wayfinding
	  o furniture and material selection
	  o sight lines, etc.

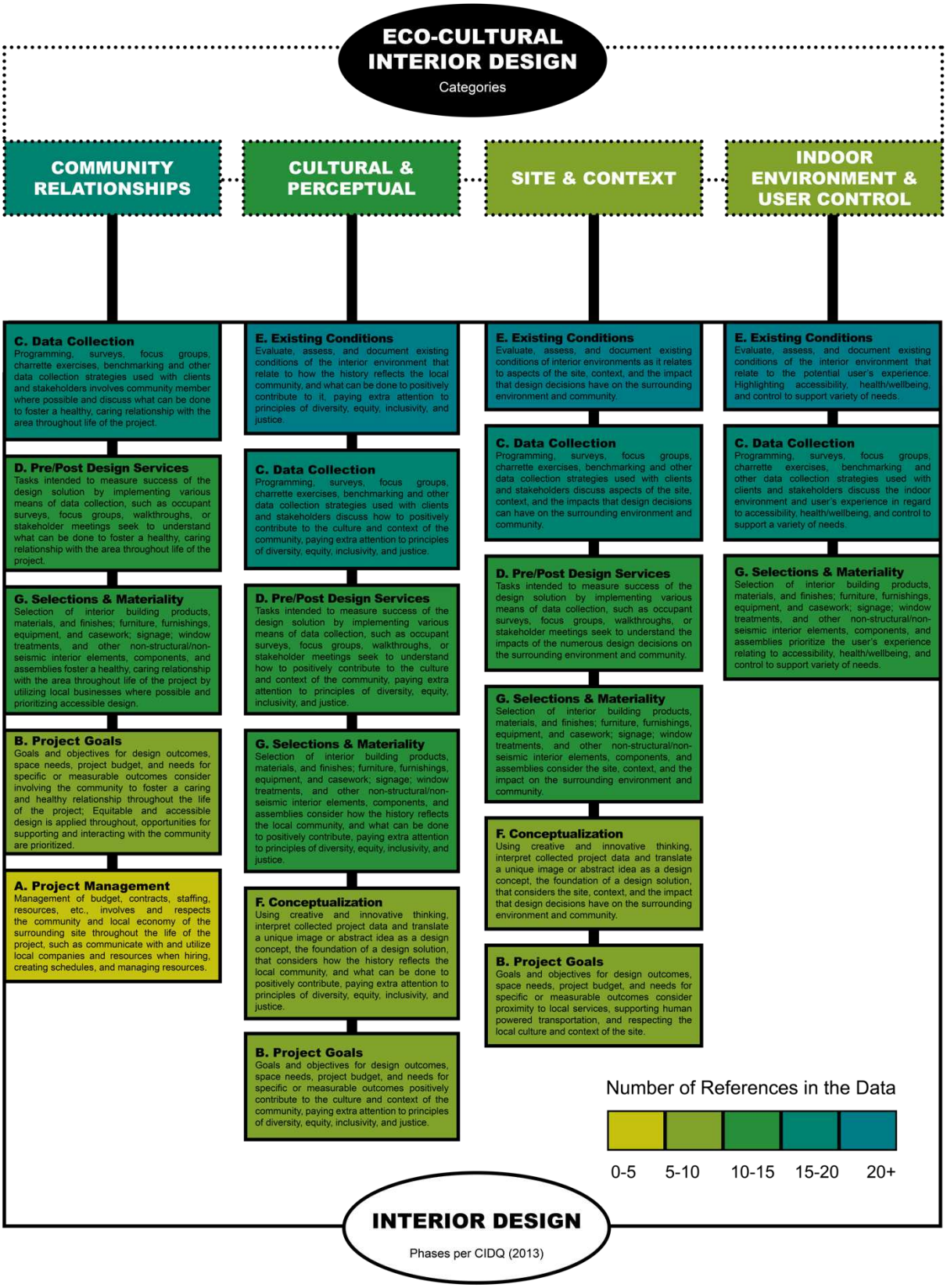
SENSE OF PLACE	SENSE OF PLACE
- equitable feelings of belonging for everyone - appealing ambiance - freedom for user expression, without concern for wellbeing - supports healthy lifestyle	Consider aspects relating to the user's formation of place attachment. Focusing on supporting healthy lifestyles, safety, acceptance, comfort, and opportunity to find purpose. Priorities include (but are not limited to): - provide equitable feelings of belonging and user expression for populations regardless of age, socioeconomic status, race, gender, sexuality, etc. - create an appealing and comfortable ambiance for a variety of users - create spaces to support health lifestyle, consider various health rating such as WELL - design for equity, consider new rating systems such as WELL Equity Rating - provide opportunities for users to safely express and find purpose
	LONGEVITY
	Consider aspects relating to the longevity of the project such as monitoring and measuring of systems, designing for ease of maintenance, and affordability controls. Priorities include (but are not limited to): - include operable windows - design air ducts and openings with focus on air tightness, weatherstripping, and pest control - design for ongoing moisture management - include on site metering and monitoring for energy and water, leak check, efficiency, etc. - select materials, finishes, furniture, and lighting that is durable, easy to clean, replace and maintain - control rent and mortgage affordability of surrounding areas

The definitions strive to provide a clearer understanding of what can be considered within each category of eco-cultural interior design and provide more flexibility for use. In general, the categories stayed the same, but the definitions and associated considerations became clearer and more focused. The category, longevity, was added in response to the ongoing

conversations about cost and value being a driver of adaptive reuse and to better appeal to the client.

Application for Practice

As mentioned, the term eco-cultural design has been absent in the interior design literature despite its connection to the profession. Similarly, the term is not yet commonly understood by professionals in practice, even though they are already implementing many of same aspects in their work. The numerous responsibilities that define interior design illustrate that there is potential for interior designers to influence eco-cultural design through their impact on the different phases of the design process, particularly in the context of adaptive reuse projects. The participants showed the most enthusiasm when talking about existing conditions, data collection, pre/post design services, and selections and materiality phases, which all involve working with the stakeholders and clients and determining the goals of the projects and potentials of the site. These phases are when elements of eco-cultural interior design can be considered and applied most successfully and provide interior designers with the greatest opportunity to communicate with the clients. Figure 2 illustrates the connections between the guideline categories of eco-cultural interior design and the different phases of interior design that make up their “scope of services,” (p.1) according to CIDQ (2013). The definitions for each phase were compared with the refined definitions and considerations for each category of eco-cultural interior design. The phases were then listed below each category where there may be potential for impact based on what happens in each phase, and a brief description is provided to illustrate what it could look like. The descriptions are not exhaustive and aim to be a starting to point to get designers to critically think about what they can do in their role for the project. Both the categories and the phases are color-coded and organized by the number of references in the data (as detailed in tables 10 and 11) to show the phases and categories that were discussed most by participants as they talked about their experiences at the intersection of adaptive reuse, interior design, and sustainability.


ECO-CULTURAL INTERIOR DESIGN
Categories
COMMUNITY RELATIONSHIPS
CULTURAL & PERCEPTUAL
SITE & CONTEXT
INDOOR ENVIRONMENT & USER CONTROL
C. Data Collection
Programming, surveys, focus groups, charrette exercises, benchmarking and other data collection strategies used with clients and stakeholders involves community member where possible and discuss what can be done to foster a healthy, caring relationship with the area throughout life of the project.
D. Pre/Post Design Services
Tasks intended to measure success of the design solution by implementing various means of data collection, such as occupant surveys, focus groups, walkthroughs, or stakeholder meetings seek to understand what can be done to foster a healthy, caring relationship with the area throughout life of the project.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies foster a healthy, caring relationship with the area throughout life of the project by utilizing local businesses where possible and prioritizing accessible design.
B. Project Goals
Goals and objectives for design outcomes, space needs, project budget, and needs for specific or measurable outcomes consider involving the community to foster a caring and healthy relationship throughout the life of the project; Equitable and accessible design is applied throughout, opportunities for supporting and interacting with the community are prioritized.
A. Project Management
Management of budget, contracts, staffing, resources, etc., involves and respects the community and local economy of the surrounding site throughout the life of the project, such as communicate with and utilize local companies and resources when hiring, creating schedules, and managing resources.
E. Existing Conditions
Evaluate, assess, and document existing conditions of the interior environment that relate to how the history reflects the local community, and what can be done to positively contribute to it, paying extra attention to principles of diversity, equity, inclusivity, and justice.
C. Data Collection
Programming, surveys, focus groups, charrette exercises, benchmarking and other data collection strategies used with clients and stakeholders discuss how to positively contribute to the culture and context of the community, paying extra attention to principles of diversity, equity, inclusivity, and justice.
D. Pre/Post Design Services
Tasks intended to measure success of the design solution by implementing various means of data collection, such as occupant surveys, focus groups, walkthroughs, or stakeholder meetings seek to understand how to positively contribute to the culture and context of the community, paying extra attention to principles of diversity, equity, inclusivity, and justice.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies consider how the history reflects the local community, and what can be done to positively contribute, paying extra attention to principles of diversity, equity, inclusivity, and justice.
F. Conceptualization
Using creative and innovative thinking, interpret collected project data and translate a unique image or abstract idea as a design concept, the foundation of a design solution, that considers how the history reflects the local community, and what can be done to positively contribute, paying extra attention to principles of diversity, equity, inclusivity, and justice.
B. Project Goals
Goals and objectives for design outcomes, space needs, project budget, and needs for specific or measurable outcomes positively contribute to the culture and context of the community, paying extra attention to principles of diversity, equity, inclusivity, and justice.
E. Existing Conditions
Evaluate, assess, and document existing conditions of interior environments as it relates to aspects of the site, context, and the impact that design decisions have on the surrounding environment and community.
C. Data Collection
Programming, surveys, focus groups, charrette exercises, benchmarking and other data collection strategies used with clients and stakeholders discuss aspects of the site, context, and the impacts that design decisions can have on the surrounding environment and community.
D. Pre/Post Design Services
Tasks intended to measure success of the design solution by implementing various means of data collection, such as occupant surveys, focus groups, walkthroughs, or stakeholder meetings seek to understand the impacts of the numerous design decisions on the surrounding environment and community.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies consider the site, context, and the impact on the surrounding environment and community.
F. Conceptualization
Using creative and innovative thinking, interpret collected project data and translate a unique image or abstract idea as a design concept, the foundation of a design solution, that considers the site, context, and the impact that design decisions have on the surrounding environment and community.
B. Project Goals
Goals and objectives for design outcomes, space needs, project budget, and needs for specific or measurable outcomes consider proximity to local services, supporting human powered transportation, and respecting the local culture and context of the site.
E. Existing Conditions
Evaluate, assess, and document existing conditions of the interior environment that relate to the potential user's experience. Highlighting accessibility, health/wellbeing, and control to support variety of needs.
C. Data Collection
Programming, surveys, focus groups, charrette exercises, benchmarking and other data collection strategies used with clients and stakeholders discuss the indoor environment and user's experience in regard to accessibility, health/wellbeing, and control to support a variety of needs.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies prioritize the user's experience relating to accessibility, health/wellbeing, and control to support variety of needs.
Number of References in the Data
0-5
5-10
10-15
15-20
20+
INTERIOR DESIGN
Phases per CIDQ (2013)

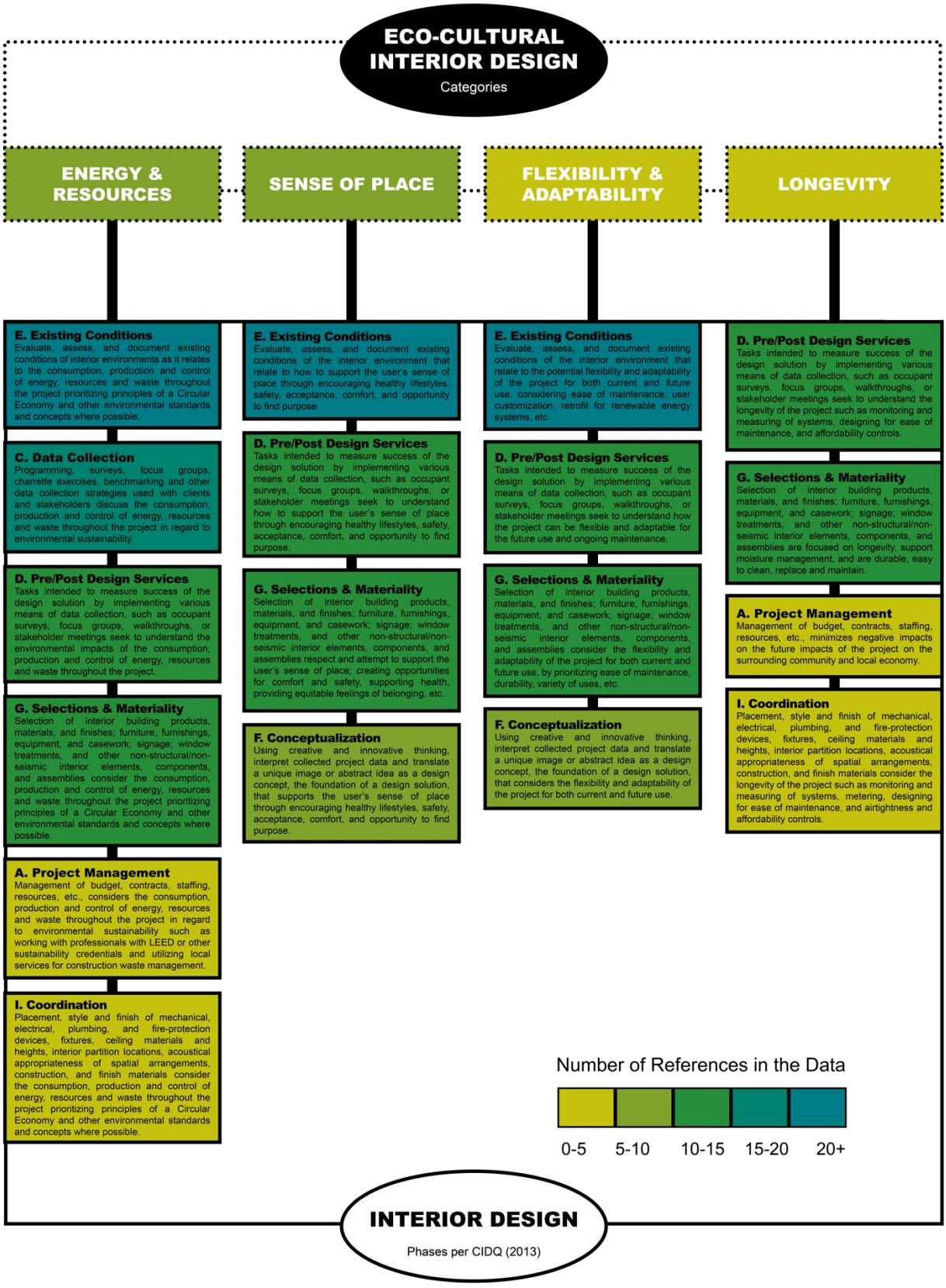

ECO-CULTURAL INTERIOR DESIGN
Categories
ENERGY & RESOURCES
SENSE OF PLACE
FLEXIBILITY & ADAPTABILITY
LONGEVITY
E. Existing Conditions
Evaluate, assess, and document existing conditions of interior environments as it relates to the consumption, production and control of energy, resources and waste throughout the project prioritizing principles of a Circular Economy and other environmental standards and concepts where possible.
C. Data Collection
Programming, surveys, focus groups, charrette exercises, benchmarking and other data collection strategies used with clients and stakeholders discuss the consumption, production and control of energy, resources and waste throughout the project in regard to environmental sustainability.
D. Pre/Post Design Services
Tasks intended to measure success of the design solution by implementing various means of data collection, such as occupant surveys, focus groups, walkthroughs, or stakeholder meetings seek to understand the environmental impacts of the consumption, production and control of energy, resources and waste throughout the project.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies consider the consumption, production and control of energy, resources and waste throughout the project prioritizing principles of a Circular Economy and other environmental standards and concepts where possible.
A. Project Management
Management of budget, contracts, staffing, resources, etc., considers the consumption, production and control of energy, resources and waste throughout the project in regard to environmental sustainability such as working with professionals with LEED or other sustainability credentials and utilizing local services for construction waste management.
I. Coordination
Placement, style and finish of mechanical, electrical, plumbing, and fire-protection devices, fixtures, ceiling materials and heights, interior partition locations, acoustical appropriateness of spatial arrangements, construction, and finish materials consider the consumption, production and control of energy, resources and waste throughout the project prioritizing principles of a Circular Economy and other environmental standards and concepts where possible.
E. Existing Conditions
Evaluate, assess, and document existing conditions of the interior environment that relate to how to support the user's sense of place through encouraging healthy lifestyles, safety, acceptance, comfort, and opportunity to find purpose.
D. Pre/Post Design Services
Tasks intended to measure success of the design solution by implementing various means of data collection, such as occupant surveys, focus groups, walkthroughs, or stakeholder meetings seek to understand how to support the user's sense of place through encouraging healthy lifestyles, safety, acceptance, comfort, and opportunity to find purpose.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies respect and attempt to support the user's sense of place; creating opportunities for comfort and safety, supporting health, providing equitable feelings of belonging, etc.
F. Conceptualization
Using creative and innovative thinking, interpret collected project data and translate a unique image or abstract idea as a design concept, the foundation of a design solution, that supports the user's sense of place through encouraging healthy lifestyles, safety, acceptance, comfort, and opportunity to find purpose.
E. Existing Conditions
Evaluate, assess, and document existing conditions of the interior environment that relate to the potential flexibility and adaptability of the project for both current and future use, considering ease of maintenance, user customization, retrofit for renewable energy systems, etc.
D. Pre/Post Design Services
Tasks intended to measure success of the design solution by implementing various means of data collection, such as occupant surveys, focus groups, walkthroughs, or stakeholder meetings seek to understand how the project can be flexible and adaptable for the future use and ongoing maintenance.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies consider the flexibility and adaptability of the project for both current and future use, by prioritizing ease of maintenance, durability, variety of uses, etc.
F. Conceptualization
Using creative and innovative thinking, interpret collected project data and translate a unique image or abstract idea as a design concept, the foundation of a design solution, that considers the flexibility and adaptability of the project for both current and future use.
D. Pre/Post Design Services
Tasks intended to measure success of the design solution by implementing various means of data collection, such as occupant surveys, focus groups, walkthroughs, or stakeholder meetings seek to understand how the project can be flexible and adaptable for the future use and ongoing maintenance.
G. Selections & Materiality
Selection of interior building products, materials, and finishes; furniture, furnishings, equipment, and casework; signage; window treatments, and other non-structural/non-seismic interior elements, components, and assemblies are focused on longevity, support moisture management, and are durable, easy to clean, replace and maintain.
A. Project Management
Management of budget, contracts, staffing, resources, etc., minimizes negative impacts on the future impacts of the project on the surrounding community and local economy.
I. Coordination
Placement, style and finish of mechanical, electrical, plumbing, and fire-protection devices, fixtures, ceiling materials and heights, interior partition locations, acoustical appropriateness of spatial arrangements, construction, and finish materials consider the longevity of the project such as monitoring and measuring of systems, metering, designing for ease of maintenance, and airtightness and affordability controls.
Number of References in the Data
0-5
5-10
10-15
15-20
20+
INTERIOR DESIGN
Phases per CIDQ (2013)

Figure 2

Framework to Guide Eco-Cultural Interior Design: Reconceptualizing the Relationship Between the Categories of Eco-Cultural Interior Design and the Phases of Interior Design

Each phase is given a letter designation to more clearly show which phases are included and left out. Based on the conversations, the phases where interior designers appear to have the most impact on eco-cultural interior design, especially in the context of adaptive reuse, are the pre-design phases such as existing conditions, data collection, pre and post design services, as well as selections and materiality as this is where they are most involved. This supports the importance of including interior designers early in the design process for adaptive reuse projects. In addition, it suggests the framework can be most successful when used in the early phases and throughout the design process to guide and provoke critical thinking, rather than as an assessment tool or building rating system, echoing what was mentioned in the interviews. The color grading of the eco-cultural categories, illustrating the interest and efforts of participants in each, shows that the profession is already advocating for and interested in aspects of eco-cultural design despite their lack of familiarity with the term, and were especially interested in aspects related to cultural sustainability such as the community relationships and cultural and perceptual categories.

The Framework to Guide Eco-Cultural Interior Design can help to simplify the complexities of the concepts of culture and context and the importance of considering these unique aspects to preserve and support a community. It pushes interior designers to think about how to address aspects of sense of place, storytelling, culture, diversity, equity, inclusion, and justice and illustrates which phases of the design process they may have success in doing so. The framework can also provide a model for communicating with clients the return on investment and value of adaptive reuse in not only the economic and environmental dimensions of sustainability, but the social and cultural as well, as described by Par9:

> “I think for designers, the way that design guidelines or assessment systems help us the most is in giving us the framework to speak with our clients and to sort of hold all of that complexity together at once,” Par9

This framework reconceptualizing the relationship between an interior designer’s role and the aspects of eco-cultural design can help to guide eco-cultural interior design in practice and justifies the need to involve interior designers in adaptive reuse projects throughout the design process.

Limitations and Future Directions

Overall, interior designers and architects in the population interviewed are making an effort in the social and cultural dimensions of sustainability in the industry. All participants recognized the importance of it, and while not always being able to define certain terms, are still incorporating aspects of these ideas into their designs. Some participants believe interior designers and architects may not have the power to make socio-cultural change on a large scale using a framework like the one proposed in this study, since developers, landowners, and jurisdictions may have more leverage on the urban environment. However, many believe that anything that can help guide the conversation with clients and convince them to make more sustainable decisions has value and is needed. It can be especially helpful in the early phases during visioning sessions to create the story and goals for the project going forward. Interior designers are already advocating for eco-cultural design; however, they are lacking a consistent language and shared understanding of the concept, and would therefore, benefit from a framework that links eco-cultural design to their roles and responsibilities as interior designers and pushes them to think critically about their work.

It is important to note the potential limitations of this research. Some might view the sample size as small, as the data represents a fraction of the population. However, since this study intends to focus on the experience of interior designers with adaptive reuse and sustainability, the purposeful sample selection was focused on those aspects. There was difficulty finding interior designers with specific adaptive reuse experience, which pushed for the inclusion of architects who fit the criteria. Additionally, the participant's experiences may be influenced by where, when, and how they have practiced. For example, respondents' experiences are impacted by different cities, jurisdictions, years of experiences, and dynamics of different firms, as well as differing expectations for the participant's roles and responsibilities.

This study intends to understand the lived experiences of the participants, and therefore, the findings are not intended to be generalized.

From this research, the investigators hope to understand how eco-cultural design can be connected to interior design and adaptive reuse and provide a framework that can inform the creation of a more comprehensive design guideline. Different building certification systems and guidelines are continually evolving, and new ones may be developed that address more aspects of social and cultural sustainability and should therefore be investigated to better flush-out the proposed framework. In addition, more research can be done with communities to investigate the local opinions regarding eco-cultural design and its impacts on the project's surrounding area. As our urban environment continues to develop and change, and as issues of diversity, equity, inclusion, and justice continue to gain more focus, there is a need to bridge the efforts and beliefs of the design industry with the desires of clients and community. Holistic solutions that are more sensitive to the culture of a community are the desired outcome.

This study focused on the current understanding and efforts of the architecture and interior design industry related to cultural sustainability and adaptive reuse, and interior design. The Framework to Guide Eco-Cultural Interior Design developed from this study aims to answer the need for a better way to understand and communicate the value of eco cultural design and the involvement interior designers in adaptive reuse. However, findings from this study also suggest the need to further research and understand the accessibility of existing and new building certification systems that are starting to cover cultural aspects of sustainability, and how they can be better understood by interior designers, architects, and their clients. There was a general desire from participants to learn more about eco-cultural design and incorporating more aspects of equity, diversity and inclusion into their work and therefore, more educational resources should be developed regarding eco-cultural sustainability, ESG and DEIJ principles for professionals to use in the industry. When thinking about aspects of cultural sustainability in the built environment, it is crucial to consider equity and the unintended consequences that may

emerge and using a framework to guide eco-cultural interior design in practice can help to critically think through the many associated complexities.

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APPENDIX A: INTERVIEW QUESTIONNAIRE

Guided by Conceptual Framework

1. General info and background about the designer
    a. Can you tell me about your experience as an interior designer at the intersection of sustainability and adaptive reuse?
    b. What is your understanding of the different pillars of sustainability?
    c. Have you heard of the concept of eco-cultural design?

2. Process of adaptive reuse projects
    a. How are you involved in the site selection of adaptive reuse projects? Do you have input on whether the project is a new build or reuse?
    b. Can you tell me about your overall experience with and involvement with the design process for adaptive reuse projects?
    c. Are there any project examples that come to mind that support your thoughts and experiences?
        i. Is there any information about these projects published online? Or are you able to provide me with further information?

3. Understanding their use of assessment tools/building certification systems
    a. Does your team utilize tools such as LEED and WELL?
        i. Do you feel these are sufficient?
        ii. What, if anything, do you believe is lacking?

4. Eco-Cultural Design Assessment Tool for Interior Designers
    a. Do you have initial thoughts about this tool/idea and categories?
    b. What is missing?
    c. What components are not necessary?
    d. Are there any other errors or problems that need to be addressed?
    e. What, if anything, did you like about the tool, and what did you dislike?
    f. Do you have any suggestions for how to improve the tool?
    g. Do you have anything else to say or add?

5. Snowball Sampling
    a. Are there any other interior designers that you can think of or know, that would be willing to provide insight into their experience as well?

APPENDIX B: IRB APPROVAL FORM

PROTOCOLS

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COLORADO STATE UNIVERSITY

The protocol listed below has been approved by the CSU IRB Determinations Fort Collins on Tuesday, May 24th 2022.

PI: Malinin, Laura H

Submission Type and ID: Initial 3361

Title: Eco-Cultural Sustainability Framework for Interior Design

Approval Date: Tuesday, May 24th 2022

Continuing Review Date: no date provided

Expiration Date: Sunday, May 23rd 2027

The CSU IRB (FWA0000647) has completed its review of protocol 3361 Eco-Cultural Sustainability Framework for Interior Design . In accordance with federal and state requirements, and policies established by the CSU IRB, the committee has approved this protocol under Exempt review.

Any additional comments regarding this approval are included below. If you have additional questions about this please contact RICRO IRB Staff.

Please note:

- This protocol will need to undergo Continuing Review and approval prior to no date provided.
- Any additional changes to this approved protocol must be obtained prior to implementation of those changes, by submitting an amendment request to the CSU IRB for review/ approval.

Good luck in your research endeavors!

Initial exempt determination has been granted on May 24, 2022 to recruit with the approved recruitment and consent procedures. The above-referenced research activity has been reviewed and determined to meet exempt review by the Institutional Review Board under exempt §46.104(d)(2)(ii) of the 2018 Requirements. This study is unfunded.

Attachments

Data Management Plan	Data Management Plan.pdf	Data Management Plan
Methodology Section	Methodology Details.docx	Methodology Information
Recruitment Materials	IRB_EmailRecruitment_EcoCultural.docx	Email Recruitment
Consent	Verbal Recruitment Consent_Eco-Cultural (1).doc	Verbal Recruitment / Consent