

# Redefining Heritage and Cultural Preservation through Design: A Framework for Experience Design

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The recent attention towards cultural preservation and heritage studies has positioned design to redefine cultural experiences in the contemporary context. Against this backdrop, design is marked by an ability to transform and revitalise cultural practices to change and alter perceptions, generate and disseminate knowledge, and create new value through the curation of experience. A case-study on temple architecture in Tamil Nadu, India presents the tensions posed by globalisation to discuss and explore the development of design tools, evaluation of the design process, and the creation of a design-based framework for intangible culture and heritage. This paper introduces a future mode for designing cultural experiences through community engagement by identifying four key design principles guiding the preservation and sustainability of endangered cultural traditions, practices, and spaces.

**Keywords:** *intangible culture, heritage preservation, cultural experience, community engagement, sustainable culture*

## 1 Introduction

The changing role of designers, in areas such as interaction and experience design, has impacted the socio-cultural landscape by presenting a need to recognise the value of theoretical investigations in design and integrate the processes guiding the creation of knowledge. As outlined by Buchanan (1999), the focus on material and human systems provides a space for design in previously unexplored areas. These investigations allow designers to drive socio-cultural innovation by connecting knowledge from various specialisations and creating new frameworks in support of positive cultural change.

Against this backdrop of change and the challenges presented by future uncertainty, the design response is to position designers within historical contexts to investigate areas such as heritage and sustainable culture. This not only opens up new avenues to solve complex cultural problems but legitimises the role of design through the development and testing of culture-based design frameworks. The inherent interdisciplinarity of design encourages collaborative processes across different disciplines, efficiently breaking down hierarchical or expert-driven ways of ideation and decision making to facilitate the emergence of cultural discourses through modes of human-centric, creative problem-solving.

Design is the ability to respond and continually adapt to socio-cultural issues, keeping in mind the rapid pace at which discourse is generated and shared. This research presents a tactical inquiry for identifying a space for design within the field of heritage preservation and to test the possibility of conceptualising tools and frameworks that could potentially aid the creation of sustainable culture. Within the scope of this study, the role of design is further explored through a case-study of temple heritage in Tamil Nadu, India. Following a literature review to highlight the gaps in the historical and heritage studies of design, this paper provides insights around the perceptions and discourses surrounding cultural heritage within the region. Directions for future research and practice in sustainable heritage design are introduced by:

1. Discussing the concepts framing the need for more robust and resilient approaches to cultural heritage studies.
2. Presenting a case-study involving temple architecture in Tamil Nadu to construct design-led methods and tools for heritage preservation.
3. Reviewing a framework for sustainable heritage and culture.

## **2 Background of Study**

In recent years, developmental pressures arising from urbanisation and industrialisation have been seen as a major threat to the declining local heritage in Tamil Nadu, India. The state's focus on portraying success through new infrastructure facilities such as highways, airports, telecommunication networks, etc, has caused a certain level of fragility amongst the local population, with lasting effects on their cultural identity and value (Nitzky, 2012). There is, therefore, a growing need for stability as well as sustainability in the field of heritage preservation. This cultural revitalization can only be achieved by negotiating new strategies and introducing new design techniques or tools that take into consideration the past, present and future landscapes.

### **2.1 Monumentalisation versus Functionality**

Whilst most of the projects involving heritage preservation take on interdisciplinary approaches, one critical dilemma that continues to plague these heritage studies is the choice between retaining its original functionality or representing the space as a 'monument' (Kuipers, 2017, p.17). In many cases, this poses a critical predicament and the indecisiveness leads to loss of valuable age-old heritage that defines the identity of many subcultures. The only way to negotiate these complexities is to bring in new concepts of research and problem-solving that can identify definite patterns, relationships and the attributes that contribute to meaning-making within the minds of the stakeholders, as well as the local community (Dorst, 2015). This is where the role of design begins to manifest itself. Other than identifying common themes through research, it also provides the gateway to conceptualise new tools that solve these critical conflicts, while concurrently reiterating the need for design-based reasoning within the field of preservation.

### **2.2 Economic Viability**

One important facet of this renegotiation is the economic viability of these spaces. Ensuring monetary value not only safeguards these spaces but also ensures sustainability by maintaining its relevance and positioning itself within the sphere of developmentalism (Kuipers, 2017). This socio-economic revival requires a careful understanding of the existing modes of heritage interactions and its associated discourses. In most cases, the consumption continues to be passive, especially in remote areas, relying predominantly on sources such as complex texts, academic literature and videos. In a fast-paced information economy, this practice drives away critical audiences, thereby degrading the cultural

value and consequently the economic benefits. Here, design practice plays a crucial role in providing new and improved tools and technologies that could not only make these spaces relevant for the future generations but also bring in tourism welfare (Dollani et al., 2016).

### **2.3 Visuality and Materiality of Heritage**

The conceptualisation of these tools, while it may lead to the resolution of these conflicts, requires an acute understanding of visual culture. In a study by Watson and Waterton (2010), the power of the visual and its significance in cultural heritage is dissected. The materiality of heritage, as they describe it, lies in the objects or artefacts that are selected, beautified and represented, for the purpose of representing a collective identity. During this process, it becomes essential for the curator to understand the participant as an “active subject” and not a “passive on-looker” (Watson et al., 2010., p.85). Therein lies yet another challenge in the form of visibility. The predominantly expert driven field relies on depicting conventional heritage narratives without conscious selection and representation for the enjoyment of the multicultural audiences. This lack of reconstruction or curation of heritage narratives undermines its cultural significance and diverts attention away from its primary role of identity making. Together, this materiality and visibility requires active design interventions that reimagine the ways in which heritage is consumed. This will not only help to mediate favourable discourses but also bring in the element of sustenance to the heritage by the way of meaning-making and realisation of value.

Within the scope of temple architecture in Tamil Nadu, the application of this theory must be supplemented by the careful comprehension of the current contemporary context. Currently the participants ignore the beauty passively, leading to a partial separation of the physical form and elements of iconography. In her attempt to deconstruct this confrontation, Stella Kramrisch emphasises the importance of the underlying concepts and semiotics that are projected in the anthropomorphic images sculpted on the walls. She says that a participant who is uninformed of these meanings can never fully appreciate its distinctive artistic forms (Kramrisch, 1987). Hence the creation of timelessness requires the researcher to understand and communicate favourably, the semiotics embedded within the iconography. This negotiation not only strengthens the curatorial role of the designer but also holds the additional responsibility of building a community that is sensitized towards the need for preservation of these spaces (Stuedahl et al., 2021).

## 2.4 Heritage Preservation and Design

A glaring gap within the context of heritage preservation in Tamil Nadu is the definition of design as being limited to its specialised branches such as graphic, architectural, etc. (Margolin, 1989), leading to restricted and unsatisfactory perceptions towards the ongoing efforts of local heritage enthusiasts. Buchanan (1999, p.5-8), in deconstructing the old and new learning, stated that the definition of the designer's role is inadequate especially when they tackle difficult problems using the knowledge at their disposal. Keeping this in mind, it can be said that the lack of collaborative and integrative action between designers and other specialisations functioning around temple preservation accounts for the inability to solve the complexity of heritage related problems.

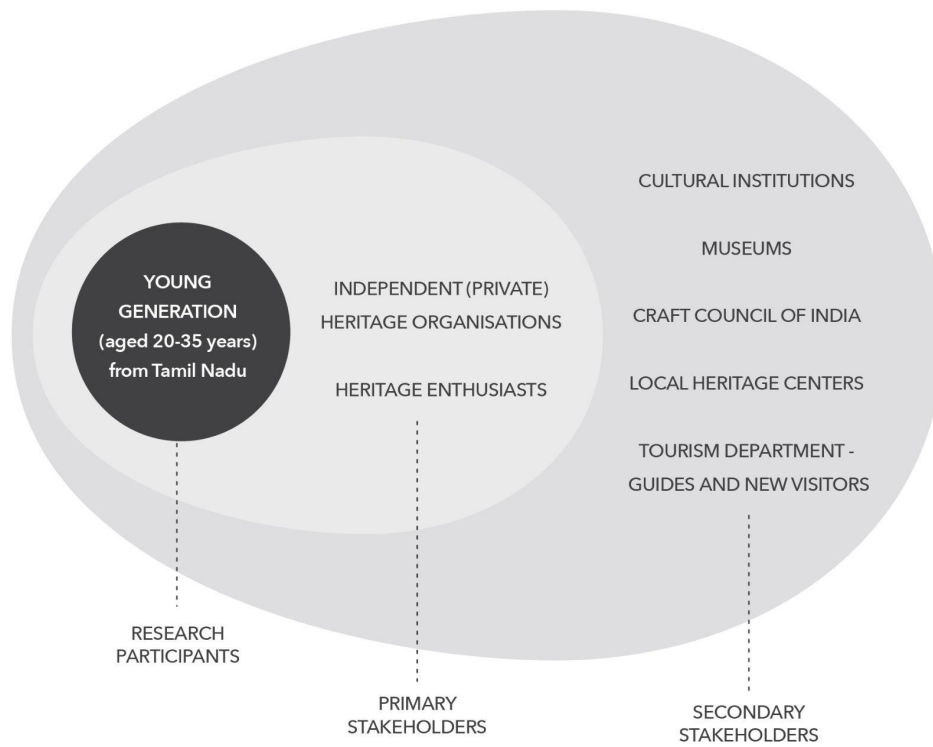
Moreover, the involvement of multiple disciplines and perspectives provides alternative ways of understanding a subject (Dykes et al., 2009). This new way of working ensures that the design intervention embodies all the essential properties, expertise and knowledge required to redefine experiences. Consequently, this not only becomes a solution that tackles the paradoxes, it also allows for redefining the role of the designer in the current ecosystem. A designer is no longer just involved in the practice of designing products but takes on a larger role of curating and facilitating the discourses that can enable the creation of a sustainable culture (Krippendorf, 1998).

## 3 Case-Study: Temple Heritage Experiences in Tamil Nadu

The temple architecture of 'Gangaikonda Cholapuram' was selected as the site of this study, where the existence of pluralistic cultures in Southern India can be traced back to its colonial past and loosely signifies the birth of 'modernity' in Tamil Nadu. David Washbrook (2009, p.126), in his study of modernity in this region, describes the complexity that arose from this borrowing and adapting from Western contexts. He states that the ideas that have been identified as modern and selectively borrowed threaten the meaning and integrity of the traditions, leading to an urgent need for recovery (Washbrook, 2009, p.127-128).

In addition, the need for representing 'development' externally has gradually led to an overshadowing of heritage related matters (Khilnani, 2007). Consequently, this has caused a degeneration of heritage and degradation of cultural identity, which is particularly noticeable in the younger generations. Coomaraswamy (1985), in his Essays in the *Dance of Shiva*, predicted this social change. He claimed that the existing ideologies will only focus on progress that's suitable for political power. Hence, the survival of art and heritage lies in the hands of the local communities, where some remnants of connection with cultural heritage can still be seen.

Additionally, the prevailing language that surrounds the discourse concentrates on ensuring the survival of the older traditional concepts only, especially with relation to iconography and symbolism. This approach is shaped by stakeholders (private cultural institutions, Non-Governmental Organisations and independent heritage enthusiasts), whose interest lies in monumentalisation for preservation and the older generations (50 - 70 years) who are engrossed in the sanctity of the spaces (Branfoot, 2013). This is why the scope and its reach is limited and it further reiterates the need for a different approach that relies on collaborative processes for reconstructing the ecosystem. This study, therefore, serves as an exploration into determining the role of design and, in the process, increasing its relevance and positioning it within the spectrum of building sustainable culture.



*Figure 1. Map of primary and secondary stakeholders in the study*

### 3.1 Research Methodology

The cultural complexity of Tamil Nadu is further complicated by factors such as religious sentiments, socio-political realities, and contemporary ideologies. Therefore, to expand the scope of design knowledge in a relatively untapped domain, qualitative research methods were required to gain insights into the problem space and develop a stronger understanding of perceptions around temple architecture.

The research methods were selected based on two areas of focus through virtual and digital tools as outlined in Table 1, where the studies were conducted remotely due to the Covid-19 pandemic. Study 1 involved a culture probe and in-depth interviews to understand the perceptions of users and scope of research. This was followed by Study 2, where prototypes were developed and tested to improve user engagement and impact through design.

Table 1 Research Tools & Methods

	FOCUS OF STUDY	DATA COLLECTION TOOL	RESEARCH METHODS
1.	Understanding perceptions and identifying gaps in research	ONLINE PROBE KIT	<p>CULTURE PROBE (sculpture key + virtual tour)</p> <p>IN-DEPTH INTERVIEWS (post-activity with participants)</p>
2.	Analysing design outcome for impact and engagement	PROTOTYPE TESTING (1, 2 & 3)	<p>QUESTIONNAIRES</p> <p>QUALITATIVE CONTENT ANALYSIS</p>

### 3.1.1 Study 1: Understanding Perceptions and Identifying Gaps

#### Culture Probe

In order to obtain inspirational responses that could be directed towards design development, an online probe kit was designed along with a virtual tour, sculpture key, and an activity sheet. The participants were asked to observe, explore, and reflect on the experience and then articulate their emotions and thoughts. This was conducted primarily to ensure that the design outcome remains grounded in social realities, and thereby eliminate any biases or preconceptions by the researcher.

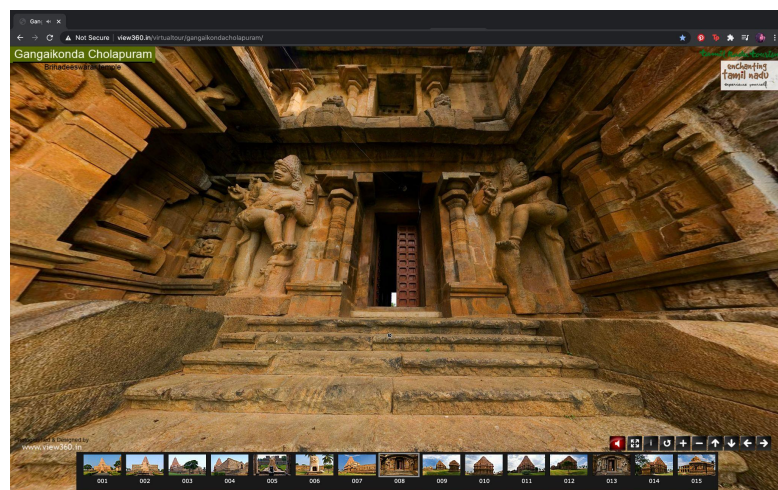


Figure 2. Probe kit 1- Virtual tour of Gangai Konda Cholapuram



Figure 3. Probe kit 2 - Sculpture key with classification of the iconography

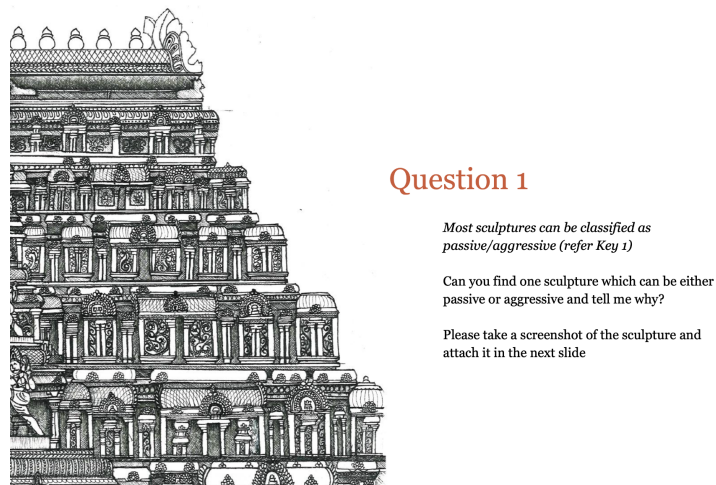


Figure 4. Probe kit 3 - Activity sheet with open-ended questions for participants

Within the context of Tamil Nadu, the knowledge associated with temples is expert-driven and culturally sensitive. Consequently, to prevent any participant biases or performance anxiety, the participants had to be reassured that any and all responses were acceptable and useful; and were given enough time to engage with the probe kit (Muratovski, 2016).

### In-Depth Interviews

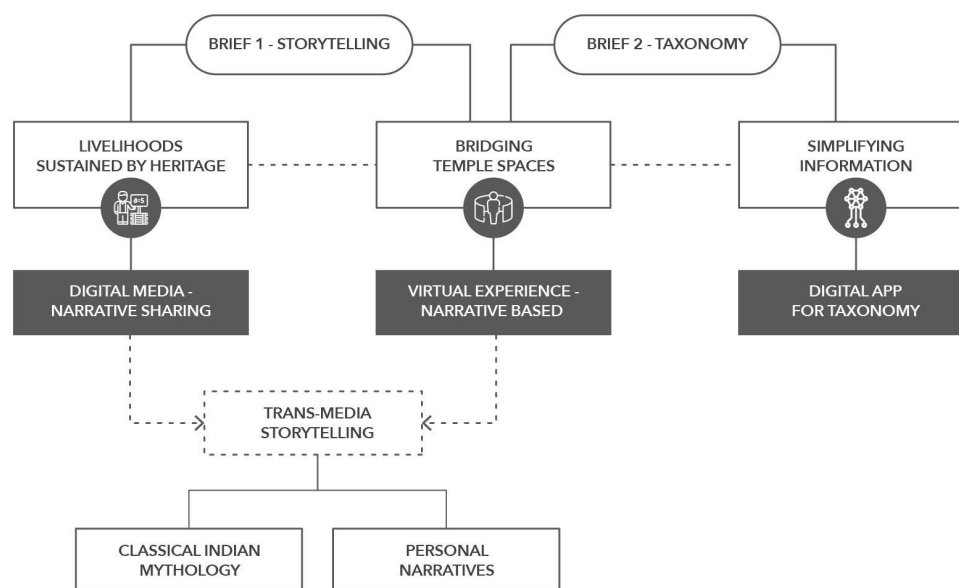
As the data collection was conducted remotely and away from the context of study, it was essential to compensate for the lack of real-time observations or field notes by the researcher. Hence, in-depth interviews were conducted with participants who had completed their culture probe, and were willing to engage in casual conversation about their experience with the probe kit. The interviews allowed the participants to think, reflect, and share but also provided a clear understanding of their motivations, emotions, and attitude towards temple spaces and new experiences.

### 3.1.2 Study 2: Analysing Design Outcome for Impact and Engagement

#### Prototyping for Design Research

While explaining the fourth order of design, comprising environments and systems, Buchanan (1999, p.12) clarified the role of systems thinking today. He said, in the contemporary world, “The focus is no longer on material systems - systems of “things” - but on human systems, the integration of information, physical artefacts, and interactions in environments of living, working, playing and learning”. The ideal way to design these new norms of temple experiences, therefore, rested on making and testing prototypes, inside the social and cultural environment within which the research was situated. (Buchanan, 1999). Keeping in mind the insights from the first part of the study, three tools were designed to simplify complex semiotics, cultivate interest in temple spaces, and investigate the creation of value.

For the research to generate knowledge, it required some form of design activity which, in this case, led to the development of prototypes staying true to the inherent attributes of the designer to solve a problem by synthesis (Cross, 1999). The conceptualisation and realisation of these new tools began with two design briefs, each of which focused on a set design approach through storytelling and the building of a design taxonomy. Cumulatively, both approaches were aimed towards evoking a favourable response from the participant’s interaction with the temple space, specifically the ancient temple of ‘Gangaikonda Cholapuram’ in Tamil Nadu (Fig 1).



*Figure 5. Approaches to developing the Design Tools and Prototypes*

The first approach utilised storytelling, as stories have been an integral part of India's cultural heritage. Epic tales, such as *Mahabharata* and *Ramayana*, have become a medium to share the morals, values and beliefs embodied by the local culture and the age-old association with storytelling was harnessed and used as vehicles of inquiry in research (Lupton, 2017). To ensure the effectiveness of communication, multiple channels were used systematically to contribute towards a different aspect of the storytelling experience (Schiller, 2018).

**Prototype 1** involved the design of a holistic 360-degree virtual experience demonstration, where the mythological stories sculpted on the walls of the 'Gangaikonda Cholapuram' were shared using recorded sound, narration, music and visuals. Each of these digitized elements were chosen in such a way to create a sense of drama, convey an emotion, and evoke a pleasurable memory while simulating the temple space. User experiences were analysed and used for the planning of optimal, interactive temple experiences in the future.

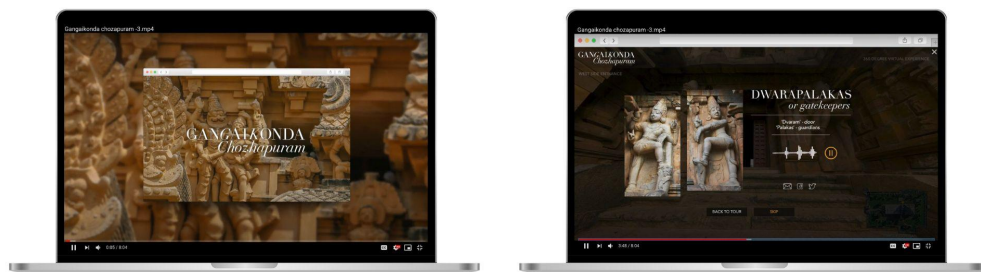


Figure 6. Prototype 1: Simulation of Virtual Experience

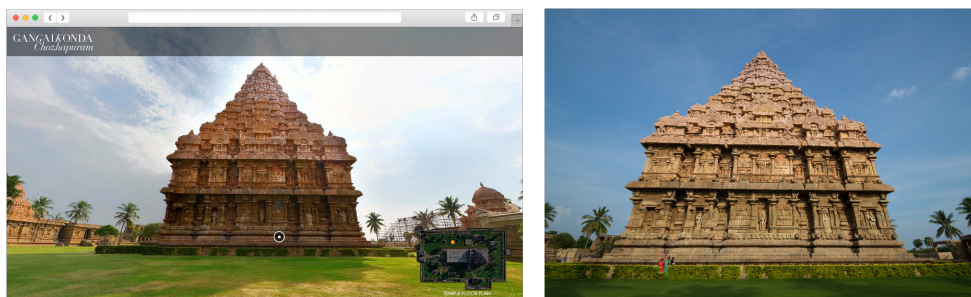


Figure 7. Comparison of the Simulation (left) and actual temple site (right)

**Prototype 2** was the design of a website specifically oriented towards educating the participants to the living realities of temple heritage today. It focused on telling the personal narratives of the people who run their businesses in and around the temple areas, indicatively sharing their daily activities and touching upon the harsh effects of the pandemic. The implicit

aim was to remind the participants that these spaces continue to hold relevance and deep value for the often-ignored sections of society. As part of the design process, these stories were collected and rewritten to evoke emotional responses from the participants, whilst ensuring authenticity of the content.

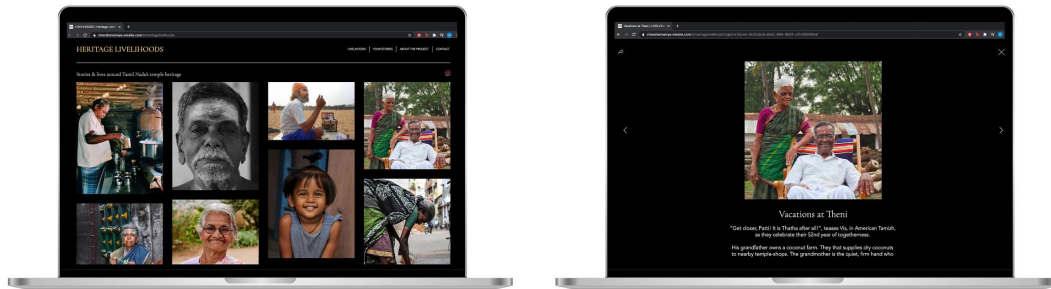


Figure 8. Prototype 2: Stories of livelihoods sustained by heritage

**Prototype 3** was the development of a taxonomy that dealt with the classification of information to make the temple experience more accessible and favourable for the user. In this case, the taxonomy design was based on the elements in iconography, specifically the semiotics. The source for this simplification was derived partly from the archeological analysis by R Nagaswamy (1970) in his book *Gangikondacholapuram* and the four volumes of TA Gopinath Rao's (1916) *Elements of Hindu Iconography*. The two broad categories were the sculptural elements and the anthropomorphic figures.

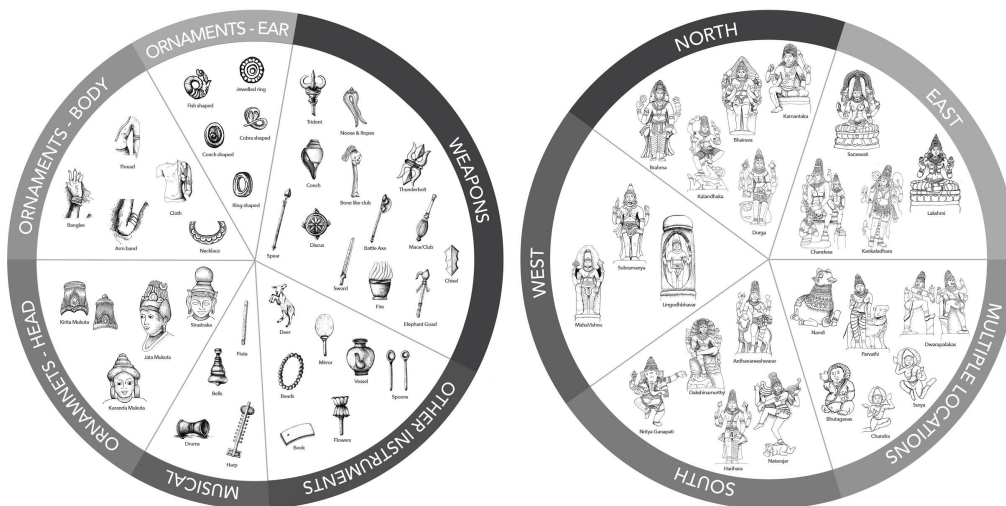
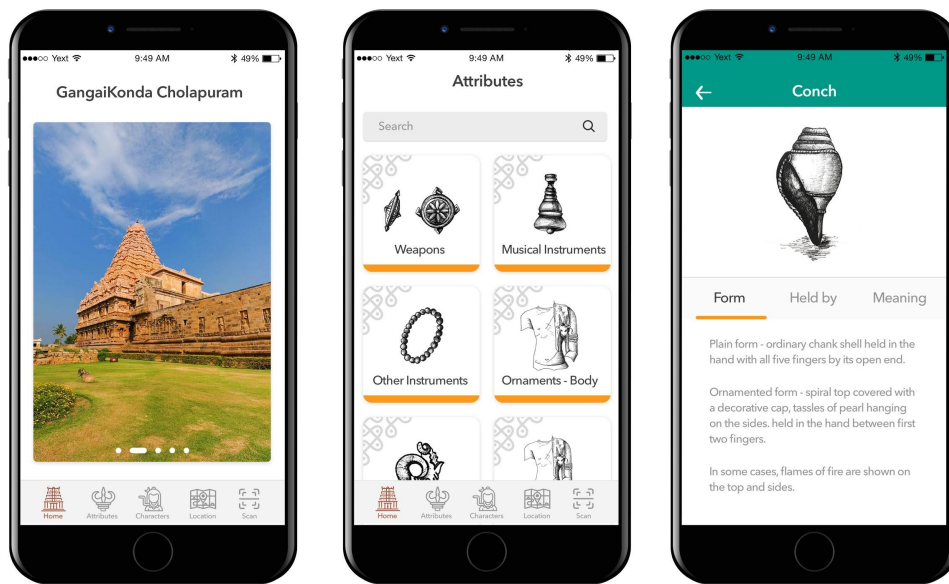


Figure 9. Taxonomy of Iconography: Sculptural Elements (left) & Figures (right)

This taxonomy was implemented and digitised in the form of a digital application, which could be used on-site as well as virtually, to break down and understand the symbolism of the iconography. For each element, three categories of information were chosen. The focus, in this tool, was to maintain simplicity in order to keep the participants interested in the content without restricting interactions with the physical space.



*Figure 10. Prototype 3: Digital App for Taxonomy*

The three prototypes aimed to satisfy different aspects of the entire temple experience by combining the use of technology, taxonomy and storytelling to increase engagement, meaning-making, reinforce identity, and ensure uninterrupted availability to evoke strong emotional responses. This not only reinforces the importance of design approaches but also gives us a brief idea of the effectiveness of interdisciplinary teams in driving change within a community.

#### Questionnaires for Feedback

To understand the mindset under which the participants test the prototypes, an online qualitative survey was shared to express their opinions about the design tools. The question followed an open-ended pattern to engage the participants in sharing thick descriptions of their experiences rather than direct answers. Firstly, this format provided the participants with a degree of freedom and also helped them articulate their own narratives and memories (Atkinson, 2017). Secondly, it also helped the researcher to gather abundant information about the value held by the temple spaces and the experiences that drive meaning-making. By the end of the survey, qualitative content analysis was used to uncover any recurrent themes or patterns in their responses. This tool not only simplified the complexity of this pluralistic culture but also aided the understanding of contemporary interactions with traditional systems.

Table 2 Detailed process of the case study

STAGE OF STUDY	ACTION	TOOLS USED
UNDERSTANDING THE CONTEXT OF STUDY	Informal interactions and observations with primary stakeholders and audiences in Tamil Nadu	Unstructured interviews, preliminary culture probe
IDENTIFYING PERCEPTIONS AND GAPS IN RESEARCH	Remote Residency and Mentorship with stakeholders from private heritage organisation based in Tamil Nadu  Understanding and engagement with temple spaces by researcher	Literature review,  Virtual tours,  Observations from interactions
IMMERSION IN CONTEXT	Interaction and engagement of researcher with preliminary participants between the age group of 20-35 years  Culmination of initial insights	Culture Probe,  In-depth interviews,  Qualitative content analysis
PROTOTYPING FOR RESEARCH	Initiating contact and finalising a community of collaborators for designing and curating the prototypes  Negotiating paradoxes and conceptualising 'built environment' and new temple experiences  Designed prototypes 1,2 & 3	<i>Remote tools for communication with co-designers based within the context of study (Tamil Nadu)</i>
PROTOTYPE TESTING	First round of testing with new participants and participants from the culture probe (10 nos)  Iterations to prototypes 1,2 & 3 based on initial feedback	Questionnaires  <i>(Promotion and participant sourcing using social media tools - Instagram, Facebook and LinkedIn)</i>
	Final testing with 60 participants within the above mentioned age group	
FRAMEWORK FOR EXPERIENCE DESIGN	Analysing and coding responses based on values, attitudes and beliefs	Qualitative content analysis
	Development of a transferable framework for redesigned heritage experiences in endangered areas	

## 3.2 Key Insights

### Skepticism Arising from Low Awareness

From the earlier stages of initiating conversation with the researcher, the participants felt the need to reiterate their apparent lack of knowledge about the spaces. The causes for this can be attributed to the nature of the field, the inadequate education of the community regarding their own heritage or the ill-equipped systems and lack of tools guiding the dissemination of knowledge.

### Redefined Value of Heritage in the Context of Covid-19

The most significant insight was the redefined meaning of temple spaces as an offset of the global pandemic. On a normal day, the spatial features in the architecture are available for the participants to touch, feel and explore; an act that is usually supplemented by social interactions. During the period when this study was conducted, access to these spaces were terminated indefinitely and, in many ways, this prompted some of the participants to reflect on the impact that these temples have had in their lives before the pandemic. The probe exploration, though only virtual, brought out feelings of yearning and desire in the minds of the participants. Some also went one step further and revealed that the experience of the activity uncovered a sense of protection and ease of finally feeling 'at home'. The research emphasised the magnified value of heritage during a period of crisis while clarifying the implicit role that the temple architecture has played in their daily lives.

### Active Engagement with Temple Spaces

The idea of using an activity as a tool to explore and learn about the temple space was fairly transformative and kept the participants engaged. This could be because of the noticeable shift from passive to active consumption of heritage. In this fast-paced information economy, the participants were more eager to learn under conditions that promoted engagement and interaction with the temple. The activity gave them a revitalized approach to understand a space that had played an unstated role in their socio-cultural life. Simultaneously, this also helped to legitimize those aspects of the temple architecture (artistic, historic or iconographic) which could potentially help to mould a favourable heritage discourse and act as a catalyst for redefining experiences.

## 4 Development of Framework

Dorst (2015, p.74) investigates the process of developing frameworks to clarify complex problems through "universals", which describe the key factors that dictate the problem situation. He says that these universals exist implicitly and need to be filtered and extracted during the researcher's immersion in the context, for one to build the core themes surrounding the design research.

### 4.1 Emergent Themes of Research

Using Dorst's model, the research can be framed within the following core themes:

1. **Virtual/Digital Spaces** - presenting traditional information through non-traditional media (tech-based) for *increased availability and access*
2. **Narrative Building** - communicating the narratives in these spaces for *improved interaction and engagement*
3. **Knowledge Levels** - sharing relevant and simplified information about these spaces to the community for *reinforced cultural identity*

4. **Emotional Connection** - using the above-mentioned themes collectively to build on the fluctuating connection, *for enhanced meaning and value*

#### ***Virtual and Digital Spaces for increased availability and access***

Introducing contemporary media in traditional settings provides an ideal method for engaging younger audiences with endangered cultural heritage. Using relevant and relatable information, the design of virtual and digital spaces allows for a more ubiquitous outcome that enhances accessibility to temple spaces.

The need for alternative experiences was particularly evident during the unforeseen circumstances brought on by Covid-19. A pattern, which emerged as a consequence of this pandemic, was the integration of virtual spaces in maintaining engagement. This was magnified even more in the case of heritage spaces, considering that they hold a certain level of importance in building the identity of a community. Evidently, the provision of this virtual access not only strives to ensure the availability of information during times of crises but also fulfills the need to connect with elements that determine their sense of identity and community. It is also foreseen that the efficient integration of virtual spaces can be used to enhance and complement on-site visits, further supporting the creation of sustainable experiences and participation in heritage sites.

#### ***Narrative Building for interaction and engagement***

To ensure the effectiveness of virtual spaces, the designer must consciously exercise his or her role as a curator. While the museums have the option of rotation and selectively showcasing certain artefacts during specific times, temple heritage poses a slightly different dispute. The existence of the tangible and intangible aspects in unison within the pre-designed space, gives the designer the responsibility of prioritising those symbols and things that can bring forth a favourable discourse (Watson et al., 2010). It is, therefore, an urgent necessity to introduce heritage narratives that promote active learning and provide new avenues of engaging with the spaces, thereby transforming perspectives (Stuedahl et al., 2021).

#### ***Knowledge Levels for reinforced identity***

It is fairly explicit that the state of preservation and sustainability of culture is impacted heavily by the levels of cultural education of the community. Furthermore, dissemination of knowledge (other than the narratives) through collaborative activities not only stimulates the community that is closely connected to this heritage, but also the stakeholders that are involved in revival and preservation (Jerome, 2014). This also forms the defining theme for encouraging dialogue and driving bottom-up change.

#### ***Emotional Connection for meaning and value***

The insights from the culture probe proved that even though the participants have a narrow knowledge base about the importance of these heritage spaces, the value manifests itself emotionally rather than cognitively. Coomaraswamy in his essay on *Aesthetic Shock* explains this confrontational process with the artefact further. He uses the Pali word *Samvega* to “denote the shock or wonder that may be felt when the perception of a work of art becomes a serious experience” (Lipsey, 1977, p.179), where the work of art, together with the semiotic aspects, evokes two types of experiences in the participant - first is the emotional and the second is the cognitive. The first stage presents a sensation or connection that the user feels, whereas the second stage requires an understanding of the meaning behind the work. Hence, for the experience to reach a state of completeness, both stages need to be accounted for - the experience of the beauty and the knowledge behind it.

Although it can be postulated that the distance created by the pandemic may contribute towards different emotions, it is undeniable that there is a connection that exists between the participants and the spaces which trace back to earlier confrontations and physical interactions. Keeping these factors in mind, if the design is aimed at enhancing the meaning and value for these spaces, it is essential that it appeal to both the emotional and cognitive components of the user's experience.

## 4.2 Themes and Frames of Research

The themes and frames illustrated in Figure 6 show interdependencies that collectively function as potential properties that need to be embodied by the design. Together, these themes and frames should be employed in such a way to seamlessly integrate traditional elements within contemporary systems, leading to redefined interactions between participants and the temple spaces.

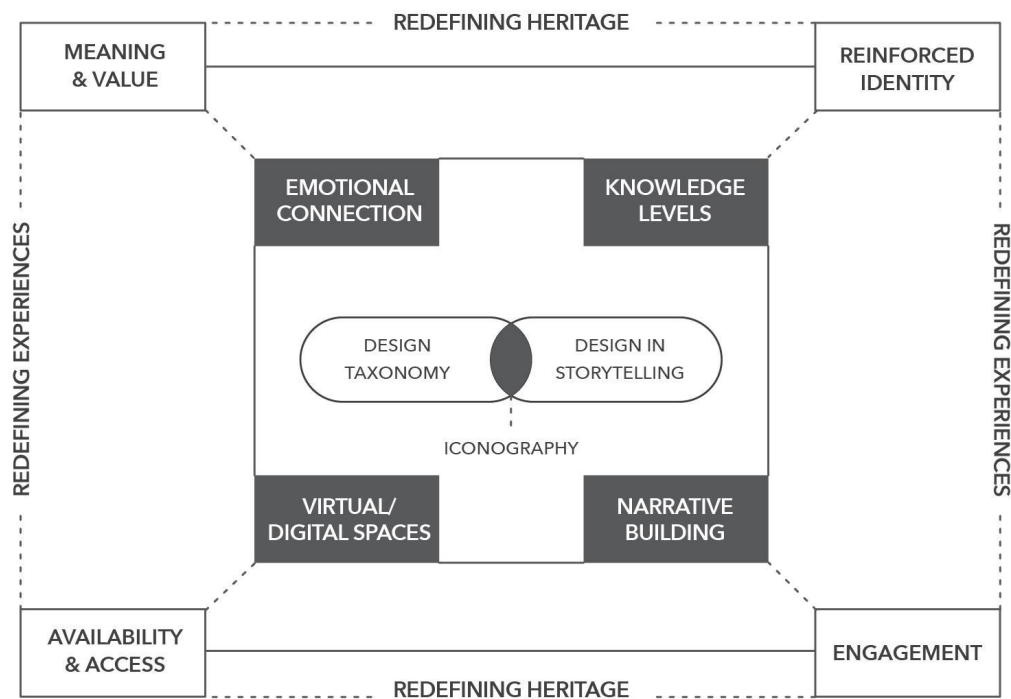


Figure 11. Framework of Cultural Preservation and Heritage

Even though this framework was designed specifically using the case study of temple heritage in Tamil Nadu, the themes discussed in the framework could be applicable in testing the integration of design in other endangered regions. This is primarily due to the universality of these concepts. The importance of (1) educating the community, (2) selecting the visuality of heritage, (3) ensuring ubiquity, and (4) maintaining engagement continue to be the principal gaps that need to be addressed in areas where there is a threat to local and ancient heritage. Its survival requires a need to integrate the element of sustainability, thereby facilitating the redefinition of what heritage could mean to the community. Undoubtedly, this requires the balancing of paradoxes in the environment which cannot

be done without the employment of design. Therefore, this framework provides the scope for researchers to test two important aspects:

1. The curatorial role of design in altering heritage experiences
2. The problem-solving role of design in ensuring sustainability

### 4.3 Design Principles in Sustaining Heritage

The insights and new experience paradigm bring into focus the scope for transferability and scalability of similar concepts in preservation, where heritage is endangered. This requires the researcher to extract those essential principles that govern the redesigned world, in the hope that it can be adapted to allow for creating cultures that are sustainable and timeless. Namely, this seamless alteration within a continually changing landscape requires the use of four major principles in the design process.

*Table 3 Design Principles essential for sustainable heritage and preservation*

PRINCIPLES	VARIATIONS	FOCUS
DESIGN APPROACH	TRANS-MEDIA STORYTELLING TAXONOMY	ENGAGEMENT Building interaction and engagement to drive familiarity with heritage
SENSORIAL STIMULI	SIGHT SOUND SMELL TOUCH	MEANING & VALUE Activating the role of memory and nostalgia
COGNITION	HISTORY SEMIOTICS	REINFORCED IDENTITY Facilitating the desire to learn more about their heritage
MODES OF EXPERIENCE	ON-SITE VIRTUAL	AVAILABILITY & ACCESS Sustaining access to spaces at all times and from all areas

**Design Approach**, as the first principle, lists trans-media storytelling and taxonomy as a means to achieve engagement within heritage studies. The pluralistic subcultures of Indian heritage rely on storytelling to translate and transfer intangible culture across generations, which can also be broadly applied to all forms of heritage across the global cultural landscape. Therefore, it becomes a universal design tool with the power to capture attention, alter perceptions and divert the discourse favourably to enhance engagement. The classification of information, through the building of a taxonomy, becomes vital from an Indian perspective when considering the abundant literature that is available today. This form of capturing and transferring cultural knowledge can be broadly applied to heritage preservation studies where symbols, attributes, and meanings can be semiotically presented to reinforce cultural experiences.

**Sensorial Stimuli** focuses on utilising the role of memory and nostalgia, using elements that trigger the senses. Irrespective of the context, the sensorial experience is vital for recalling and building connections with the local community. In this manner, the design of sensorial experience allows for the human experience to achieve meaningfulness.

**Cognition** is necessary for the user to understand why a particular heritage is of value and retains importance against the gamut of local culture. Here, semiotics and history become important factors as heritage is linked to symbolism and purpose, of which some manage to remain timeless while others continuously shift and change. Understanding these meanings not only revitalises the participants but also ensures that they remain curious and willing to participate in sustaining cultural traditions. This allows for the strengthening of cultural identity, both individually and collectively.

The final principle deals with **Modes of Experience**. In order for access to culture and heritage to become ubiquitous, especially during uncertain times, it becomes increasingly important to make these spaces open for interactivity through online and offline modes. Fortunately, new media provides different avenues to facilitate this process. Interactive tools designed for engagement and learning not only ensure sustainability but also break through barriers across different age groups, especially for generations that have become increasingly reliant on the consumption of information through technological mediums.

#### **4.4 Redefining Heritage and Cultural Preservation through Design**

The framework of cultural preservation and heritage has identified key design principles that impact and contribute to the formation of a new cultural ecosystem through community engagement, support and involvement. These implications add to the discourse of heritage studies, where emotional and cognitive needs are designed through developing new cultural experiences as a means to effectively capture, preserve, and transfer cultural traditions. Reinstating community emotions and values through the design of experience allows for the activation and revitalisation of endangered cultural heritage. As the value situates the heritage as a part of the participant's cultural identity, the concern evoked might drive them towards taking action (Stephen, 2015).

The designer is positioned to aid the transition of discourse from the individual participants to the community as a whole, as a means for driving bottom-up change. As the design discourse shifts from the outcome to the individual user and diffuses into the community, a collective benefit of enhanced value and reinforced identity is achieved (Buchanan, 1999). This notion of shared discourse not only helps in preservation but also drives the creation of new norms of heritage experiences that integrate tangible and intangible characteristics, aiding a process of learning while maintaining the extrinsic function of traditional culture.

## **5 Conclusion**

In a global economy where the boundaries of culture are blurring, it becomes increasingly important for complex cultures to allow reinventions in ways that do not necessarily threaten their survival. The urgent need to maintain this relevance becomes particularly noticeable during unforeseen circumstances like the COVID pandemic. Hence, this research looks at some of the paradoxes and challenges brought on by these complexities and sets the development of design tools as a means to mediate cultural shifts and discourses around cultural heritage, preservation and sustainability.

This study has presented a study developed around redefining heritage and cultural preservation through the design of new cultural experiences. The implications of this research position the role of design as facilitating bottom-up cultural change through the design of tools and principles to guide heritage preservation. A framework was developed based on a need to redefine heritage experience through the emergent themes of integrating digital technologies to increase accessibility, building narratives to improve community engagement and interaction, developing knowledge levels to educate and reinforce cultural identity, and establishing emotional connections through meaning-making and value creation. The framework was further explicated to identify four key design principles guiding heritage preservation, proposing tools and methods for future studies of design and culture.

The function of design-based techniques, especially in the field of heritage preservation, requires a level of transferability across the dimensions of interdisciplinary collaboration to generate more meaningful and sustainable impact. This not only challenges the existing hierarchical, expert-driven ecosystem but facilitates the possibility of directly involving the community in initiating a cycle of large-scale changes in cultural policies. Future studies can build on the framework and design principles outlined within this study to produce more culture-based design experiences as part of the ongoing discourse around cultural sustainability, heritage preservation, and the future of traditional practices.

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