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## Value Communication for Cultural Heritage: Operational Workflow for Digital Environments

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(Article begins on next page)

**Università degli Studi di Torino**

Dipartimento di Informatica

Ciclo XXXV

DOCTORAL THESIS

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**Value Communication for Cultural Heritage**

Operational Workflow for Digital Environments

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**By Srushti Goud**



Supervisor:

**Vincenzo Lombardo**

A thesis submitted in fulfilment of the requirements for the degree of

Doctor of Philosophy

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**Srushti Goud**



# Abstract

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Cultural Heritage (CH) is a kaleidoscope of our shared human history in all its tangible and intangible forms. Cultural Heritage Communication (CHComm) is the transfer of authentic heritage information and its associated values. Every individual and by extension, communities made up of individuals associate heritage values with heritage properties and assets that they consider as central to their history and identity. All the cultural traditions have associated values with heritage properties, and these values may have changed, evolved, cherished and been forgotten and remembered again over centuries.

Digital communication has impacted all fields of human endeavour and cultural heritage is no exception. There is a need for heritage experts, institutions and local communities to maintain a digital presence that supports global sharing of CH knowledge and increases audience participation in heritage conservation and communication. However, digital heritage projects often do not pay enough attention to certain aspects of heritage communication. Often, digital CHComm projects fail to effectively communicate the associated cultural heritage values and there is no systematic method to address such issues.

This thesis explores how the information uncovered by heritage professionals can be effectively communicated to groups of willing and interested participants in CHComm. After a thorough analysis of the current state of the art, we formulate an eight-stage operational workflow that undertakes the uncovering, verification and inclusion of cultural heritage values in digital CHComm projects. Then, we go over three case studies to apply and review the operational workflow. The first case deals with the creation of a value-based digital multimedia application for the artefacts under the Menorah collection at the Hecht Museum in Haifa, Israel. The second case is a standalone digital multimedia application that tells the story of the Virupaksha Temple at Pattadakal, Karnataka, India. The third case is a companion application for the existing BeA-ViR system, of the BeArcheo archaeological project, which deals with the excavation at Tobiotsuka Kofun, a funerary burial mound in Soja city, Okayama prefecture, Japan. The observations from the implementation of the three cases and the results from the public testing of the workflow in each of these separate instances are compared to assess the method and provide a better understanding of how we can reduce the communication gap pertaining to CH values between the heritage experts and the non-expert communities.

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# Chapter 1

## Introduction

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*In this chapter, we discuss cultural heritage values and the role it plays in conservation and communication of cultural heritage by tracing its journey from antiquity to the present day. We introduce the past and current definitions of heritage values in conservation. Then we proceed to illustrate the position of values in digital communication.*

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Cultural heritage is a patchwork tapestry of our shared human history which is made of memories and legacies. From ancient times to the present, groups of people have shown a tendency to share information about their cultural identity and inheritance. The cultural knowledge shared can include:

- Memories of significant events with facts and legends about the places and characters involved;
- Descriptions of those places, buildings or locations where these events occurred;
- Natural landscapes, places, sites, buildings and ruins of monuments which are associated with those memories;
- Oral tradition, practices, inscriptions, books, paintings and other artefacts where these descriptions are recorded and shared.

The memories, descriptions, sites and traditions are all intricately interconnected through the collective memory and practices of a culture [1]. Tangible cultural heritage assets encompass the built structures, sites that contain ruins of such structures, books, works of art, paintings, sculptures, daily-use artefacts, weapons, holy sites, sacred landscapes and other physical remnants of the past. Intangible cultural heritage assets include historic narratives, descriptions, myths, beliefs or events from factual history. Cultural heritage is cherished or contested based on the objective interpretations and subjective perspectives of its tangible remnants and intangible retellings. The tangible and intangible elements of cultural heritage can have a special meaning and relevance to a certain group of people to this day.

Our shared past and the cultural history of humanity can be understood by conserving, interpreting and communicating about these tangible and intangible assets



of heritage. The focus of this study explores the interpretation and communication of cultural heritage in the digital era. For the purpose of this study, Cultural Heritage Communication (CHComm) is a term that refers to the process of transfer of values associated with Cultural Heritage (CH) [2]. CH knowledge can provide us with insights into the value associations and the methods that communicated these values over centuries. Today, heritage interpretation and communication has to adapt to people's habits of relying on the Internet and digital connectivity for their information needs [3]. CH discourse in the digital age is undergoing a "continuous process of reinterpretation and mutual exchange" with traditional communication [4]. As such, the communicators and experts engaged in the creation of CHComm must shoulder the responsibility of conveying the meanings and values associated with heritage assets in the digital paradigm. In the next section we discuss how CH values have influenced conservation and their role in CHComm.

## 1.1 Cultural Heritage Conservation – Role of Values

Heritage value can be defined as a set of characteristics perceived in heritage by certain individuals or groups [5], who may refer to different typologies and ranges of values [6]. These values make up the 'significance' of a heritage deemed worthy for conservation [7]. There are many 'typologies' for value judgements and they range from suggestions of a few value types to long lists that cover different variations of value associations [8].

### 1.1.1 Cultural Heritage Values – Historical Perspective

In 1931, the Athens charter was the first document to call for the establishment of international organisations that advise on the restoration of historic monuments. The charter was concerned with avoiding any loss of **historical values** for the structures that were undergoing restoration [9]. In 1964, a second international congress approved principles guiding the preservation and restoration of ancient buildings. This document known as the Venice Charter enlarged the scope of the Athens Charter. It was seen as an influential framework for nations to base their plan for conservation. It included mentions of **historical, archaeological and aesthetic value** [10]. For example, following the tenets of the Venice Charter, preserving the old fabric (archaeological value) for the 'age value' (historical value) of a building might require a new layer of lime paint. This could also be necessary to preserve the artistic appearance (aesthetic value) and to conserve the original layers underneath it (historic value again) [11].

The focus was to conserve the existing monument by carrying out minimum necessary restoration to preserve the cultural significance of the structure in its full richness. The years after the Venice Charter saw the creation of guidelines and operational procedures by national and international level institutions. The concepts of historic monument and historic site, respectively, were redefined [12]. The understanding of cultural significance has changed from what was proclaimed in the Venice Charter [13]. We summarise a few interpretations from renowned institutions below.

1. UNESCO introduced the concept of **Outstanding Universal Value (OUV)** at an Expert Meeting in 1976. This was the first major international attempt at standardising what was ‘significant’ or ‘outstanding’ in terms of cultural heritage. Outstanding Universal Value is defined as, “*cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity*” [14]. At the international level, there are ten World Heritage selection criteria. Statement of significance provided for every World Heritage site shows alignment to at least one of the ten criteria. The statement of significance elaborates on all the values of the heritage as assessed by the experts involved in the task. The values highlighted are not associated with any discipline but are important to the entire human community [15]. For example, the world heritage property of ‘Stonehenge, Avebury and Associated Sites’ fulfils three out of ten as per the World Heritage Criteria <sup>1</sup>:

- (a) Criteria i: to represent a masterpiece of human creative genius - The monuments provide information of creativity and technological achievements of prehistoric times;
- (b) Criteria ii: to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design - The sites illustrate the evolution of construction starting from the neolithic to the bronze age and have had “*an unwavering influence on architects, artists, historians and archaeologists, and still retain a huge potential for future research*”;
- (c) Criteria iii: to bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared - The complex of monuments provides great understanding of the funerary and ceremonial practices of Britain in the neolithic and bronze ages.

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<sup>1</sup><https://whc.unesco.org/en/list/373>

World Heritage criteria facilitates the judgement of relative importance based on the statement of significance for every cultural heritage. The concept of **relative importance** is necessary to sort through multiple value associations.

2. In 1979, the Australia ICOMOS (The International Council on Monuments and Sites ) adopted the Burra charter which set out to define the basic principles and procedures for heritage conservation and management in Australia. The charter has been periodically updated to reflect the developing understanding of the theory and practice in heritage conservation and the concept of cultural significance. Burra Charter extends value typologies to the ‘social’ ones, embracing the reality that qualities of a place could be significant to a majority or minority group. The cultural significance attached to a place can also vary from one group to the other [16]. For example, northern Cape York, Australia, which is known to be of primary significance to descendants of European settlers (majority group) also holds **perceived aboriginal values** to the indigenous Australians (minority group), who have been living in the area before the European settlers arrived [17]. Different communities have different significance for one heritage because of their own value associations developed over time through social selection of their cultural inheritance. Conservation must consider the significance assigned by all the different communities, who consider a property to be a part of their heritage. Each community will have their own perceived values leading to a situation of **multiple perspectives** which may compete with or cherish each other.
3. In 1994, a group of experts assembled in Nara, Japan, highlighted the notion of **authenticity within a cultural context** as a pivotal factor for significance assessment. In the Nara document, authenticity is understood as information sources that are “credible or truthful” [18]. The committee agreed that authenticity is an essential qualifying factor for values and that the understanding of authenticity varies for distinct cultures. The assessment of authenticity should ‘be considered and judged within the cultural contexts to which they belong’ [18]. For example, ‘Shikinen Sengu’, which is the rebuilding process of Shinto shrines done every twenty years can be seen at the Ise shrine, Japan. The dismantling and rebuilding process transfers the construction skill from one generation to the next in its utmost authenticity. The same techniques have been used for centuries but the shrine itself is rebuilt [19]. Here the construction techniques are considered as the cultural heritage that is being conserved. This can be contrasted with other religious places of worship in the world which are preserved in their original built form. Hence, the values associated with the cultural

heritage can only be judged as authentic or credible by the culture itself.

4. A report released after the turn of the millennium by the Getty Conservation Institute [5] classifies provisional typologies of values for conservation under two categories i.e. socio-cultural and economic value typologies. The socio-cultural typology of values are Historical, Cultural/symbolic, Social, Spiritual/religious and Aesthetic. The economic typology of values are Use (market) value, Non-use (nonmarket) value, Existence, Option and Bequest. However, an exhaustive list of value typologies might lack necessary contextual nuances. Value typologies can “*constitute a first-order research tool, ordering and organising knowledge so that research builds on itself*” [5]. For example, Virupaksha temple at Pattadakal, Karnataka, India, has multiple values associated with it. The temple has historical and aesthetic value as it represents the high point of art and architecture in the 7<sup>th</sup> and 8<sup>th</sup> century CE under the Chalukyan Dynasty. The temple also has spiritual/religious values as it is an active place of worship. Here the Historical, Aesthetic and Spiritual/Religious values can be the important benchmarks for the assessment of conservation decisions but the other typologies may also contribute.

### 1.1.2 Cultural Heritage Values – State of the Art

Heritage conservation in the 21<sup>st</sup> century takes an approach that considers ‘community values’ alongside ‘experts values’. Researchers have described methods to identify and integrate community values to achieve an inclusive conservation process. In fact, a well-developed and inclusive conceptual framework, the Cultural Values Model, has been devised for landscapes. As seen in the Burra charter, it builds upon the idea that every community holds a diverse set of values that might not be ‘universal’ or ‘outstanding’. The values are built on three fundamental components of landscapes which are, relationships, practices and forms. Examples of relationships are feeling of belonging, stories and myths and meaning of place names. Examples of practices are historic events and ecological processes. Examples of forms are human made structures and natural landforms. Values from each component (relationships, forms, practices) can be recorded through interactions with the community (insiders). These interactions help to discover the cultural attitudes towards places and their cultural identity. The community values are considered in addition to the values associated with other disciplines (usually outsiders). The **cultural insiders** in this study did not express their values in the traditional ‘discipline-specific’ value assessment methods but they ranged freely across many topics [20]. For example, at the Akaroa basin, the Māori-Akaroa association to their landscape was strongly tied to the stories of the landscape

significance, myths and historic events. When asked about the “valued aspects of landscape” the insiders referred to their practices and not the aesthetics of the landscape. The Maori communities associated their naming and burial traditions, practices of having lookouts, signalling, activities like fishing, whaling and historic walking/trading routes with the landscape. These **community associations of values are not discipline-specific in nature** but they are very important considerations in the conservation and management of the Akaroa landscape [20].

Researchers have described holistic value-based approaches that deconstruct assessments of significance of heritage into three evident stages. These are (1) features of significance, (2) aspects of value, and (3) qualifiers of value. Features of significance are based on the understanding shared by the Cultural Values Model and address the ‘what’ of heritage. Aspects of value for each feature of significance can be ‘associative, sensory, evidentiary or functional’. Qualifiers of value, such as authenticity, rarity or condition, assess the degree of significance for the features and aspects with respect to the heritage asset at hand [8]. For example, the bench table at the Middle Temple is a heritage object which consists of many features of significance like the material it is made of, the story of its origin and its continued use. The bench table has an *“associative value because it mentions Queen Elizabeth I and is of evidentiary value for historical research. The four planks could be said to have sensory value, as they have a pleasing surface to both look at and touch, evidentiary value for studies of artisanship and dendrochronological dating and are of considerable functional value as the Bench Table remains the table of honour during formal dinners”* [8]. The rarity of the bench table can increase its significance, say if this object is one of a kind and is irreplaceable. Values associated with any heritage asset by stakeholder communities and the experts point to the ‘what, why and how’ of its significance. Holistic values-based approaches which assess heritage significance through the aspects, features and qualifiers of value can be critical to identifying the **relative importance of value associations** within a given cultural context.

In summary, the understanding of the concept of value has evolved with the increasing expert and other stakeholder community interest in the conservation and management of heritage. Conservation of heritage is decided based on its cultural significance. Cultural significance builds on perceptions of communities as well as the experts’ judgements. Multiple communities can be interested in or associated with one particular cultural heritage asset. Their perceptions can vary, even on a single aspect of heritage. These judgements and perceptions may not be discipline-specific but are grounded on values. Values can be broadly arranged into typologies for implementing a concrete decision-making process needed for heritage management. The credibility of

value judgements is to be acknowledged by the respective cultures through authenticity or rarity value qualifiers. Communication of cultural heritage must be able to convey such values to all the people interested. **Interested parties** should be enabled to perceive all the dimensions of the cultural significance attributed to heritage.

### **1.1.3 Cultural Heritage Values as the link between Conservation and Communication**

Cultural heritage values are attached by those who see themselves as associated with the heritage, one way or another. Assessment of values are the reason for “all the actions” proposed for “the conservation, development, interpretation” of cultural heritage sites [5]. ICOMOS Statutes define Cultural Heritage conservation as being based on “historical, architectural, archaeological, artistic, aesthetic, scientific, social, ethnological, anthropological, cultural or spiritual value” [10]. These assets of tangible and intangible cultural heritage are deemed to have heritage values of conservation [5]. Conserving heritage is usually coupled with the act of communicating about heritage to the current and future generations. In its 1972 convention, concerning the protection of world cultural and natural heritage, UNESCO had identified the presentation of cultural heritage as an integral part of heritage conservation [21]. The ICOMOS Charter for the Interpretation and Presentation of Cultural Heritage Sites explains that heritage conservation itself is a ‘communicative act’ and public communication is an essential part of the conservation process. Communication itself has been described as ‘dissemination,’ ‘popularisation,’ ‘presentation,’ and ‘interpretation’ in the earlier charters of ICOMOS [22]. The communication of cultural heritage is recognized as one of the five C’s (Credibility, Conservation, Capacity-building, Communication, Communities), which are the strategic objectives of UNESCO regarding cultural and natural heritage [23]. The communication of cultural heritage needs to be implemented as an integrated approach, addressing the values that account for the expression of the collective identity, the objective documentation of the heritage sites, and the promotion of the universal significance of the cultural diversity [24].

## **1.2 Communication of Cultural Heritage**

Communication of cultural heritage is considered fundamental to its conservation and this is also the reason for the long-established principle of public access to the nomination files of properties that have been listed as World Heritage [25]. Another aspect of communication which is stressed upon by the World Heritage convention is

the need for educational programs to be conducted by state parties. In Article 27 of the 1972 World Heritage Convention document, countries are asked to “strengthen appreciation and respect by their peoples of the cultural and natural heritage” [21]. Historically, cultural narratives have been propagated among the people or handed over from one generation to the next through various forms of heritage communication without any intervention from experts or institutions. This communication of cultural and historical narratives is what keeps the heritage afresh in the collective memory and thereby conserves the cultural identity and heritage [26] [27] [28]. Heritage management and research relies on communication that is ‘produced and reproduced’ by agents with their own purpose for doing so. This communication is then ‘used or consumed’ by people [29].

### **1.2.1 Traditional Communication of Cultural Heritage**

Traditional systems of communication such as the folktales, performing arts, rituals, written records, inscriptions, religious practices and the oral traditions (especially in case of living heritage) have transferred the CH values and information across generations for many centuries [30] [31] [32]. Tangible structures and objects have also communicated the cultural message in one way or another, even if their interpretation has not always been easy [33].

The intangible communication media passed knowledge over generations [30] [31]. Stories were orally repeated with minor change in the core content for ages. All these methods relied inherently on narratives that would be propagated across generations and even across cultures over time by human communicators. These tales were held in collective memory through mutual exchange and interpretations. Stories, songs and poems have inspired people into action leading to discoveries of long-lost cultural heritage sites or artefacts. Today, we are aware of many historic cultures and civilizations through the records of their achievements as recounted by others and through their own tangible or intangible media of CHComm such as buildings, artefacts, books and paintings. In some cases, we only know of certain cultures through records of them from other cultures.

An illustrative example of how the stories from traditional CHComm motivated heritage research can be seen when looking at the history of excavations carried out to uncover the ancient ‘Homeric’ Troy. Narratives regarding the Trojan war presented in Iliad and Aeneid played a role in the series of excavations and the eventual discovery of Troy I to Troy VIII by various teams of archaeologists [34] [35]. The story of Troy and the Trojans has been told from multiple viewpoints over the centuries. We have stories from various periods during the existence of the city in some form and also



from the time after the city fell to ruins. Troy and its citadel have been described as one of the oldest continuous memories in the western world [36]. This statement conveys the essence of cultural heritage value appreciation and its propagation through successive generations. Many tales inspired by the Trojan War can be seen in the 20<sup>th</sup> and 21<sup>st</sup> century mass media and it has become part of the popular culture [37], even leading to controversies and academic debates fuelled by the popular perception [38]. Troy itself is valued for the understanding of the development of European civilization in its early years <sup>2</sup>.

When looking at traditional communication of heritage via tangible media, we can see that a human communicator was not always necessary. The information was recorded on books, paintings, papyrus or vellum scrolls, in clay tablets or etched on to stone. These tangible records have survived through the intervening years either as originals or through copies, interpretations or translations made from the originals. Another form of tangible communication would be the structures that were built by various cultures such as places of worship, urban centres, performance arenas, palaces, tombs, and infrastructure such as roads, bridges and aqueducts. This built heritage in tandem with its intangible associations remained as symbols of the respective cultures, shining a beacon from the past into the future.

A direct example of intangible memories being tied to tangible structures which motivate heritage research and communication can be illustrated by exploring the history of the Arch of Constantine in Rome, Italy. The Arch, which is a part of the Colosseum district in Rome commemorates the Roman emperor Constantine's victory over Maxentius at the Battle of Milvian bridge. The communication of heritage provided by the Arch is multifold. Most importantly, the horizontal frieze running along the monument shows scenes from the Italian campaign of Constantine against Maxentius. This includes scenes such as Constantine's departure from Milan, siege of Verona, Battle of Milvian bridge and his entry into Rome with his army [39]. The events that led to the construction of the arch were directly etched as reliefs on the structure.

Artefacts and daily use items of past cultures have also done their share to aid in CHComm. At times the interpretation of artefacts such as the Rosetta stone has unlocked direct communication from the past. The Rosetta stone, which is an epigraphic artefact, is an Egyptian stele that contained the same text of a decree written with Hieroglyphs, in Demotic and Ancient Greek. The Rosetta stone was the key to deciphering Hieroglyphs. Contemporary historians are able to read hieroglyphs from ancient Egypt, which led to new understanding of the life and culture of Ancient

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<sup>2</sup><https://whc.unesco.org/en/list/849>



Egypt [40]. The cultural heritage that stood the test of time did so mainly due to the success of its communication. All of these methods of communication form a corollary to a statement from the 2008 Ename Charter by ICOMOS. Every act of heritage conservation was described as a communicative act [22]. We can now confidently state that **every act of heritage communication is by its nature an act of conservation**. As a medium of communication, built structures and objects may not have been able to communicate as directly as folktales, performance arts or the early written media. Nonetheless, historic communication, whether intentional or unintentional has transformed into cultural heritage communication. It continues to serve a lofty purpose and motivates research which has frequently led to the rediscovery of what was once thought to be lost heritage.

### 1.2.2 Cultural Heritage Communication and Contestation – 19<sup>th</sup> Century onwards

In the industrialization era, newspapers became carriers of human culture and a form of mass media that would record the culture of its time. Later, in the 20<sup>th</sup> century, through the advent of radio and television, communication progressed further. Studies have been done on the various levels of cultural discourse. It has been observed that heritage and its communication are plural concepts. Multiple interests and actors with varying objectives tend to communicate with and over one another. This creates different levels of cultural heritage discourse and gives rise to separate historical narratives. The identities associated with places, people or events and their links with certain communities have always been diverse. A historic event, such as World War II, which is still relatively recent history, has multiple perspectives and interpretations. Therefore, it gives rise to contestations. *“Heritage meanings are socially, or culturally, constructed and are therefore always contestable”* [29]. This reorganisation of heritage knowledge has further shaped the cultural identities through the last two centuries; giving rise to new discourses that both simultaneously cherish and contest aspects of each other. An interesting example of this can be seen in how the regional identity both cherishes some aspects of and contests the other aspects of the national identity in countries like Italy or Germany. In the late 19<sup>th</sup> century and the early 20<sup>th</sup> century, the idea of a German nation or an Italian nation was *“very much in competition with other sources of legitimization, just as national identities themselves represented contested discourses”* [41]. Prior to WWII, the previous few centuries had seen constantly shifting borders, oscillating centres of power and the contrasting notion of a ‘Venetian identity’ against the ‘Italian identity’ or the ‘Bavarian identity’ against the ‘German

identity'. In the decades following WWII, discourses coalesced around the concept of the modern Italian or German nation and the aspects of regional identity began to be seen as contributing to the national identity. In the context of the 21<sup>st</sup> century, it can be said that the national identities of the countries that are a part of the European Union are contributing to the European identity through a celebration of their diverse national identities.

Today, we understand contestation and diverse values for different groups of people as very much a part of cultural heritage. As the field of heritage conservation changed over the 20<sup>th</sup> century, the rise of national and international organisations for cultural heritage led to the creation of local and national institutions dealing with cultural heritage. CHComm, which was traditionally an activity carried out by the people and for the people, has also become a major institutional responsibility. Galleries, Libraries, Archives and Museums which are collectively called GLAM institutions became centres for knowledge in art history, cultural history and cultural heritage in general. The heritage institutions and experts of today which are involved in CHComm have the unenviable responsibility of sharing a holistic, inclusive and accurate picture of cultural heritage.

### **1.2.3 Digital media and Digital Cultural Heritage Communication**

Over the last three decades, Internet and digital technologies have connected distant cultures across the world, causing a further paradigm shift in the field of CHComm. Cultural institutions have attempted innovative methods of communication to maintain their position as knowledge leaders [42]. Substantial amounts of information can be accessed simultaneously by anyone from anywhere. For example, extensive use of mobile phones has created a dependency in the communication of CH [4]. Traditional systems of communication have been outdated by non-linear, engaging and interactive technologies such as AR, VR and MxR, all coming under the umbrella of virtual heritage [43]. Digital technologies are shaping up to form a “new landscape of communication” and “new learning environments” are having a significant impact on CHComm. Communicating to an audience of mixed communities helps in safeguarding cultural identity and achieves a wider sharing of cultural knowledge. Researchers have termed the “digitally enabled two-way interaction between community and institution” as Digital Cultural Communication [44]. The point to note here is that the interaction can be two-way, and the popularity of digital technologies helps in taking feedback and enabling the audience to record their responses. In fact, the “historical competence” of an average person is being formed by “information that comes from the new media”. This leads cultural heritage communicators into a situation where there is a need

for “higher technology products”. Products or environments made with the express objective of communicating history by reconstructing a sense of the past are much more in demand. The focus of the communicator has moved to a point where adding scientific value along with an immersive and realistic ‘projection’ is possible [43].

Physical CHComm experiences are now being combined with digital technology elements. Novel applications that tap into the social aspect of CHComm have been conceptualised [45] and are being tested. Research in contemporary digital and phygital (physical + digital) CHComm shows an increasing focus on handling the technological aspects involved in the creation of such CHComm environments. The processes used for the discovery of points of user interest are frequently studied by UI/UX researchers in CHComm applications [46] [47]. The design focus is more towards the ‘mechanics’ of the user experience and user engagement. As a result, the user interface and user experience are becoming increasingly optimised. There have been studies where researchers talk about the combination of the physical and digital environments for CHComm as a potential medium for enriched communication of heritage values [48]. Even so, research into the depth of understanding necessary for the communication of CH values are few and far between. Methodologies of CHComm environment design, especially in the digital CHComm space, rarely talk about communication of the values inherent in the CH asset [2]. This is expected since the novelty of the technology being adopted is an exciting field of research but the development of the ‘script / storyboard’ or the multimedia content for such communication projects are increasingly becoming an afterthought.

### **1.3 Cultural Heritage Values and Digital Cultural Heritage Communication**

Digital representations of cultural heritage need to leverage the advantages of modern technology while presenting something more than an arrangement of factually correct information to the users. Combining accurate information with relevant cultural heritage values can generate impactful content for cultural heritage communication. In a survey covering the relationship between cultural heritage and storytelling, stories are described as vessels for wisdom, beliefs and values. Storytelling itself is described as a tool to bridge the gap between people over time and across cultures, thereby becoming a means for preservation and dissemination of cultural heritage [49]. Interactive Digital Narratives (IDN) have been successfully and repeatedly used as a tool for emotional engagement of users in various settings [50]. Research shows how non-fiction

interactive narrative structures encourage user exploration and non-linear navigation even if it can cause confusion at times, due to its novelty [51]. The contributions of technology to storytelling as a tool for reflection in cultural heritage has been explored through multiple pilot projects [52]. Exploration of the limits and possibilities afforded by evolving digital technologies continues to add novelty in CHComm projects and experiences. On the other side of this spectrum, research has shown that digital technologies should strike a balance between recording collective memories of people and acting as a communication tool [53]. Deficient communication of CH values which may occur from an overemphasised celebration of the past, does not help. Creators of digital CHComm who are responsible for such representations should take care to avoid surface disclosure and selective communication of history. Narrative communication projects that use digital recreations of history must strive to make it “*clear to users what a computer-based visualisation seeks to represent . . . , extent and nature of any factual uncertainty*” as professed by the London Charter [54]. This is especially true when digital communication projects are made for living heritage or where there are multiple communities that consider the heritage as part of their identity. To quote the Faro convention of 2005 “*Valorisation of a cultural heritage through intercultural dialogue requires ongoing research and debate, especially to take account of disagreements which arise in the course of interpretation*” [55]. There is a need to communicate cultural heritage values without leaving out perspectives of any of the stakeholders involved. Essential attention can only be provided in the communication of the communities’ CH value associations by enabling two-way CHComm.

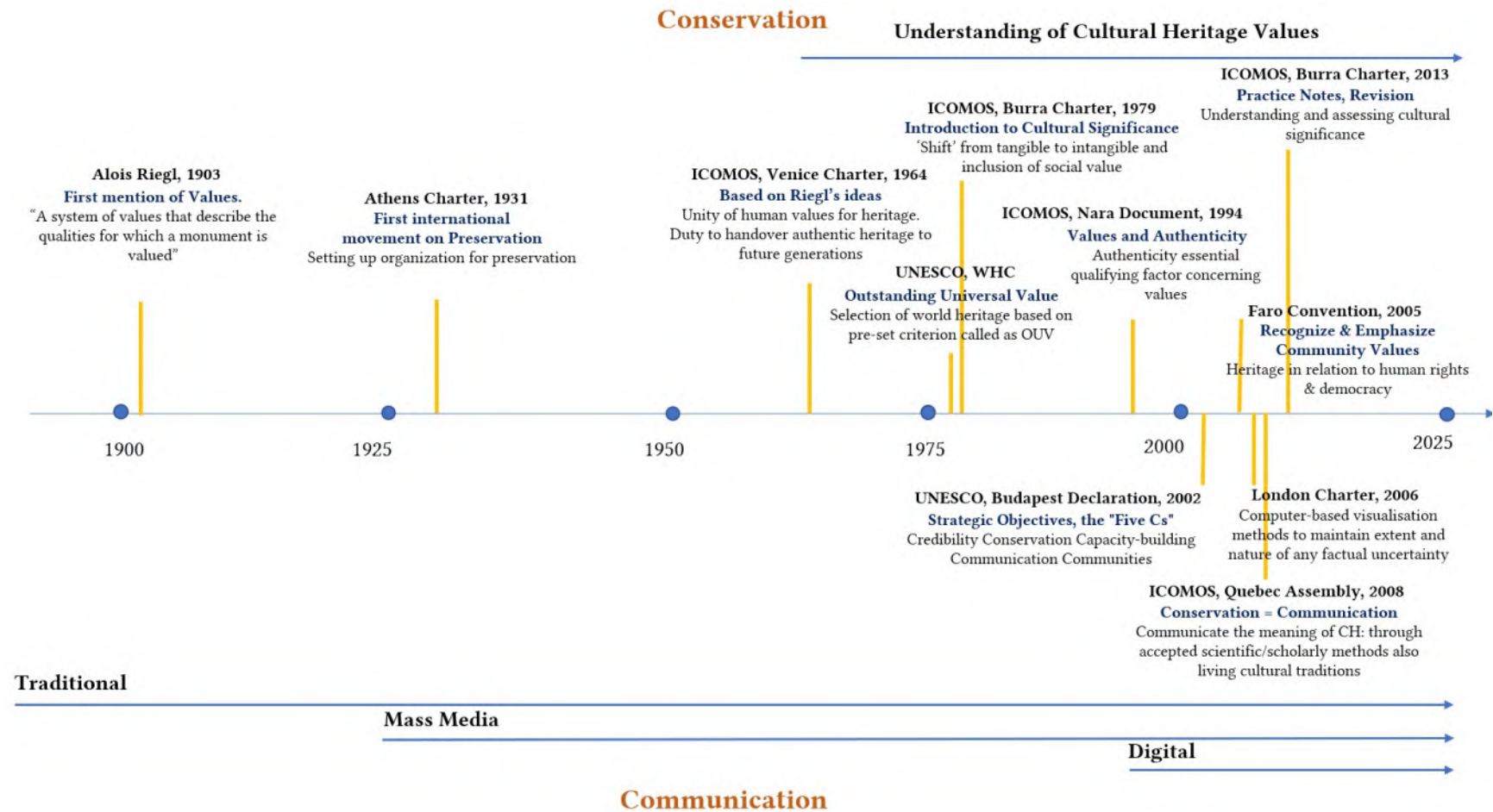
Figure 1.1 summarises the evolution of the concept of cultural heritage values. The figure displays a timeline of adoption/declaration of influential documents by centralised authorities discussed above. These documents are concerned with the practice of heritage conservation and communication. They all have mentioned the term value in some form and a few have discussed the concept and its implications in detail. Evidently, the codification of CH value for conservation has been attempted a few times but a holistic approach for the application of CH values in digital CHComm is still in its infancy. This presents us with a case where we need to re-look at the current state of digital communication experiences and environments for cultural heritage. We need to understand the state of the art in Digital heritage and communication of cultural heritage through digital and phygital projects / environments. There has been a rapid growth of online presence of cultural heritage communication blurring the boundaries of the various stakeholders and communicators. Today the experts, locals, tourists, guides and other interested parties are all creators and consumers of digital CHComm. Digital representations of CH, which are sometimes perpetually

accessible online, appear as portrayers of the values for the heritage being represented. Mis-communication causes attachment of wrong values to the cultural heritage which in turn helps no one, neither the locals nor the outsider [56].

What we should ask ourselves is, as ‘experts’ and digital communicators of CH today are we addressing this **need for a balance between technology adoption, heritage documentation and CH value communication**.

## 1.4 Organization of the Thesis

In this chapter we established the grounds for an investigation into the position of CH values in digital CHComm. The following chapter, Chapter 2, presents a detailed review of existing literature on cultural heritage value typologies as seen in heritage conservation or management. Chapter 3 covers the state of the art in digital CHComm and tries to understand how cultural heritage values are communicated in contemporary phygital and digital experiences. The analysis of the existing literature shows us that there is a need to introduce CH values motivated communication for cultural heritage. Chapter 4 discusses the methodology and expositis how we approach the design and testing of a workflow that can assist designers in creating CH values motivated communication. An eight stage operational workflow is proposed for the testing of the hypothesis which is then detailed out. In Chapter 5, we report on the first implementation and testing of the workflow. The first case concerns a museum setting where a selected collection of artefacts were presented to visitors using a web-based digital application. In Chapter 6 we analyse the findings from this application and use the takeaways to create a second and then a third application. These two applications use a digital outreach process to involve digital communities in the CH communication process. The second application is built for a monument that is on a UNESCO world heritage listed site while the third application is meant to accompany a VR system realised to ease the exploration of a group of recently excavated heritage sites. The three differentiated settings provide diverse data points that help us to learn more about the necessity and applications of CH values motivated CHComm. We also discuss the findings from these studies. Chapter 7 presents important takeaways, concludes this current study and suggests avenues for further research.



**Figure 1.1:** A timeline representing the institutional declaration of influential documents on cultural heritage conservation or communication and their espousal of value as applicable.

## Chapter 2

# Review of Literature - Value Typologies and the Goals of Cultural Heritage Communication

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*This chapter discusses the published literature on the major concepts relating to value typologies used in the decision making process for conservation of cultural heritage. We look at the prevalent systems and their shortcomings after which we talk about research that has suggested better approaches. We illustrate through examples, the need for integrating the centralised or institutional approach with the community approach to understanding and propagating CH values. We outline the goals of cultural heritage communication as shared by the Ename charter and then highlight the need to understand how values are taken into account in digital cultural heritage communication.*

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Cultural heritage values can be a vast and admittedly nebulous concept. Various definitions have been attempted and there may be as many definitions as there are relevant fields of study that relate to cultural heritage. Comprehensive literature reviews and detailed study of cultural heritage value typologies have been suggested, to assist policy and decision makers. Some of the previously discussed studies have tackled the conservation and management perspective of heritage [57] [8] while others have looked at the social and economic aspects of CH [58]. At the local community level, the concept of CH values as a formalised system does not play a major role in the actions taken for conservation. Research has shown that local heritage is preserved by voluntary local workers especially when the heritage assets are not deemed to be of ‘major national interest’. In such cases the local understanding of heritage and the need to maintain local institutions or local customs are shown to be the primary motivation for local level heritage conservation [59]. The interested parties among the local communities can feel a sense of loss of value when the locally managed sites are disturbed. This is most easily observed when a traditional system associated with a living heritage site comes in contact with rapidly urbanising settlements [32] [60]. There exists a dichotomy between the ‘central authority’ or institutional approach and the ‘local community’ approach to heritage conservation. This also appears to extend



to what is being actually conserved. A heritage asset like the Stonehenge which would not have many local community associations will benefit from an institutional approach to conservation while the local customs and traditions of the Maori community are best preserved by their own actions and would not see much benefit from an institutional approach. In the following sections we delve into the literature and bring out a few studies with examples for the basis and application of cultural heritage value typologies. This helps us formulate a process which can be used to enhance cultural heritage communication which in turn benefits the conservation and management of heritage assets.

## 2.1 Value Typologies and Conservation of Cultural Heritage

Cultural heritage values can inform policy and planning decisions and can also be relevant to all the disciplines and stakeholders involved in the conservation of CH. Values have been described as the positive features and characteristics attached to, or perceived in heritage properties. At a higher level, CH values can be classified as Sociocultural and Economic values [5]. Of great importance, among the values for conservation are those that inform the rationale behind why a heritage asset is valued by the people. Communities of people often ascribe sociocultural values to cultural heritage and these are described as the core of conservation. These are the values attached to a Cultural Heritage Object (Place / Building) by people or social groups because of its age, artistic beauty or association with a significant person or event. They can be categorised as Historical, Cultural/symbolic, Social, Spiritual/religious, Aesthetic and these types are also prone to overlap [5]. The following Table 2.1 provides an overview of these value categories with examples.

The value typologies mentioned in Table 2.1 under the sociocultural values are suggested as a provisional classification. It is evident from Table 2.1 that the definition of each typology is broad enough to cover multiple aspects of a single heritage asset. This also means that specific value associations would be represented by one word. For example, the ‘historic value’ represents the age value, educational value and artistic value of a heritage asset. It will not be a difficult task to convince anyone that the Great pyramids of Giza are old and have educational value in the sense that they are a doorway to our understanding of ancient Egypt. The artistic merits of pyramids could be subjective but their massive size in itself apart from the hieroglyphs and murals within them leave a profound impression on any visitor. These are three separate value



**Table 2.1:** Cultural Heritage Values definitions from a report on “Assessing the Values of Cultural Heritage” by the Getty Conservation Institute [5] with a basket of matching examples.

Value	Description	Examples
Historical Value	Those associated with the age/history of an event, object, place or building. As a further classification or sub-type of historic value, 1.Educational value is ascribed to objects that are also sources of information about the past in one way or another. 2.Artistic value for historic objects can arise out of something being a unique or the best-preserved example of some historic group of objects.	Educational value 1.Great Library of Alexandria, Egypt - Ruins 2.Taj Mahal, India -Monument 3.Oxford University, England -Institution Artistic value: 1.Khajuraho Group of Monuments, India -Monuments 2.David by Michelangelo, Italy -Sculpture 3.Last Supper by Leonardo da Vinci, Italy -Painting 4.Residences of the Royal House of Savoy, Italy -Monuments
Cultural/Symbolic Value	The values that help people build a cultural affiliation with their heritage. These values are not strictly speaking historic, but the social groups identify with heritage for shared meanings. A further classification or sub-type of Cultural value, is Political Value 1.Political Value is identified with heritage that have political nature to the above said cultural affiliations. “These values stem from the connection between civic/social life and the physical environment and from the capacity of heritage sites in particular to stimulate the kind of positive reflection and political behaviour that builds civil society.”	Cultural/ Symbolic Value: 1.Globe Theatre, England -Site 2.Old Delhi, Shahjahanabad, India -Place 3.Sankore Madrasah, Mali -Monument Political Value: 1.Jallianwala Bagh Massacre, India -Place and Event 2.Jerusalem -City 3.Hagia Sofia Mosque, Turkey -Place 4.Ayodhya, India -City
Social Value	Heritage that becomes a catalyst for social connections and networking even in the present day is considered to have social value. This may come from shared public spaces that are still used today but may not necessarily be used for the same purpose before.	Social Value: 1.Roman Forum, Italy -Site 2.Great Bath, Mohenjo-Daro, Pakistan -Ruins 3.Trafalgar Square, England -Place 4.Saint Peter’s Square, Italy -Place
Spiritual/Religious Value	Heritage sites associated with organized religions, places of worship and also secular heritage that may create a sense of wonder or awe that may be described as almost spiritual may be said to religious or spiritual values.	1.Bodhi Tree, Bodhgaya, India -Site 2.Cathedral of Notre Dame, France -Monument 3.Dome of the Rock, Jerusalem -Monument 4.Pyramid of Giza, Egypt -Monument
Aesthetic value	Beauty and artistic value that may also encompass the other senses such as smell, taste etc. may add to the aesthetic value of cultural heritage. The artistic merit which also forms a sub-type of historic value may overlap with aesthetic values.	1.Angkor Wat, Cambodia -Monument 2.Sagrada Familia, Spain -Monument 3.Brihadেশwara Temple, India -Monument 4.St Basil’s Cathedral, Russia -Monument

associations which would be described as ‘Historic’ if one were to use the socio-cultural value typology as suggested. There is also an obvious overlap between the Historic and Aesthetic value classifications in this case. It is to be noted that the author intended these classifications to be purposefully simple when applied to heritage conservation decision-making processes.

Further studies have listed various typologies and different names to classify associations of similar values. A wider list of multiple value typologies by various authors are reproduced in Table 2.2 from a previously published literature review on the significance of values [8]. The authors suggested that value typologies fail to see the consequences of ‘omission of values’. When specific value associations end up clubbed together with other values, they do not allow the satisfactory evolution of a detailed understanding of the heritage. The authors were critical of the ‘universalising’ of significance. The problems with ‘universalisation’ come to the fore when institutional conservation systems come up against the local community associations. This is even more pronounced in areas where conservation efforts are opposed to the local community’s sense of value. There is a *“tendency for experts to correct them rather than to understand and evaluate them”*. For example, forest places or natural landscapes with cultural significance to the aboriginal communities in New South Wales, Australia were recorded by the experts as places with ‘biodiversity, habitat value or Aboriginal archaeological value’ as expressed by the communities. This was because the communities understood that these categories of scientific significance were well-defined and protected by authorities [17]. The universally pre-defined approach had no place to record values or assess the social significance and the community associations as would have been described by the members of the community.

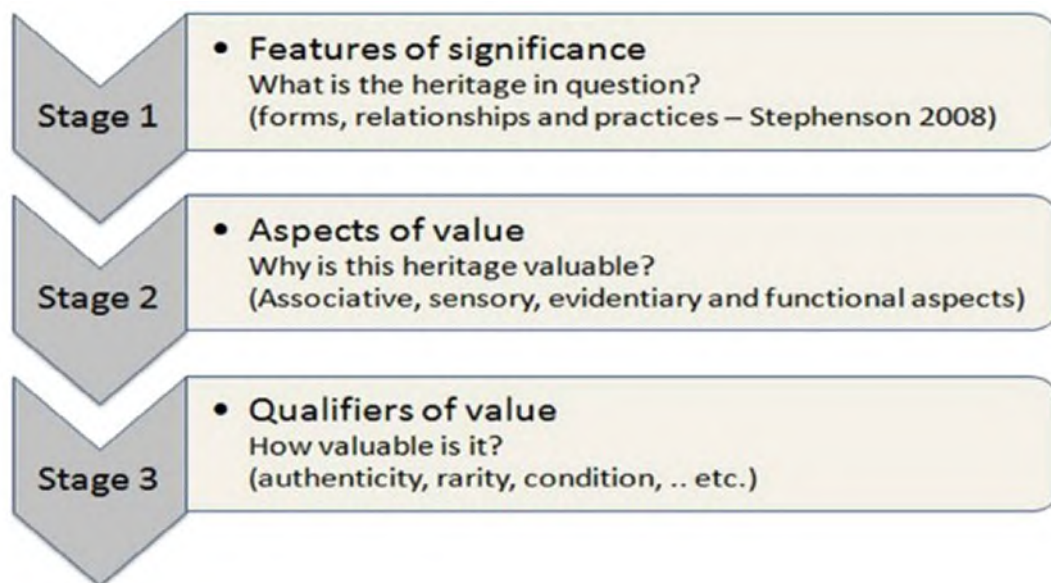
Other studies have termed the ‘historicist’ and ‘universal’ approach to values in cultural heritage conservation as inadequate in non-Judeo-Christian contexts. For example, in India, where Hinduism is a majority religious tradition, thousands of living temples exist. In these living heritage sites, active religious worship takes place and this draws pilgrims from across the country. In some cases such as in the case of the World Heritage Site referred to as “Group of monuments at Hampi” in the state of Karnataka, worship is carried on statues and religious iconography that are a part of dilapidated ruins. Some other temples in the same complex stand alone *“in a landscaped area, echoing the Renaissance ideas of romanticising ruins through ruin-gazing and siting them in a picturesque landscape”*. These unattended temples such as the Krishna temple in Hampi show signs of ruin and loss of detail. In contrast, the Virupaksha temple at Hampi which has been in continuous use and has been maintained in a traditional manner stays in excellent condition. Other temples in the

**Table 2.2:** Published typologies of values for cultural heritage (Redrawn from [8])

<p><b>Riegl ([1902],1982)</b> Age Historical Commemorative Use Newness</p> <p><b>Australia ICOMOS (1979)</b> Aesthetic Historic Scientific Social Lipe (1984) Economic Aesthetic Associative/ Symbolic Informational</p> <p><b>Darvill (1995)</b> Use Archaeological research Scientific Research Creative Arts Education Recreation and Tourism Symbolic Representation Legitimation of Action Social Solidarity and Integration Monetary and Economic Gain Option Stability Mystery and Enigma Existence Cultural Identity Resistance to Change</p>	<p><b>Carver (1996)</b> Market Capital/Estate Production Commercial Residential Community Amenity Political Minority/ Disadvantaged/ Descendant Local Style Human Environmental Archaeological</p> <p><b>Frey (1997)</b> Monetary Option Existence Bequest Prestige Educational</p> <p><b>Ashley- Smith (1999)</b> Economic Informational Cultural Emotional Existence</p> <p><b>Pye (2001)</b> Historic Artistic Scientific Cultural Contextual Condition Economic</p> <p><b>Throsby (2001)</b> Aesthetic Spiritual Social Historical Symbolic Authenticity</p>	<p><b>Mason (2002)</b> Historical Cultural/Symbolic Social Spiritual/ Religious Aesthetic Market Existence Option Bequest</p> <p><b>Feilden (2003)</b> Emotional Wonder Identity Continuity Spiritual and Symbolic Cultural Documentary Historic Archaeological Age and Scarcity Aesthetic and Symbolic Architectural Townscape, Landscape and Ecological Use Functional Economical Political and Ethnic</p> <p><b>Keene (2005)</b> Social Aesthetic Spiritual Historical Symbolic Authenticity</p>	<p><b>Appelbaum (2007)</b> Art Aesthetic Historical Use Research</p> <p><b>English Heritage (2008)</b> Evidential Historical Aesthetic Communal</p> <p><b>Orbaşlı (2008)</b> Age and Rarity Architectural Artistic Associative Cultural Economic Educational Emotional Historic Landscape Local Distinctiveness Political Public Religious and Spiritual Scientific/ Research/ Knowledge Social Symbolic Technical Townscape</p> <p><b>Stubbs (2009)</b> Universal Associative Curiosity Artistic Exemplary Intangible Use</p>	<p><b>Gómez robes (2010)</b> Typological Structural Constructional functional aesthetic architectural Historical Symbolic</p> <p><b>Szmelter (2010)</b> Cultural Identity, emotive artistic/technical, Evidence Rarity, Administrative Contemporary Socio- Economic Economic, Resource Functional, Usefulness Educational, Tourism Social, Awareness Political, regime</p> <p><b>ICOMOS New Zealand (2010)</b> Aesthetic Archaeological Architectural Historical landscape Monumental Scientific Social Spiritual Symbolic technological traditional</p> <p><b>Lertcharnit (2010)</b> Informational Educational Symbolic Economic Entertaining/ Recreational</p>
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area which are not part of the the World Heritage Site are also in good shape as they have been maintained through traditional building practices which *“have promoted replication or repair in such a way that the stonemason’s skill is exemplified by how accurately he can match the existing fabric with the least visual discrepancy”* [61].

After a critical re-examination of cultural heritage value typologies, the authors of a study (Table 2.2) proposed a broad framework for assessing and communicating significance as part of a holistic value-based approach. Figure 2.1 shows the three identified stages of significance assessment, reproduced from the study [8].



**Figure 2.1:** The three identified stages of significance assessment for a holistic value-based approach [8].

The typologies of values are a useful tool to understand the wide varieties of values that exist in relation to CH. While these values are a lot more ‘discipline-specific’, there are some values that are attached to heritage assets that may not be categorised as easily. Broad value typologies can be a starting point for the classification of various value associations. Further significance assessment can bring out the pertinent details of heritage values. A combined approach that takes the institutional and community values into account would be the ideal path for cultural heritage communication. This would ensure that no detail relating to a specific heritage asset is left out when communicating about it.

## 2.2 Values and Communication of Cultural Heritage

In discussing the idea of values with regards to communication of Cultural Heritage, we inevitably come across people who are both the senders and receivers of Cultural

Heritage Communication. The field of cultural heritage has many aspects and disciplines which are related and engage in the communication of heritage. It is also apparent that many CH values are communicated by both the professionals or experts and also by others or non-experts. When a culturally significant event, practice, place or building is recorded by a person or a group of people, it follows that the values of association held by those doing the recording will also seep into the message or communicate that is being recorded. Since cultural groups interact with each other in various ways, there is always a chance of misinterpreting one another, especially if the interaction is indirect. Indirect interaction may be the result of culture groups communicating over time. If a book describing the cultural activities of an ancient culture is discovered, by a later culture, they may struggle to fully understand the older culture [62]. This is true in the case of inscriptions on old buildings, such as those that may be found in Egyptian pyramids or on the built structures from the Mayan civilization.

We illustrate this with the example of the Colosseum in Rome, Italy and contrast that with another example. The Colosseum was completed in 80 CE and used as an arena to entertain the inhabitants of ancient Rome. When in active use, the Colosseum was a symbol of the glory of the Roman empire and prosperity of Rome to its citizens. Outsiders who may have come to visit Rome would also be in awe of the scale of its construction. It communicated the cultural values of ancient Rome to its contemporaries all through its period of active use which came to a close around the mid 6<sup>th</sup> century CE. As it fell into disuse in the late 6<sup>th</sup> century CE, the ‘cavernous vaults’ of the structure became a place for housing and lodging, and workshops were built in the spaces under the seats. Over the intervening centuries, the building served multiple uses including religious purposes as a chapel was built on the ground in the centre of the Colosseum at a later date. Paintings of the Colosseum and the surrounding area depict the change in landscape and land use of the region which changed with the depopulation of Rome after the fall of the Western Roman empire (476 CE).

Over the centuries, the Colosseum has been associated with various values, including the capability of the Roman civilization and the endurance of a well-built piece of architecture. It also forms a part of the regional identity and even the national identity. Various architectural details and feats of engineering seen in the Colosseum have served as educational case-studies for later generations. From this, we derive the values of the Colosseum as a heritage asset which communicated the glory and prosperity of the Roman empire, and educates about the architectural and engineering ability of the Romans [63]. The gladiatorial culture and the importance given to militaristic and

athletic feats in Roman civilization apart from the information on the ancient cultural activities of the Romans and the socio-political structure of Roman society can also be deduced from the value associations of the Colosseum.

Further communication in the form of records of the events and uses of the Colosseum gives us some other information such as the religious importance of the Colosseum to Christianity and economic situation of the region after the fall of the Roman empire. Popular sentiment towards the Colosseum as a structure was usually one of wonderment. The stones used in the construction of the Colosseum were of such a high quality that it became a quarry in the later mediaeval ages [63]. This shows us that while the Colosseum was valued as a historic and aesthetically striking structure by the economically stronger section of the populace, there was another section of the populace that used it purely for the economic benefit. The cultures that followed the Roman empire could not understand or appreciate the original purpose of the Colosseum. The construction of the colosseum was intended to send a message of the strength of the Roman empire at its peak. This was potentially lost on the future occupants of the Colosseum. Even so, we have now been able to interpret the meanings and associations that were attached to the Colosseum originally. We are also able to appreciate the later associations by the people who came after the decline of ancient Rome.

The practice of 'Shikinen Sengu' in Japan is an interesting contrast to that of the history of the Colosseum. Shikinen Sengu is a ritual tradition where the temple or the 'sacred palace' in which a kami (deity / divine spirit) is actively being worshipped; is rebuilt by the priests of the Shinto religion in Japan. The rebuilding process is meant to replicate the shrine as it is. The kami is transferred to a newly built shrine. In the Grand shrine at Ise, Mie Prefecture in Japan, this is done once every 20 years. All the buildings at the Ise-Jingu (Jingu meaning shinto shrine in Japanese) and the Torii (entrance archway) are remade and then the deities are carried to the new site. Over a thousand sacred textiles and apparel [64], furnishing and treasures which are placed within the shrine are also remade on the occasion of the Shikinen Sengu. The construction is done with cypress wood and no nails are used since the joinery is done by shaping the wood. The first known instance of such a practice at Ise was in 690 AD and since then it has been conducted every 20 years with some postponements and rare exceptions due to wars. The Ise region has over 125 shrines and the legend says that around 2000 years ago, the Emperor's daughter had a vision that this region was appropriate to build a shrine for the Sun Goddess Amaterasu. In the Shinto belief system, she is considered one of the three most important children of the creator God, Izanagi and is also considered to be one of the parent Gods of the current Imperial



Family of Japan. Amaterasu-Omikami (Omikami meaning great deity) is the guardian of Japan and even to this day millions of Japanese people visit the shrines and take part in over 1000 different rituals every year. The rituals associated with the Shikinen Sengu are reported as taking almost 8 years to complete [65]. Researchers have stated that the meanings associated with the grand Ise shrine are purposefully left undefined. Instead the focus of the Shikinen Sengu and other rituals at the shrine and in general with Shintoism relies on the “preservation, transmission, and repetition of ritualised forms” [66]. The religious values and socio-cultural values of a society that has taken pride and felt a sense of security by consistently performing the rituals over centuries is being inherently communicated by the rebuilding of the shrines.

Unlike the Colosseum, the built structures at the Ise Jingu were not left to deteriorate over time and then eventually preserved in a ruined state. They were purposefully demolished and rebuilt thereby preserving the built structures in their original design and passing the knowledge of the construction techniques over generations. The symbolic associations of the ritual of Shikinen Sengu includes the idea of everlasting youth or ‘Tokowaka’. The built structures are never older than 20 years but their style and techniques of construction are over 1000 years old at this point [67]. The original structures of the Ise Jingu were arguably capable of surviving a few centuries with periodic repairs and restoration as and when needed. The rebuilding of new shrines would not make economic sense but it was done and is still done today as part of a sacred tradition. This process in itself is a communication of historic, sociocultural, religious and symbolic values over time.

Both the above examples show us how two different heritage assets have been made available to us today. They were constructed for particular reasons and their underlying motivations are now known to us. They had been treated in different ways by the respective local communities. The Colosseum saw periods of celebration and then was forgotten for a long time before becoming a World Heritage Site. The Ise Jingu and the practice of Shikinen Sengu was never forgotten. Even though their value associations may have changed or evolved today both heritage assets have unintentionally become communicators of cultural heritage values. They were created by the actions of those who were in power and impacted the lives of communities. It is possible that these properties were intended to last a long time but there is very little possibility that their existence over thousand years into the future was imagined at the time. The colosseum was used as a quarry at a point in time when its purpose and the values associated with it were forgotten. It was not conserved when the institutions that created it were no longer around to communicate about it. The Ise Jingu was able to communicate its value associations throughout its history and the institutions that created it were

always around in some form. This highlights how heritage communication can aid with conservation and how conservation itself becomes a communicative act. We now look at a collaborative approach to heritage conservation and communication which is also an instance where a communities' values were understood and benefited by the institutional approach.

### **2.2.1 Values and CHComm – A Participatory or Collaborative approach**

Today, collaboration between experts and non-experts is becoming more common in CH conservation and communication. The Mobile museum project serves as one illustration of such an endeavour. The Mobile Museum project was created in order to give the Nalik people of New Ireland, Papua New Guinea, remote access to the artefacts stored in Queensland museums and help them re-connect with their history. This project, a collaboration between the University of Queensland, the Queensland Museum, and the Nalik community, used a participatory methodology to address community needs. Through their 3D recreations, the designers hoped to offer online access to wooden carvings and sculptures kept at the Queensland Museum [68]. The Nalik communities' funeral rites are not complete without these carvings. These wooden sculptures, which are decorated with clan-specific themes and are carved after a person has passed away, are presented to the community at a "mortuary feast" with accompanying song and dance ceremonies, in accordance with local custom. These "malangan" sculptures—also spelled Malanggan or Malagan (see Figure 2.2)—were burned or left to rot after the ceremonies connected with death were finished. The specific carvers who perform this duty from memory then carve these sculptures again during the following mortuary feast. The CH value of the malangan is not only found in the actual carving or sculpture itself, but it is also in the memories of the imagery and the right to replicate such carvings [69]. The designers of the Mobile Museum project were aware of these value associations and made an effort to allay worries in the Nalik community that some clans had lost the ability to replicate their malangan carvings. Members of the community now have access to a digital platform where they can view 3D recreations of malangan and even zoom in to read the carvings and iconography on the sculptures. The digital reproduction was additionally improved by the usage of textual descriptions and notes contributed by community members. The digital information was also distributed via CD ROMs to community members who could then see the information on their home computers as just 10% of the community had reliable Internet connection on their mobile devices. The community members



were able to rediscover their roots thanks to the efforts of the Mobile Museum project.



**Figure 2.2:** Malangan masks from New Ireland. Ethnological Museum, Berlin-Dahlem (Public Domain, Wikimedia).

In contrast to the Mobile Museum Project which resulted in better conservation and communication of the Nalik community heritage, many communities find that an institutional approach is not beneficial to them. Communities play a central role in safeguarding and propagating their values from one generation to the next. In some cases, communities have systems in place to conserve and propagate heritage that they consider significant. As discussed previously in this chapter, urbanisation and ill-advised administrative intervention has changed much of the landscape, and this has negatively impacted the cultural heritage values and associations held by communities. An example of this would be the Adat community in Bali, Indonesia which is historically responsible for the conservation of sites like temples, royal palaces and Balinese Hindu rituals of the Balinese Hindu population. A study conducted interviews of the hierarchical heads of local communities in Denpasar, Bali and qualitatively analysed the leader's perspectives. The responses showed that the community was unhappy with the urbanisation happening in the region, especially 'profit-oriented' development. The traditional communal governance of the lands around significant heritage sites was focused on maintaining a 'sacred and very quiet' environment. This was done through registering the land ownership with the 'Desa Adat' (communal registry) which would then manage the lands near the temple including its inheritance. Current government

policies have reverted the management of these lands to the state administration which has led to development of housing and commercial complexes and this has left the community upset due to their perceived weakening of the character and image of the temples. An integrated approach for the development which considers the cultural heritage values associated by the community to these sites was recommended by the study. The authors also highlighted the socio-economic and environmental issues which were to be remedied through this integrated approach [60].

The communal perception of values presents a unique situation for the CH professional. The reliable identification, preservation and communication of such values can be a daunting task. In the 21<sup>st</sup> century, the academic discourse has more openly adopted the idea of cultural heritage values, as professed by the community of ‘others’ or non-experts. Social value and related forms of public participation have entered the vocabulary of international heritage frameworks and even among the national level conservation policies and guidelines. On the contrary, the idea of cultural heritage value remains ‘relatively marginal’ in areas of heritage practice other than the formulation of policies and guidelines [70]. It has also been observed that the practice has remained focused on documenting the items that are supposed to physically represent heritage instead of the cultural heritage values that are considered to be at the core of conservation [71]. The under-representation of CH values in the practice of cultural heritage management can be considered to go hand in hand with the lack of CH values in the communication of cultural heritage. To improve the process of communication of cultural heritage we need to discuss certain goals that guide the communicator. Achieving a balance between technology adoption, heritage documentation and CH value communication remains the ultimate target.

### **2.2.2 Goals of Cultural Heritage Communication and the Role of Values**

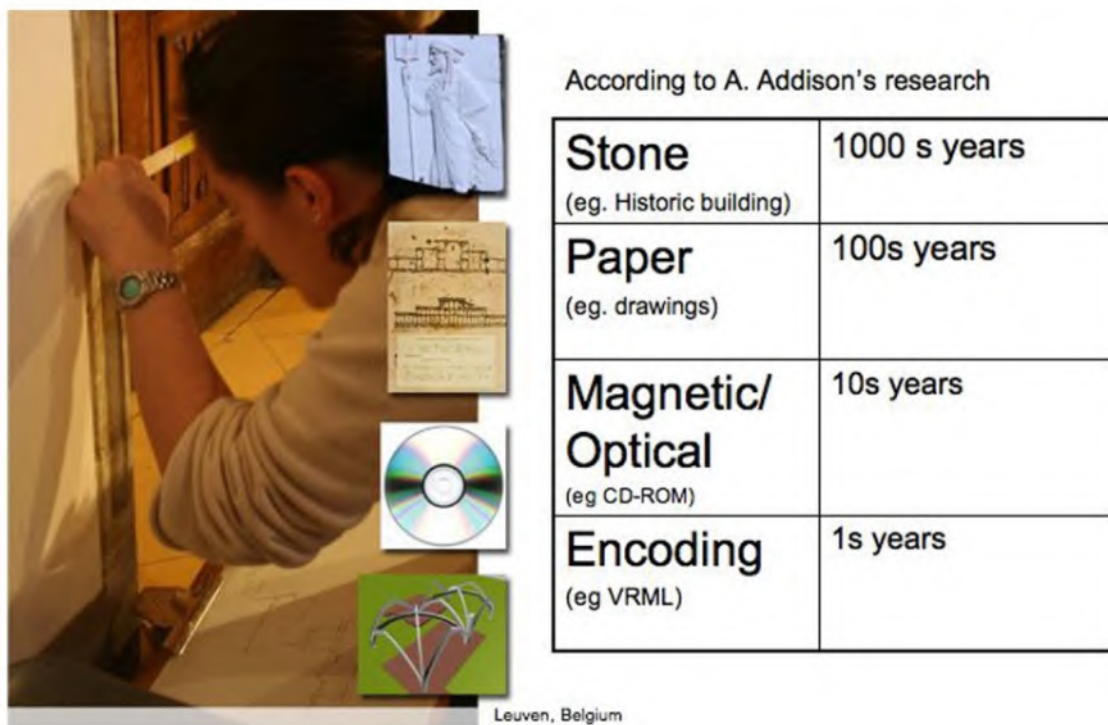
The goal of the communication of cultural heritage (CHComm) is to transfer the information, as well as the cultural significance of a specific cultural heritage property to an audience. Heritage information can be the collection of facts, records and scientific data available. The cultural significance of heritage would be the collection of all the cultural heritage values associated by various communities and experts from various backgrounds. CHComm can be enhanced by identifying, filtering and thoughtfully presenting CH values in physical and digital content intended for willing participants. Communication of heritage must aid and enhance the awareness of interested parties so that they may contribute to further conservation and involve

themselves in creating a sustainable future for the heritage. As discussed, charters and guidelines formulated by authorities or professional associations cater to the conservation of CH, but do not embed any directives for the communication of values inherent in the CH. In fact, it is observed that communication of cultural heritage is treated as ‘secondary’ to conservation [24]. There is one notable exception, the 2008 Ename charter developed from the 2005 Charleston Declaration on Heritage Interpretation [72], applicable to cultural heritage sites. The charter lists down some basic principles for the interpretation and presentation for cultural heritage sites, and these principles are essential for heritage conservation and public appreciation. They are based on seven objectives [22]:

1. **facilitate understanding and appreciation**, through a full range of potential activities like print and electronic publications, public lectures and community activities;
2. **communicate meaning**, through careful, documented recognition of significance, through accepted scientific, scholarly methods and living cultural traditions;
3. **safeguard the tangible and intangible values** that form the significance of the cultural heritage site;
4. **respect the authenticity**, by communicating the significance of their historic fabric and cultural values and protecting them from the adverse impact of developments;
5. **contribute to sustainable conservation**;
6. **encourage inclusiveness**, by facilitating the involvement of stakeholders and associated communities in the design and implementation of communication programmes;
7. **develop technical and professional guidelines**.

Researchers have noted that the objectives of communication provided in the Ename charter complimented the needs of the 21<sup>st</sup> century educational and social realities that were moving beyond objectivity, factual, and historical aspects [73]. In particular, the charter acknowledged that values alongside information have to be communicated to the public in order to enhance appreciation and understanding of cultural heritage sites and its sustainability for the future. Hence, now we have guidelines for communication of physical cultural heritage sites which are cognizant of values and community perspectives which explicitly mention living traditions.

It is encouraging to see that the charter in its seventh objective has implored heritage professionals to develop guidelines that are appropriate and sustainable in their social contexts. Lessons from our history show that the examples of successful communication required explicit sharing of values. Communicators should ensure the transfer of authentic information that includes the local community values alongside the expert interpretations when reaching out to a wide audience. As the global communication system has settled into an ever-connected digital epoch, there is a need to understand how values are taken into account in digital cultural heritage communication. Over a decade ago, researchers had identified that digital mediums can have longevity issues [74]. Figure 2.3 shows a comparison between stone, paper, magnetic and encoding based storage media.



**Figure 2.3:** A comparison between stone, paper, magnetic and encoding based storage media, reproduced from original publication [74].

While some of these issues can be practically mitigated by utilising adequately maintained server systems, the reality of digital storage is that it cannot be considered as permanent as some of the other media. Regardless of the longevity of storage, we are at a time in human history where communication is reliant on digital technology.

In the next chapter, we start by discussing the impact of digital technology on CHComm. Then we look at what effective communication of heritage can be like in the digital age. Finally we analyse certain examples of digital CHComm that stand out in their attempts to document and propagate CH values to wider audiences.

# Chapter 3

## Effective Communication of Cultural Heritage Values in the Digital Age

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*In this chapter, we look at the impact of digital technologies and the Internet on cultural heritage communication. Then we look at what effective communication of heritage can be like in the digital age. We raise the point that perpetual and widespread access to cultural heritage communication is leading to constant contestation. We proceed to develop criteria that can be used to categorize effective CHComm. Then we analyse existing literature reviews and certain selected examples of digital CHComm. Finally we identify the projects that made clear attempts to document and propagate CH values to wider audiences. We conclude the chapter by explaining why there is a need to develop a process that can help design effective Digital CHComm environments.*

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### 3.1 Impact of Digital Technologies on Cultural Heritage Communication

Since the advent of the Internet, communication has received a new channel that is ever present. Almost anyone from anywhere can converse with any number of people at any time regardless of the distance. Digital environments have advanced rapidly, especially over the last decade as computing hardware has become cheaper and Internet access has become widespread. Digital communication of cultural heritage has evolved into interactive games and augmented, mixed or virtual reality experiences. Digital experiences can be built to function within a physical site like a museum or a heritage site. Digital communication of cultural heritage can also function independently as completely standalone projects living within the devices that interact with servers on the Internet. This trend of digital technology adoption can only be expected to continue as off-the-shelf consumer technology, ranging from high-capacity smartphones to wearable AR, MxR and VR headsets, becomes widely available [43].

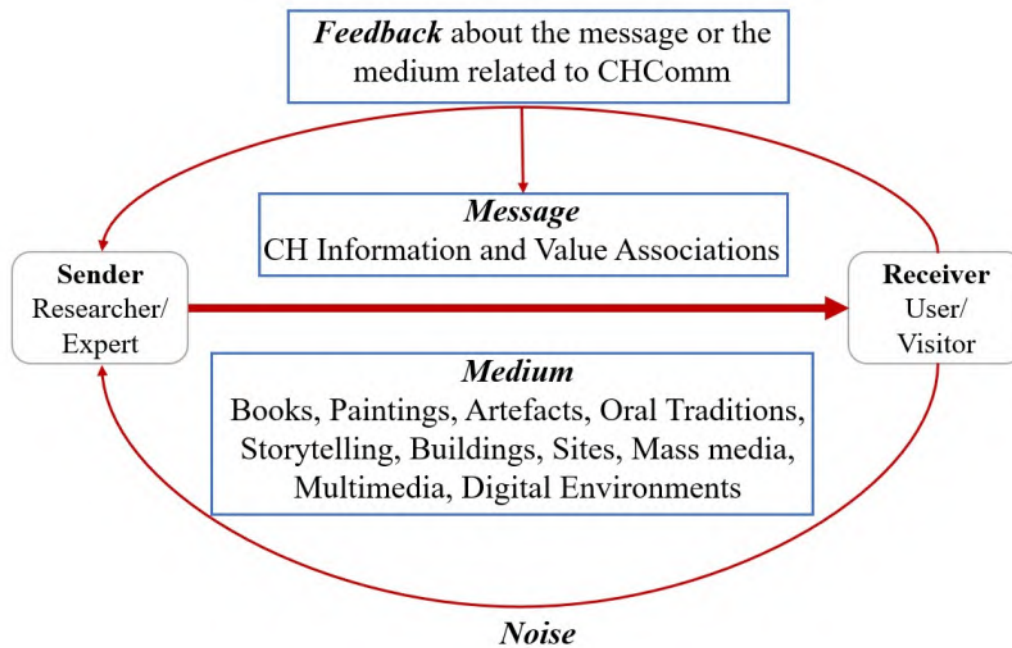
Contemporary digital environments are being used to communicate cultural heritage and they have become the newest medium through which the message is transferred.



Before the Internet, the senders or the communicators would usually be the professional researchers/heritage experts/curators and the receivers would usually be the other non-experts and wider audiences. After widespread access to the Internet became a fact of life, almost anyone can conduct research via the Internet and also become a communicator. This is also the case on the other end as anyone can be a receiver of the communication at any time as long as the technology and infrastructure support is available. Not only that, the users are able to send constant feedback about every aspect of a cultural heritage communication environment if the option is provided or supported on a digital platform.

Figure 3.1 is a representation of how Cultural Heritage Communication (CHComm) can look like in our digital age of constant and widespread Internet accessibility. Senders from any part of the world can use any media to share cultural heritage information and values. An author could write a book on heritage, a curator could create a museum experience and a tourist may share a blog post or a video of their visit to a heritage site and they would all become senders of CH information and values. Any reader of the book, visitor to the museum or user of a digital platform that is used to view videos or read blogs can then share feedback. This feedback can be about any aspect of the CHComm, it could be about the CH information and value associations shared (message) or about how it was shared (medium). The feedback could also be shared at any point in time from anywhere in the world. Additionally, the feedback itself can impact the message being shared. Many Internet users now check the reviews of a certain service or product before they make a choice to purchase or access the product or service. Readers who read a book or visitors to a museum or a heritage site can share their thoughts on digital platforms like Google reviews or TripAdvisor. There can also be a lot of other commentary in the feedback which may not be relevant to the CHComm (Noise). Everyone on the Internet is free to see the feedback and would likely see it before or while they are experiencing a CHComm project or environment. As we will see, many digital CHComm projects have used this aspect of user feedback through digital platforms to their advantage.

We previously looked at the Ename charter and quite a few other charters that discussed the conservation and sometimes the communication (interpretation) of cultural heritage. All these statutes and charters directed heritage professionals to facilitate the understanding and appreciation of values and communicate meaning while conserving and communicating (interpreting / presenting) heritage. We also discussed how the traditional systems of CHComm have been effective in communicating the CH values and meanings over the hundreds and even thousands of years of human history. The digital environments of today, while increasingly attractive, need to be



**Figure 3.1:** Cultural Heritage Communication Process in the age of perpetual and widespread accessibility to the Internet

evaluated for effectiveness in communicating Cultural Heritage over the long term. To put that into perspective, we ask ourselves a question -

*“Can digital environments for CHComm effectively communicate cultural heritage information and value associations from one generation to the next as well as the oral traditions, folktales, books and built structures of our past?”*

In an effort to answer this question, we shall set-out a basic framework through which Effective Cultural Heritage Communication (ECHComm) can be defined and the factors impacting it can be identified.

## 3.2 Effective Cultural Heritage Communication in Digital Era

Effective cultural heritage communication is a phrase that can only be defined as a sum of its parts. Effective communication implies that the original message has been received without any corruptions and that it has been understood. Cultural heritage communication implies that the authentic CH information and value associations are what constitutes the message. Therefore, when a sender shares authentic CH information and value associations to a receiver who understands the message, the CHComm can be considered effective.

Immediately we can note some potential issues when considering how communication works in the age of perpetual and widespread Internet access. One is that the authenticity of the CHComm might not be assured when almost anyone can be a communicator / sender. When more people can and do make digital content that acts as carriers of CH information and value associations, the level of understanding and thoroughness of research can be wildly varied. Another issue is that verifying that a receiver has ‘understood’ the CH knowledge conveyed to them can be difficult. Yet another facet of digital CHComm is the possibility for contestation and entirely new types of heritage and meaning making which can arise within digital spaces. In the next section we proceed to look at how contestation can be caused by and also affect digital CHComm.

### **3.2.1 Digital Cultural Heritage Communication and Contestation**

Digital Cultural Heritage Communication environments use multiple platforms and media to expand their reach by providing auxiliary interfaces like websites or mobile apps. This results in an extension of issues that emerged in 20th century communication which was centred around mass media, namely contestability and questionable authenticity of the heritage communication. Contestability of cultural heritage had come to the fore with the adoption of mass media. Essentially, when one perspective is presented to a small group of people, we may not see many counter-perspectives. When the same perspective is presented to a large audience, we start seeing many voices raised both in support and in opposition of that perspective.

The wider access to cultural heritage communication via digital platforms is only going to increase contestation in the coming decades. Researchers have pointed out that cultural heritage could very soon include cultural symbols generated by people and agents in our network society based on ‘informatized cultural heritage’ [75] thus producing higher levels of cultural contestation than ever before. Experts and non-experts appear as equal parties on digital platforms and the two-way communication platforms enable them to share their value associations with each other. Here we present three examples of contestation seen through digital CHComm: people to authorities, people to people, authorities to people.

#### **People to Authorities**

The first example is where people resorted to social media to communicate their views and opinions on the dilapidated local cultural heritage assets which helped to bring international attention. Chandannagar town (formerly known as Chandernagore) in the state of West Bengal, India has many buildings (bungalows) of the Indo-French colonial architecture style and most of these were in various states of disrepair causing



a sense of concern and fear of loss among the residents. A perceived apathy towards the heritage by the local government spurred the local people into action. Multiple Facebook groups were created as sporadic preservation efforts by the local civil society which resulted in the creation of “the Heritage & People of Chandernagore project” in 2015. This project, which was initiated by a privately funded architecture firm, started a collaborative mapping project that identified built heritage in the town along with intangible heritage that “the local citizens perceived and valued as their heritage”. They developed a ‘web-home for the heritage of Chandernagore’. Interactive digital tools were used to update the website with heritage information collected by “citizen historians” (residents) who went door to door to capture the oral histories and memories in video or text formats. The website was promoted by blog posts and social media. The project received global attention when in 2017, the Ambassador of France to India, H. E. M. Alexandre Ziegler visited Chandernagore and the website was used to cover the history of the town in an orientation [76]. Evidently, there is a serious interest in conserving heritage that the people value as heritage even if the official perspective does not cover it.

Prior to the Internet age, such activities would not have been as easy to implement and record. With the advent of interactive digital technologies, public access to documentation and information increased which led to effective collaboration via online platforms. The community was able to contest the lack of action by the authorities using digital technologies and platforms. They were also able to communicate their heritage value associations with all interested parties.

### **People to People**

Public expressions of heritage value associations are being shared over the Internet using new and varied digital tools. Video games have become a proxy for the communication of heritage information and they are widely accessed by a mixed audience [77]. This has led to situations where users create content to be used within the specific videogames or even create content recording their specific interactions with the video game and then use that to communicate CH information with their value associations. These instances of communication on the Internet are a means of exchange of CH information that do not require and might not seek the assistance or verification from any CH experts or institutions.

For example, a YouTube video, recreating the events of the Battle of Agincourt between England and France in 1415 <sup>3</sup> was built using a modification of the Total War: Attila video game titled “Medieval Kingdoms 1212 AD”. The thumbnail of this video is shown in Figure 3.2 that received over 68,000 views in a year.

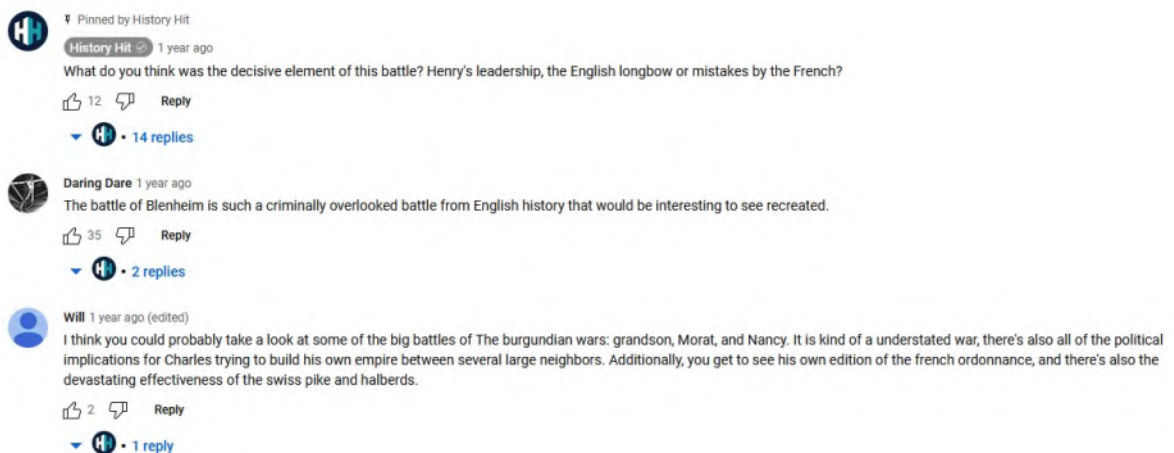
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<sup>3</sup><https://www.youtube.com/watch?v=Jo89jmdxazY>



**Figure 3.2:** Screenshot of a video uploaded to YouTube covering the historic Battle of Agincourt using footage captured by modifying a video game.

This video is followed by discussions in the comment section by people with the intent of discussing heritage without any mediation or input from experts, see Figure 3.3.

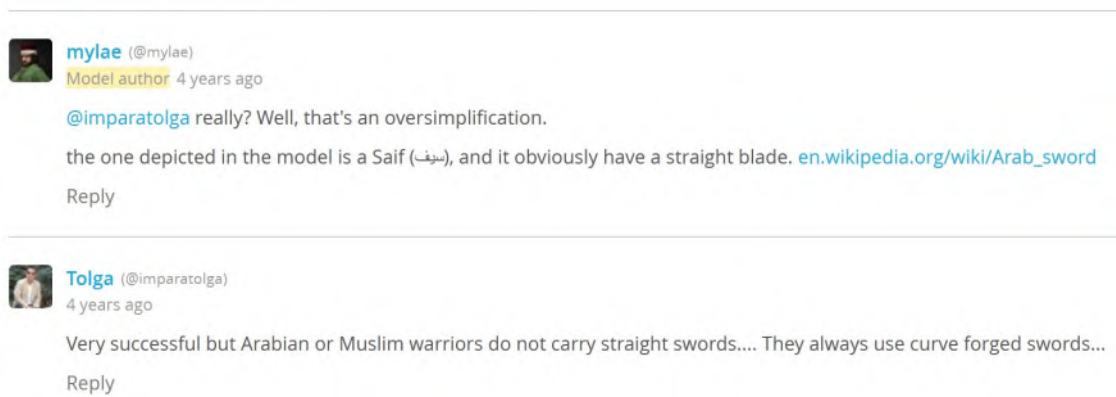


**Figure 3.3:** Screenshot of the comment section of the YouTube video shown in Figure 3.2 covering the open discussion under the video.

These videos become a source of entertainment and cultural heritage information in their own right. They also share individual values associated with the heritage items by both the creators of the video and also the engaged viewers. Many viewpoints and

personal perspectives are shared where supporting or opposing narratives evolve out of the discussion. The top comments to the video start out by recommending other battles which are ‘overlooked’ by what is seen as ‘mainstream history’ in the opinion of the enthusiasts who have presumably viewed this video. The replies to the comments then share more perspectives on the video itself and also contest the assertion that a particular battle and its historical context may have been overlooked. Other similar online discussion forums become grounds for both social reflection and contestation of cultural heritage. They also encapsulate a potential to generate competing and unverified narratives.

Another example of user-generated content and ensuing discussion surrounding expressions of cultural heritage can be seen on websites like the Sketchfab store which is an online storage platform for 3D models and allows anyone to upload content. Creators on the site have shared objects like the model of an Arab standard bearer for the Hafsid Caliphate. This model was once again created for use in the ‘Total War’ video game (Link in footnote <sup>4</sup>). Figure 3.4 shows a conversation between a user of the site and the model author. The user states that the Arab soldier model should be carrying a ‘curve forged sword’ and not a straight sword as is depicted in the model but the model author feels that it would be an oversimplification and cites reference.



**Figure 3.4:** Screenshot from comment section of a 3D Model on the Sketchfab Store.

Digital contents generated by agents and shared on the Internet are not always being fact-checked. Other users, who may consume this user-generated content, end up by complementing or contesting the narratives surrounding the specific digital CHComm instances. Such events will only increase in frequency and they cannot be effectively mediated and moderated. In some cases, they are a response to the perceived disinterest by the appropriate authorities and, in other cases, constitute a clear expression of interest by the community in the cultural heritage that they

<sup>4</sup><https://skfb.ly/6t98P>

perceive as valuable. This only further states the user interest in creating, discussing and consuming digital cultural heritage especially when it is related to the expression of heritage they value and wish to participate.

### **Authorities to people**

In mainstream heritage communication, some cultural voices tend to get missed. Within digital communication of cultural heritage the freedom for anyone to create content means that certain objectives win out over others. For example, a study was conducted on the websites that communicate the value associations of K'gari (Fraser Island) in Queensland, Australia, which is a world heritage listed site for its natural values [78]. It is also an island with a history of at least 2000 years of occupation by the Aboriginal Butchulla people and has hosted between 400 to 3000 people of the aboriginal community depending on the season [79]. Perusing the World heritage listing on the UNESCO website <sup>5</sup>, we see that there is no mention of the Butchulla and aboriginal archaeological values of the island. However, an analysis of the regional government website showed that 56% of the text referred to indigenous cultural heritage values while 80% of the visual material covered indigenous heritage. In contrast to this, five tourist-focused commercial websites studied showed that 13% of the textual content mentions aboriginal values and only 5% of the visual material could be seen covering aboriginal heritage [80]. The island is a heritage landmark for the aboriginal people and its natural value. Only the Australian government website is able to represent this variety of values for the island. This is an instance where the regional authorities form a counterpoint to the local tourist service operators and a rare instance of authorities contesting a section of the people. The authenticity of heritage comes from all its associated values and ensuring the authenticity of Digital CHComm focused on a wider audience is a necessary and difficult endeavour.

To summarise, digital media consumption is now prevalent primarily because of ease of access to the public. Officially authenticated cultural heritage media lags far behind in its reach even on digital platforms. This is likely due to the fact that independent actors on the Internet vastly outnumber the institutions and experts. The ability of independent actors to create and disseminate various forms of digital CHComm products or environments is disproportionately more than that of experts and CH institutions combined. Digital CHComm creation and contestation are two sides of the same coin. Every instance of digital CHComm shared on digital platforms that support two-way interaction, immediately sees feedback which likely contests at least some of the perspectives presented. In this increasingly crowded and confused landscape, sharing of authentic information and associated heritage values for CH

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<sup>5</sup><https://whc.unesco.org/en/list/630>

assets becomes all the more necessary. In continuation to this we can also see that understanding the effectiveness of CHComm in the digital era is the need of the hour.

### 3.2.2 Criteria for Effective Cultural Heritage Communication

As we enter the digital era, this ability to faithfully document CH has improved. Digitization techniques like photogrammetry and laser scanning have greatly increased the visual fidelity of virtual recreations. Large volumes of books and other similar sources of published research containing authentic heritage information can be accessed and transferred over the Internet in under a few seconds. There is no doubt that the verification of authenticity for any CH information is not a very difficult task provided that a heritage asset is well-researched and documented. The other aspect of CHComm is that of the values associated with a CH asset. Communicating authentic values associated with CH is undeniably an important factor for the success of any CHComm effort. The receivers then need to be able to interpret and understand these CH values to ensure that the digital CHComm effort is effective. In light of the previous discussions we look at outlining four broad based criteria that can be taken into account when aiming for effective cultural heritage communication.

- **Communication of Authentic Value Associations:** Multiple values are associated with Cultural Heritage. If we use the provisional value typologies discussed in the previous chapter we can see that almost every CH asset has historic value and further to that social/symbolic, religious/spiritual, cultural, or aesthetic values may be attached to CH. In any instance of cultural heritage communication, an attempt must be made to communicate these values in their entirety to the receiver as the cultural significance of any CH is made up of the values associated with that CH. In order to successfully grasp the significance of any cultural heritage, one must receive information on the cultural heritage values associated with the cultural heritage. The communication of authentic values associated with CH becomes imperative for effective CHComm.
- **Individual Learning:** While the exact content being communicated may vary, every instance of CHComm should ideally create some understanding of CH values in all the participating individuals (receivers). The scope of understanding may also vary from person to person, but some level of appreciation for the significant value associations would have to be created in a receiver for effective CHComm. Understanding is the component of communication that makes it effective as mentioned previously. This understanding need not necessarily be based on one specific type of learning such as recollection of historic facts and figures or

memories of experiences. Learning can be achieved as a personal interpretation of the values associated with cultural heritage. This learning achievement needs to be verified so as to validate the effectiveness of an instance/environment of CHComm. Without testing the result of the communication which is learning, effectiveness of the communication cannot be established. The effectiveness of the communication can also be evidenced by actions taken by the receivers. Actions may vary in scale depending upon the interest and ability of the receiver. At one end of the scale is the action of Heinrich Schliemann, who was inspired to search for the ruins of Troy after reading the epic poems by Homer; at the other end are actions by people today, such as heritage discussions on social media or the creation of content using game engines to recreate the scenes of battles that they are interested in. Sharing an image with relevant references or sharing of an original thought or feeling as a text message or as the caption of an image can show a level of understanding and reflection regarding an instance of CHComm that may have occurred hours or days earlier. Encouraging social media discussions as a method of retention has been shown to increase the learning in the users of CHComm environments [81].

Further to the criteria of communication of authentic value associations and individual learning, it is also necessary to enhance the effectiveness of an individual's experience with a CHComm environment. This would improve the quality of the interpretation or understanding of each individual receiver in a CHComm instance. In this regard, we may consider the criteria of participant engagement.

- **Participant (receiver) Engagement:** Participation in an instance/ environment of CH maybe by receivers of various kinds and may not always be voluntary. Engaging a receiver is possible through various tools and techniques of communication within these instances/environments. Increasing receiver engagement helps in encouraging learning [81] [82] [46]. Effectiveness of CHComm would be supported by a higher quality of understanding/learning, made possible by engaging receivers/participants. Consequently, these participants may choose to act in a manner that further enhances the spread of CH information. For example, the video game Total War: Attila, which was released in February 2015, engaged a large number of players. The chart data from the Steam game distribution platform shows that over 2500 players are playing the game every day as of mid-April 2023 which is over 8 years after release (See Figure 3.5). This game and a few modifications developed for the same was used to create another digital CHComm product in the form of the YouTube video covering



the history of the Battle of Agincourt discussed as the example of contestation among people. The video game itself was a communicator of CH information and possibly a few value associations which in turn created a more direct form of CHComm.



**Figure 3.5:** Total War: Attila - Steam player data as of mid-April 2023

It is worth mentioning that in the above example while the video game itself was not a digital CHComm environment, it did unintentionally become a carrier of a lot of CH information and value associations. Researchers are acknowledging that video games could be ‘a rich vein of study and reflection to a wider heritage studies community’ [77]. Interestingly, smaller video game developers (indie devs) have notably started turning towards what they perceive as their regional cultural heritage to craft a ‘standalone characteristic’ for their games [83]. Studies have also pointed out that recent attempts at treating video games as digital cultural heritage assets have many issues. When CH institutions try to make video games ‘exhibitable’ they lose track of games as culture and how they are experienced [84]. The mention of this video game and the subsequent digital CHComm instance (YouTube video) that was created by engaged participants are used as a positive example of video games as culture and also a highlight of their impact on cultural heritage and its communication.

Once a group of receivers are engaged by CHComm environments which promote individual understanding of the authentic values associations, we may reach a stage where larger numbers of people show interest. A larger number of interested people can lead to community participation in CH preservation and this may be brought about by dissipating/disseminating/distributing CH information

(CHComm) to a larger group of people [85] [86] [87]. A CHComm effort can be considered effective when it engages participants and spurs them to respond to the CHComm effort by sharing their perspectives and understanding from the CHComm as feedback or as further communication to a wider audience.

- **Increase Awareness:** It has been noted in published literature that there exists a crisis in conserving and managing cultural heritage due to various reasons, which includes over-tourism [88] and a lack of awareness [89] among others. One solution to this situation has been suggested as increasing awareness among people regarding the value associations and management of cultural heritage. Increase in mass awareness of CH within associated culture groups [90] and larger global audience is a necessity for sustainable preservation of CH [89]. The increase in awareness of the values associated with cultural heritage is part of the World Heritage Committee’s strategic objectives. The goal number 4 adopted in 2002 states “Increase public awareness, involvement and support for World Heritage through Communication” [91]. It may appear to be a redundant statement but we feel it necessary to state that what works for World Heritage conservation can definitely form a consideration when looking into criteria that can support effective communication. Cultural Heritage Communication can become more quantitatively effective when it is dissipated to a larger group of people and it may be considered most effective when the message sustains/survives/is effective across generations and even millennia without losing much of its core values.

The impact of the aforementioned criteria in designing or evaluating the effectiveness of CHComm environments can only be validated through experimental design and testing. Such an effort for CHComm in digital environments is attempted here in the coming chapters.

### 3.2.3 Willing Participants and Effective CHComm

People who voluntarily seek out heritage knowledge sharing environments or platforms could be reasonably called willing participants. These people could be experts in heritage and history or non-experts who are actively contributing to the conservation and communication surrounding heritage assets out of their interest. Table 3.1 summarizes the types of participants and the possible actions they could take along with the reasons or motivations for the actions.

Table 3.1 serves to draw the lines for our discussion and also bring out the major distinctions between the two groups of willing participants. The group that professionally connects with heritage or history and allied fields would be the experts



while others would be those who do not have any direct professional commitments. It is assumed that experts / professionals / practitioners are interested in the research, conservation and communication of cultural heritage. Therefore the component of personal interest which would always be present with the expert group is not highlighted.

**Table 3.1:** Types of participants, the actions they make take and reasons for such actions in a cultural heritage knowledge sharing environment

<b>Participants (Row)/ Action(Column)</b>	<b>Create or Contribute to CH Communication Content</b>	<b>Seek out and Learn about CH</b>
Experts	Research purposes, as part of institutional or organizational communication efforts	Academic interest, as a part of institutional or organizational research, as part of research teams
Others (Non-Experts)	Personal interest, as a means of communication of individual or communal identity and collective memory	Personal interest, as a means of understanding about their own identity and heritage, due to an abiding interest in other cultures

As per the criteria suggested, effective CHComm looks to engage participants and increase awareness of cultural heritage while sharing authentic values and promoting individual learning. In the case of Digital CHComm, the role of willing participants is of higher importance as the spread of information on the Internet depends not only on the more conventional journalistic outlets but also on disparate digital communities across forums and social media platforms [92] [93].

Now that we have seen what CHComm can look like on the Internet and set a few criteria for analysing the effectiveness of CHComm, it is time to look at the examples of digital CHComm that are effective in communicating authentic CH values and their respective value associations.

### **3.3 State of the Art in Digital Communication of Cultural Heritage and the Communication of Cultural Heritage Values**

The state-of-the-art in digital cultural heritage communication projects needs to be understood so as to discuss the position of cultural heritage values and their authentic communication within digital environments. Heritage experts and institutions have made efforts to use participatory design approaches for heritage experiences whether

physical, phygital or digital. This has been used to collect and record community perspectives and to present them holistically within heritage communication environments. There are examples that show how expert led collection of CH values has yielded beneficial results. There have been collaborative approaches to understanding heritage that were led by institutions and the impacts of these approaches have been studied and documented. Even so, literature has noted that digital cultural heritage studies rarely discuss the methods to present the cultural significance of the heritage in question and instead tends to linger on aspects of user engagement, technical expertise and technology adoption for ‘heritagization’ [94]. A number of surveys in the literature have discussed the solutions provided by digital projects, analysing their design and impact. Here we summarise their results.

### **3.3.1 Review of Literature Surveys**

Studies on digital communication projects for cultural heritage have accounted for the user interests and user engagement, especially from the viewpoint of UI/UX design [47]. These analyses cover the “conceptual frameworks, models, research methodologies, and paradigms” for realising the so-called Cultural User eXperience (CUX). In particular, they showed that users have specific expectations for the cultural heritage that they would experience, including leisure and socio-cultural needs. Identifying users’ different experience needs to investigate what services GLAMs should provide to users throughout the process of Pre-Visit, During-Visit, and Post-Visit has also been suggested. For example, CrossCult experience implemented at the Archaeological Museum of Tripolis, Greece covered all the three stages. For the pre-visit stage, a series of mini games were released on social media. They were intended to attract attention to the museum and also understand the user’s cognitive style while playing which was shared with another app that was used during the museum visit. In the during-visit stage, users could login to their Facebook account and receive suggestions for ‘thematic tours’ that were personalised according to their interests. Every object would have a short narrative attached to it with subtitles for hearing impaired users. Post-visit, the users were also able to share their thoughts and reflections with other museum visitors, on a dedicated social media site as well as their personal social media, if they preferred it. For some objects, this option was also available during the visit. This method of personalised content delivery and post-visit social reflection was positively received by the users [81]. These studies and projects show us that the area of user experience design in digital and phygital CHComm environments is being increasingly analysed.

Much attention has also been devoted to the suitability of technologies and inter-

faces, especially with respect to virtual technologies. In a study, augmented reality was suggested as preferable for exhibition enhancement while virtual reality systems were deemed suitable for virtual museums. Mixed reality was seen as applicable for both indoor and outdoor reconstruction [46]. Another survey discussed different categories of immersive reality, namely – Augmented Reality (AR), Virtual Reality (VR), Augmented Virtuality (AV), and Mixed Reality (MxR). It covered their enabling technologies from a Virtual Heritage perspective. A similar comparison on different interaction methods such as tangible, collaborative, multimodal, sensor-based, device-based, hybrid interfaces was also done to identify the best approach for their technological requirements. Following the comparison, MxR and VR were suggested for immersive reality applications. Collaborative and multimodal interaction methods were identified as suitable approaches to interact with immersive environments. A specific combination of MxR and a hybrid interaction method comprising collaborative and multimodal features was suggested as a viable approach to enhance cultural learning at heritage sites and museums. This specific combination was seen as suitable for establishing a contextual relationship between users and cultural context. The implementation of the collaborative experience was included to add a social dimension and to improve users’ engagement with the virtual environment [95]. These studies have provided interesting insights into the technology adoption requirements and suitability for various CHComm experiences. Communicators looking to pick a technology solution for a certain type of digital CHComm project are likely to use this as a starting point.

The methodologies of design for the digital environments and the specific benefits of adopting a participatory approach have also been surveyed. Implementation of the heritage communication applications within the specific context, such as a heritage site, GLAM institution or as an online application that covers events and shares heritage information, can be a challenge. A selective sample of digital heritage projects were surveyed in a study. The results indicated that projects which explicitly seek to involve the community and use what was described as ‘human-centred computing’ can lead to ‘deeper engagement and sustained participation’ in heritage management by the community members. The participation of community members can “vary in nature, depth and extent, and a spectrum approach can be a useful way of conceptualising and envisaging the various levels of engagement” [96]. The previously discussed case of the Chandernagore town where the community contested the authorities perceived disregard of their heritage value associations is also a relevant example (Section 3.2.1) in highlighting the benefits of an expert led collaborative approach to creating and communicating digital heritage. In another study which assessed the design of digital

environments for the communication of CH, it was suggested that the communication metaphor, the contextual implementation, user engagement, interface optimization, and targeted evaluation are factors that make a significant impact on the user [2]. Attracting wider audiences can be a target for digital environments in CHComm and this can be a factor in the design of digital applications that communicate cultural heritage. Digital applications designed to engage large audiences can become a metaphor for the communication of local and global communities with heritage sites and institutions. An excellent example of this would be the case of the application tested at the Tripolis museum, discussed previously.

One effective methodology adopted for the design of digital CHComm environments, as seen in the literature, was a more conventional game design approach. Game design strategies used to develop ‘serious historical video games’ are noted as having shown positive results when used for digital educational applications. The game titled “Czechoslovakia 38-89” and its sequels are a good example for this [97] [98]. Augmented reality applications were seen as working well within a very site-specific design. Augmented reality and game design elements work well when integrated into virtual tours and narratives of heritage sites or institutions. Once again, the previously discussed application at the Tripolis museum stands as a case example. A survey noted that user engagement and interface optimization were important components of designing digital applications and discussed a few methods to improve both of these factors within certain situations. For example, it was noted that interfaces that provided “increased interaction mimicking real life situations” improved the immersion and presence of a user in a virtual environment. This can be seen exemplified through interactions such as breaking of clay pots, jugs and bowls within a virtual reconstruction of the Sanjiangkou Maritime Silk Road Port [99].

Looking at the above, we can see that existing literature studies rarely address the aspect of communicating authentic value associations and the cultural significance of the cultural heritage assets. There seems to be an increasing understanding on what all can be done to engage the wider community and there have also been suggestions on how it might be done given different scenarios. Even so, outlining a system or method that can act as a crucial first-step to develop the content for heritage communication that includes heritage value associations from all interested parties has not been tackled with the pertinent attention. Inclusion of cultural heritage values needs to be addressed during the design stage of any digital CHComm environment that wishes to be effective. They are the motivators for the conservation actions of cultural heritage and when communicated to an interested audience, these CH value associations even through changing interpretations over time, can motivate positive heritage conservation

actions from experts and non-experts alike. Another point to note is that the user reactions and impact of the CH value associations which were communicated by the multitudes of digital heritage applications were not studied in depth. Even when the user reactions to digital CHComm environments were studied, the researchers were looking to understand the user acceptance/engagement with respect to the environment/technology rather than analysing the impact of the communication of CH information or values. In light of this, we must discuss how we can perceive the effectiveness of CH value communication within existing digital CHComm projects.

### **3.3.2 Review of Digital CHComm projects highlighting the communication of CH values**

Through much of this chapter we have presented a case for effective communication of cultural heritage. The driving tenet of this deliberation is that to be effective any CHComm must address the authentic communication of information and associated values of CH assets. This is imperative to safeguard cultural identities, especially in the case of living heritage or when multiple perspectives from numerous cultural groups are involved. In this section we discuss five digital/phygital CHComm projects that we identified as having made a considerable effort to address the communication of CH value associations. We have reviewed many other Digital CHComm projects and found a few more where CH values communication was likely addressed by the design process. Even so, we chose to focus on these five projects as they have clear evidence of considering significant CH value associations. They each have a takeaway that is highlighted for future reference. These examples which are listed as Eg-I through to Eg-V are referenced in later chapters as and when required to provide an easy point of reference.

**Eg-I** - The first example we cover is an augmented heritage experience for a bomb shelter, built during the Spanish civil war [100]. Visitors to the underground bomb shelter were taken on a guided tour and presented with context-specific projections of events from the time of the Spanish civil war. Hand-held digital projectors which had videos and images arranged in a predetermined sequence were given to one member (school children in this case) of a group. As the group passed through various rooms in the bomb shelter, relevant multimedia was projected on the walls and they ranged from a video of a plane dropping bombs shown at the entry of the shelter to an explanation of how a room, such as the infirmary, was used and how the furniture in it was arranged. The application explicitly attempts to engage emotional and critical thinking of the users, in order to improve the contextual understanding of the historical

events. Collaborative activities by a group visiting the site which included embodied enactments were used to effect the transfer of socio-cultural values. Children were told stories of the Spanish civil war as they were accompanied by pictures and videos projected on the walls and as each area of the shelter was explained, they tried to visualise and even physically position themselves to understand the living situation during the war. For example, a child crouched under one of the benches in the shelter and commented that it would have been too small to fit them. Observations of the children and later interactions with them showed that a noticeable emotional impact was achieved. This is evidenced by the reactions where the children stated that they felt like they were travelling through time and also that they felt sad after having seen drawings by other children from the 1930s (during the Spanish civil war) [100].

The lesson learned from this example is that communication projects focused on delivering an emotional impact and stimulating critical thinking can evidently share CH values to the user.

**Eg-II** - The second example is a VR application built for users to explore the Paestum archaeological site in Italy [101]. In this VR experience, which is a part of the ArkaeVision project, users were able to appraise the everyday life in the ancient temple of Hera at Paestum. Researchers have built a narrative using the character of a priestess ‘Ariadne’ in a VR environment. They used scenography, dramaturgy, and other traditional film direction techniques to encourage user interest in the life and culture during the 5<sup>th</sup> century BCE. The architecture of the temple and the perceived colours, especially in the lights of the torches set on the walls, was a point of interest. Uses of the artefacts within the fully reconstructed temple, instead of the ruins that remain on the actual site today, were appreciated by the people. The true sense of wonder that some historic buildings can give may be lost when only pictured as ruins. The recreation created a mental image in the user’s mind relating to the religion of the time and they were also shown to have remembered aspects of it. This was achieved by including various learning tools within the environment via text, information graphics, multimedia and narrative nodes with problem solving. Being able to convey that the Goddess Hera was worshipped in Paestum in the 5<sup>th</sup> Century BCE and being able to transfer the value from another time is a unique ability that digital applications using authentic virtual reconstructions could potentially utilise. These situations also encourage user reflection and understanding of values.

The lesson learned is that communication projects that enable the user to form a mental image of the cultural context related to the heritage through cognition and emotion can share cultural heritage values to the user.

**Eg-III** - The third application is an on-site audio-based narrative system for

the trenches from a WWI site located on the Alps in Italy [102]. Users are given a guided tour through the trenches. The authors have co-designed a system that can deliver audio-based narratives adapted from personal and historical records. The system used custom made near-field communication devices to enable the user to choose what narratives they wanted to hear and the on-site speakers were placed well above the eye line of the visitors so that they could hear the audio but not see anything. The narratives included adapted content from letters and journals of real people who lived through the war and also historical records of orders and other announcements made by commanders during the war time. Poems from the time describing life at that point were also added to the audio materials. The overall system was not bound by a storytelling structure, instead the narratives were delivered ‘piecemeal’. The authors selected locations within the site where each set of narratives would be best suited, in collaboration with the museum personnel and curators. This enabled the non-centralized narrative structure to be contextualised on-site. This again led to an enhanced understanding of life in the times of war for the visitors. Users responded positively to the experience and the option of being able to listen to multiple perspectives or even picking one perspective as the ‘main’ focus of their visit and using the other perspectives to enrich their experience was appreciated. While the emotional connection and the associated value transfer was not the primary focus of the experiment, it did enhance the experience of the site visit.

The lesson learned is that contextualisation of heritage can also be done by highlighting the changes to a heritage property over time. This helps the user appreciate how a particular heritage event was valued during its time. This also encourages user reflection with a comparison to the modern-day status of the heritage asset.

**Eg-IV** - The fourth example we considered is a structured website with interactive elements that included narrative videos and explorable 3D recreations of the White Bastion Fortress in Sarajevo [103]. The homepage of the website shows an interactive image of the White Bastion fortress which can be changed across 6 different time periods. Once the user ‘enters’ the website there are short videos and interactive digital environments to engage with. These are presented in a structure where there is one intro video and three other videos discussing three distinctive periods of existence of the fortress, ideally viewed after the intro video. Users are also able to interact with the digital 3D reconstructions of the fortress from various time-periods. The videos are centred around an ‘immortal soldier’ character who describes events that may have occurred in and around the fortress for each time period. In some sections of the video a narrator steps in to describe certain overarching events of the particular time-period that may have affected the fortress. For example, the soldier character describing an



extended period of peace in the Ottoman time-period video says that “I thought my name would be forgotten, that Sarajevo would never again need its soldiers.” Then after a brief musical interlude, the narrator steps in to say that “So it was until the campaign of Prince Eugene of Savoy in 1697...” Going through the entire series of the videos allows users to form a mental image of the fortress from the medieval era to the 20th century. Each video has a corresponding interactive digital environment beneath them that tries to show the structural changes in the fortress at the time. Entering an interactive environment drops the user into a 3D model constructed for that certain time period and certain archaeological finds from that period are placed within the environment. Finding such an object and clicking on it will open another tab where the object itself is highlighted and can be interacted with in more detail. Once all the interactive environments have been explored, users can view a final video meant as a closing comment [103] [104]. This kind of ‘time-travel’ can also be incorporated into the design of a CHComm in order to transfer the notion of change in CH values and the varying contextual cultural importance of the heritage.

The lesson learned here is also about presenting the heritage information with contexts. The change that happened to a heritage asset over time when presented to a user can contextualise the evolution of the CH values associated with that heritage. This is especially helpful when looking at living heritage or locally important heritage assets that have cultural value even in the present day.

**Eg-V** - The fifth example that we present is designed as a serious war game based on the World War 2 events during the Nazi occupation of erstwhile Czechoslovakia [97]. We had mentioned this case at an earlier point in this chapter. The video game Czechoslovakia 38-89, which shows the implementation of multiple perspectives in a digital CHComm application. The narrative structure of the game follows a conflict-oriented ‘three-act’ structure with a central character that is controlled by the player. The central character is the grandson / granddaughter of J. Jelinek, a Czechoslovakian national, who was arrested after the assassination of Reinhard Heydrich, “Reichsprotektor” of the Nazi-occupied Czech Territories. The character is looking to uncover the truth surrounding their grandparents’ arrest and comes across multiple people who share their experiences and memories from the time. These characters, who the player can interact with, are created based on the ‘contested memories’ built from real testimonials of people who survived the traumatic times. Initial user feedback showed a lot of positive response from teachers with regards to interest shown in learning of the history by school students. An improved version of the game released online was commented on by various members of the public, who expressed appreciation for the handling of the topic through multiple “eyewitness



testimonies” and also reflected on contemporary events in relation to the historic narratives. It was criticised for its not very ‘game-like’ nature, since the narrative could not be ultimately controlled by the user and the end product was more like an interactive novel. The authors shared their design process in this research, which gave insights into how the narrative structure was built from various personal experiences shared by survivors of the war and public historic records available from the time. This multi-perspective approach enabled them to present a holistic view that was as authentic as it could be [97] [98]. This also engaged multiple users at various levels and made them think and react to the content sometimes positively and also negatively as cited previously [105]. The initial set of values selected for the CHComm design were all included in the design via a multi-perspective approach.

The lessons learned here are about the concept of multiperspectivity. In the presentation of digital applications for cultural heritage, covering multiple perspectives helps communicate a wider view of the heritage. There are situations where memories and values associated to the same heritage are contesting each other and leaving out one view in order to bolster the other may not present an accurate picture. This method can address views on a heritage property that are opposed to each other (contesting perspectives) but are authentic.

In conclusion, digital projects have communicated values through differing methods such as delivering emotional impacts, encouraging critical thinking or cognition, contextualising heritage in its place and time and also by presenting multiple but contrasting perspectives. While reviewing multiple projects that attempted to communicate heritage values by design, we have observed that the emergence of CH value communication is not commonly pursued and authors do not typically address the appreciation of value associations as one of the explicit goals of their approach. Furthermore, we did not find any attempt at providing a comprehensive or explicit method to include values or the overall significance of the cultural heritage asset into the design process.

### **3.4 Need for a Process that can help Design Effective Digital CHComm environments**

The intentional inclusion of CH values would require a dedicated collection of multiple value associations right from the start of development of a CHComm environment. Heritage professionals and experts are likely familiar with the CH value associations of many heritage assets. Multiple heritage organizations across the world keep records

of the value associations and the ‘statement of significance’ as vetted by the expert community for CH assets that have major national or international interest. These lists or descriptions of heritage values are likely to be written with a discipline specific approach and could therefore be reductionist as they may have been designed for a universal understanding. As we have seen over the course of three chapters, the discipline specific approach to CH values has shown its limitations when applied to the management of heritage assets. In so far as we take the case of heritage communication, these values must be communicated but are not going to be enough. The more conventional and institutional approach needs to be improved and newer more comprehensive descriptions of CH value associations need to be developed for the effective communication of cultural heritage values. Just as a curator creates an experience within a museum, just as a CH management professional would develop the interpretation of a heritage site for visitors, so must the digital cultural heritage communicator proceed to design the digital CHComm environment.

In the next chapter we provide a workflow for supporting the communication of CH value associations in the design of digital communication environments for cultural heritage.

# Chapter 4

## Operational Workflow for Enhancing Digital Cultural Heritage Communication with Values

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*In this chapter, we propose an eight stage operational workflow for digital CHComm that is motivated by values. This also helps us frame an answer to the question from Section 3.1. We go into the depth of each stage that has been built on the basis of our lessons from the review of literature sources, guidelines and frameworks by heritage institutions. The operational workflow also takes cues from the study of existing communication projects in digital CHComm. The workflow is presented as a guideline to a communicator during the design of a CHComm project which is, needless to say, motivated by values. We compare outcomes of the eight stage operational workflow with two existing CHComm instances to understand the effectiveness of the process. This is followed by an interim conclusion for the operational workflow as we prepare to test it in a real world scenario.*

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Digital Cultural Heritage Communication environments have to account for the sharing of authentic CH information and value associations. This requires a deliberate collection, curation and intentional inclusion of CH values associated with heritage. An operational workflow that helps communicators with their collection, curation and inclusion steps is being presented in this chapter. Using the lessons learnt from the examples discussed previously we also delineate further steps to improve the effectiveness of the communication through a dialogic inquiry process followed by the inclusion of multiple perspectives and then another stage to try and contextualise all of the content developed up to that point. Further we also discuss the initial prototype creation, targeted evaluation and re-iteration to achieve the final version of the communication project / environment. This operational workflow is being termed as the eight-stage operational workflow for CH values motivated communication.

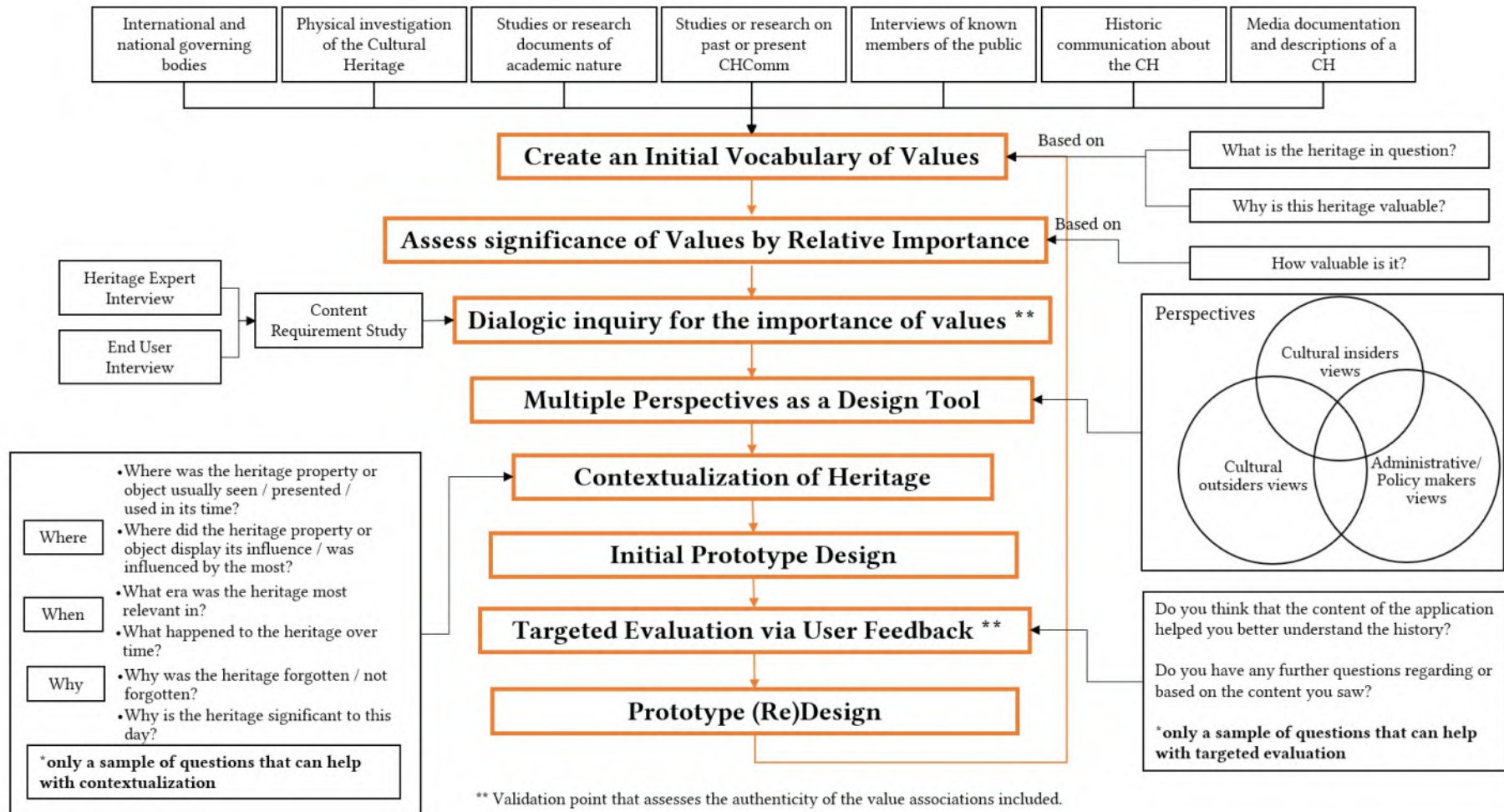
## 4.1 Eight-Stage Operational Workflow for CH Values motivated communication of Cultural Heritage

Here we detail out the steps of an operational workflow that considers cultural heritage values and their effective communication in the design of digital cultural heritage communication environments. The steps follow an ideal sequence; however, a realistic application of the process requires the case-specific attention and iteration of some steps based on the qualitative judgement of the designer. The order that we present these stages are as follows:

- **Stage 0 — Collection of CH values:** Inclusion of CH values in the content for communication can only be done by finding and recording a broad selection of CH information and its associated values with the heritage in question. This is a necessary step for the entire process to be initiated.
- **Stage 1 — Create an initial vocabulary of values:** Information collected with regards to the CH can have multiple value associations. Since we cast a wide net to grab as many potential pieces of information and associated values, the CH information and values need to be filtered. This step ideally answers the first two questions relating to significance assessment. These being “What is the heritage in question?” and “Why is the heritage valuable?”.
- **Stage 2 — Assess significance of values by relative importance:** The initial vocabulary of values is now put to the test by the third question from the model for significance assessment; i.e. “How valuable is it?”. In our work we opted to also keep the broader sociocultural value typologies that help classify the specific and detailed value associations while going through this and the subsequent steps.
- **Stage 3 — Dialogic Inquiry for the Importance of Values:** The values that have been selected thus far and arranged based on their relative importance rely primarily on the understanding of the communicators, shaped by expert views. For the dialogic inquiry stage, preliminary content is compiled and an understanding of the user perspective along with the expert views on the communication of CH values are obtained. This also serves as a stage where the initial vocabulary of values are presented to both experts and non-experts and thereby validated, corrected or rejected by the interested parties.
- **Stage 4 — Multiple Perspectives as a Design Tool:** The literature shows that CHComm projects have made use of multiple perspectives in their efforts to

effectively communicate CH value associations. This stage relies on the responses received in the previous stage and any other perspectives uncovered by the communicators.

- **Stage 5 — Contextualization of Heritage to highlight appropriate CH values:** Contextualization is the use of design elements or methods to communicate the basic understanding of a heritage property in its time or within its cultural context. Contextualization can be best achieved by providing ‘relatable’ or understandable examples that benefit from the multiple perspectives shared in the previous stage and the intangible associations uncovered thus far. This is another step that would need communicator discretion. Literature has shown that contextualisation increases the effectiveness of CHComm.
- **Stage 6 — Initial prototype design for testing: Prototype 1:** At this stage, multiple values associations and perspectives have been used to develop the outline for the CHComm project/environment. Depending on the decisions taken along the previous stages the communicators go ahead and develop their first prototype for testing.
- **Stage 7 — Targeted evaluation via User Feedback:** Having done extensive work to develop the first prototype, it is now time for the evaluation. The feedback from users can be collected through a survey or by allowing for comments to be shared via online platforms. The best case scenario is to prompt feedback for the aspects of the CHComm project that the communicators want to receive feedback for. In our work, we are targeting the effectiveness of communication of the deliberately included CH value associations. This stage is a necessary validation for the CH value associations presented in the content for CHComm. This is ideally not the finished product but depending on the demands of the project, this can be a stopping point.
- **Stage 8 — Iterative (Re)Design: Prototype 2:** The prototype developed and evaluated using the previous seven stages is bound to have shortcomings and an improved iteration is necessary to create a final product. As any good designer knows, the first version is rarely the best version. Re-iteration and refinement is the way to go. This stage might not be feasible in small scale CHComm projects but with large scale CHComm projects that release multiple versions, this is a fact of life. We advocate a thorough relook at every stage starting with the initial vocabulary of values.



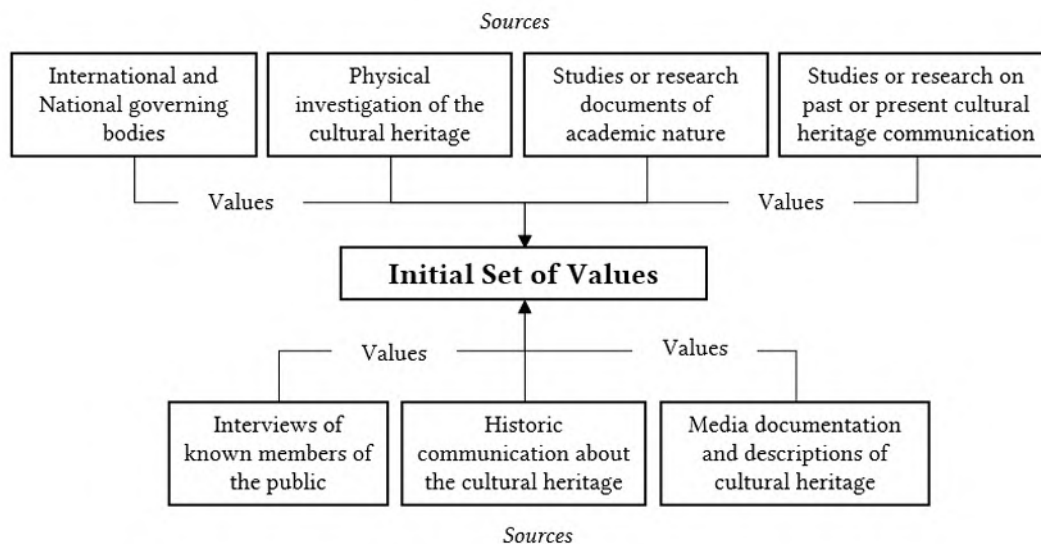
**Figure 4.1:** Overall Operational Workflow to facilitate the Communication of Cultural Heritage Values in Digital CHComm projects.

In the following sections we delve into the details that make up every stage of this operational workflow. Figure 4.1 shows a diagrammatic representation of the eight stages that make up the workflow.

The eight-stage operational workflow is represented as starting from the Stage 1 which is “Create an initial vocabulary of values”. This is because the prior stage which is the collection of values is assumed to be something that a heritage professional would be familiar with in their professional or research based activities. Even so, due to the nature of this discussion we have outlined this collection stage and the sources of values (value associations) that can be a checklist for interested communicators. This helps the eight-stage operational workflow to be presented in its complete form.

### Stage 0 - Collect an initial set of values

Values are collected for the cultural heritage asset from work done by interdisciplinary researchers and institutions. In addition, communicators can also use direct observations and interviews of experts and people who have interacted with the heritage to build the initial set of values. Seven sources for mining values are suggested below. Figure 4.2 shows a graphic schema that summarises the sources of values.



**Figure 4.2:** Sources of values.

1. **International and national governing bodies** such as UNESCO World Heritage Convention or the National bodies for protection of heritage, can share their ‘rationale for conservation’ or ‘statement of significance’. For example,

properties protected by institutions such as, the Archaeological Survey of India (ASI), have publicly accessible documentation which contains academically established Cultural Heritage Values.

2. **Physical investigation of the CH** in cases where possible, which can then be followed up with first-hand communication with other experts who have visited or studied the CH. The experts can help with the qualitative judgement of the communicator(s) with regards to the values of the CH. For example, the expert led collection of the cultural heritage value attachments held by the Maori community to the landscape in the Akaroa basin [20].
3. **Studies or research documents of academic nature** that deal with topics related to the CH that is being investigated. These documents are even more preferable if they are intended as communication, while documentation oriented publications may also be considered. For example, “Constantine and the Christian Empire (Roman Imperial Biographies)” is a book that covers 25 years of research with relevant sources discussing the life and times of Emperor Constantine whose victory over previous emperor Maxentius led to the construction of the Arch of Constantine in Rome [106]. This publication provides information and CH values that were relevant in the Roman empire at the time of construction of the Arch.
4. **Studies or research on past or present CHComm** relating to the heritage of interest or applications and such documents available from institutes, organisations and researchers which ideally discuss the communication of values about the CH and not just documentation of the CH. For example, the study covering the communication and websites that talk about K’gari (Fraser Island) shows us the cultural heritage values and their lacunae in contemporary communication [80].
5. **Interviews of known members of the public** who have lived near or have been impacted by the CH under investigation. The interviews shall preferably be semi-structured or open-ended. This is typically better utilised in cases of intangible CH. For example, values collected by the ‘citizen historians’ after they went door to door and met the residents of Chandernagore town [76].
6. **Historic communication about the cultural heritage asset**, as obtained from historic records. Historically a CH may have been valued for different reasons, therefore the onus is on the investigator to confirm what values were communicated historically and how they have changed over time or have remained



relevant to this day. For example, Homer's epic poems that shared values of Troy and the Trojan war [35].

**7. Media documentation and descriptions of CH** via articles, documentaries, videos or photographs, including social media. The preferred media content would be from people who are very familiar with the CH either by living near it and being impacted by it at some point in their lives. There may also be content created by experts for the purpose of wider dissemination of a CH asset, such as documentaries, websites etc. For example, a YouTube video <sup>6</sup> and its associated webpage <sup>7</sup> by the Smarthistory channel and their website, sharing details of the Arch of Constantine and its construction (Link in footnote).

The order in which these sources are utilised to collect cultural heritage information and values would depend on the specific heritage assets under consideration and their ease of access. The above list is not meant to be followed in order, it is only a listing that begins with the more academic sources and is followed by the more public sources. All sources can be equally effective in uncovering cultural heritage values.

## **Stage 1 - Create an Initial Vocabulary of Values**

Now we enter the first stage in the operational workflow and since we have collected a variety of CH information and value associations, this stage is meant to sort through them. At this point we can expect that the communicator has a clear understanding of what is the heritage in question and why it is considered valuable. In case the communicator is also an expert on the topic of the particular heritage asset that is to be communicated, the understanding would have already been present.

Even so, this stage is provided as a point of reflection where the communicator critically evaluates the what and why of the heritage. In our work, we used a system where the snippets of CH information and their associated values were written down and classified according to the broad based socio-cultural value typologies that were previously discussed [5]. For example, if we were to consider the Arch of Constantine in Rome, Italy as the CH asset for which a communication application is to be developed, then:

1. Aesthetic value - The Arch of Constantine is part of the series of triumphal arches built by Roman emperors and features intricate details of artistic excellence such as the frieze panels depicting the Battle at Milvian bridge or the Attic story with sculptures of Dacian captives.

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<sup>6</sup><https://www.youtube.com/watch?v=vvDcrzeBRyM>

<sup>7</sup><https://smarthistory.org/arch-of-constantine-rome/>

2. Historic value - The Arch of Constantine was constructed to mark the defeat of Maxentius by Constantine at the Battle of Milvian bridge and is therefore commemorating a significant historic event.
3. Cultural/Symbolic value - This Arch marked a political decision as this was the first triumphal arch that was constructed on the occasion of victory of the Roman emperor against a previous co-emperor. The practice was to celebrate victory over external enemies but this Arch was celebrating victory over a ‘Tyrant’ (as inscribed on the attic story) who was an internal enemy.

This above list is not complete or ordered in any particular fashion but it indicates the process that we used to match significant CH information and value associations with a pre-defined broad based socio-cultural value typology. This serves as a classification system for handling the CH knowledge which is otherwise resistant to categorization. Note that, the value associations are shared with full descriptions and any overlap between categorizations (Aesthetic beauty and Symbolic meaning of depictions) are a natural consequence of the discipline specific categorisation approach.

## **Stage 2 - Assess Significance of Values by Relative Importance**

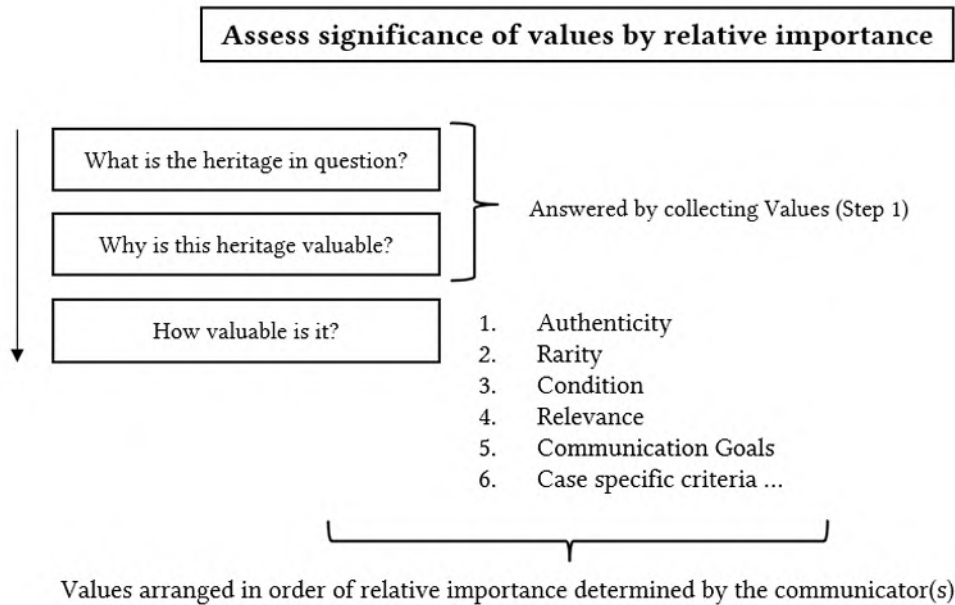
Once an initial set of values have been collected for a selected heritage, their relative importance needs to be understood. We propose a system based on the three identified stages of significance assessment suggested previously by Fredheim and Khalaf [8] shown in Figure 4.3. As per the model of significance assessment, assessing the significance of cultural heritage is broken up into three stages:

1. features of significance or “*What is the heritage in question?*”
2. aspects of value or “*Why is this heritage valuable?*”
3. qualifiers of value or “*How valuable is the heritage?*”

The first two questions can be answered by the previous steps of collection of values and the creation of an initial vocabulary of values.

The third question of “How valuable...” is something that requires an understanding of relative importance. There can be many facets used for such relative comparison but five of the considerations can almost always be answered.

1. Authenticity of the heritage value association within its cultural context is a consideration stressed by the Nara Document. This is something that the communicator has to determine for the CH asset using the sources of values.



**Figure 4.3:** Three identified stages of significance assessments.

Discussions with heritage experts and others who are well aware of the cultural context can help clarify this. The cultural context and the perception of the heritage asset in the present day can be understood by discussions with people who are from the cultural background in which the heritage is rooted. If the heritage asset is not very relevant to a present day culture as such (like the Stonehenge) but is universally valued then the authenticity would be best reported by experts and non-experts who are willing participants in CH knowledge sharing.

2. The rarity of a heritage asset is also a point that can be understood by comparing across similar assets from the historic time period and geographic region. In case there are not many examples of similar heritage assets, the rarity is easily established but if there are similar artefacts (such as pottery shards) and they are not very rare, they may still hold unique qualities.
3. Physical condition can heighten the CH value associations surrounding it. An archaeological find in a really good condition does receive more attention. The tomb of the pharaoh Tutankhamun is a good example that attests to the value associations provided by the condition of the artefact.
4. As the question of ‘How valuable..’ inherently involves a relative ranking, the relevance of a CH asset is something that needs to be assessed within a cultural context as well as within the larger context of global heritage. Some of the

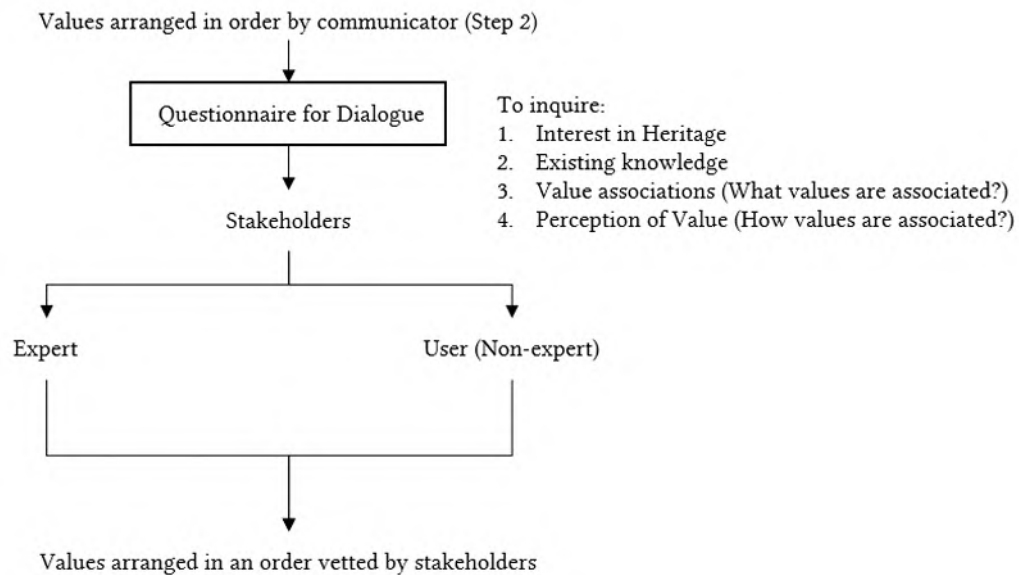
previously mentioned steps will already give us an idea of the relevance of the CH asset. The relevance of a particular CH asset may not be huge at the global scale but it may be central to one community or a few communities that see themselves as being associated with the heritage and may even be communicated about in the CHComm project. This changes the relative importance of certain CH assets within the CHComm effort. This is likely a very situational and subjective judgement that the communicators will have to make based on their own expertise. In case later stages show that this judgement needs to be revisited then at that point the question of relevance needs to be relooked.

5. Communication goals can determine how valuable a CH asset is to a particular CHComm effort. There may be significant heritage values that are not directly related to the specific heritage asset in question. Even so, the goals of the heritage communication project/environment might necessitate a mention of such values and related CH assets that are relevant. This can happen as a manner of contextualisation or to present multiple perspectives. These are separate stages in the workflow but the inclusion of such considerations beforehand does not diminish the value of these subsequent stages.

For example, the discovery of a very well-preserved tomb in the Valley of Kings in Egypt brought a lot of attention to Tutankhamun. Historically, the pharaoh ascended to the throne of Egypt as a boy of about nine years of age and died as a young teen with only a 10 year reign from 1332 to 1323 BCE [107]. The tomb was a well-preserved specimen giving archaeologists rare insights and the discovery has been described as one of the most significant finds. The rarity and good condition of the tomb of the pharaoh Tutankhamun at the time of its discovery led to a spotlight being placed on everything associated with ‘King Tut’. King Tut ended up becoming a cultural icon at the time and he has created his own heritage within popular memory apart from what might be classified under its historical significance [108]. If a CHComm application was to be developed about the pharaohs of Egypt, the high authenticity, inherent rarity and good condition of the find along with the socio-culturally significant value associations would place Pharaoh Tutankhamun at a higher relevance. The global relevance and subsequent cultural phenomena that occurred from the publicization of the find might not be seen as very important when talking about the ancient Egypt as a society. On the other hand, a mention of the popular impact could still be a valid consideration when talking about the Pharaohs of Egypt. Tutankhamun would likely get a mention as the Pharaoh who created his own cultural legacy over 3250 years after his death.

### Stage 3 - Dialogic Inquiry for the Importance of Values

A dialogic approach is used to promote dialogue between interested parties. In this case communicators, heritage experts and the users are three main interested parties. Further stakeholders can and most likely will include the authorities or heritage institutions and the cultural insiders who are interested in the CHComm about the heritage asset. In most cases, the communicators / designers of the Digital CHComm application are also heritage experts and it is our responsibility to conduct an inquiry into the values of the CH as associated by the various stakeholders. Figure 4.4 shows a schematic representation of how the dialogic inquiry process can be expected to proceed.



**Figure 4.4:** A schematic representation of an ideal dialogic inquiry process through which all interested parties’ CH value associations and perceptions are uncovered via questionnaire based discussion.

Once the values have been collected and their relative importance has been determined, we arrive at an order of CH values. This ordered set of values forms the basis of further dialogue between all the stakeholders. A questionnaire is prepared, based on the current sorting of CH values. The questionnaire is aimed at understanding what values are associated with the heritage by a stakeholder and how these associations are formed, acted upon or maintained by a stakeholder. It is necessary to be aware of the type of interest that a stakeholder has and their existing knowledge regarding the heritage asset. There are studies where various stakeholders were interviewed regarding their expectations for a digital CHComm application at the initial stages of

design (see Study 1 and Study 2 of the design framework [109]). Another way to assess stakeholder interests is to look into their previous publications that bring out their opinions which may be shared through multiple digital and physical communication media. The differentiating factor here is that while academic publications are relevant for collecting values in the first step, now we are looking for what might not be academic in nature or intent. We are looking for general views and understanding or even lack thereof. We are trying to understand what CH values may have been appreciated, celebrated or rejected and why such an opinion was formed or such an action was taken. There can be many varying manifestations of CH value associations and the dialogic inquiry stage serves to validate, correct or reject any of the CH value associations collected till now. It is also possible that new, authentic and relevant CH value associations are uncovered at this stage.

For example, multiple experts have communicated their views on the history surrounding Roman emperor Constantine's life (emperor from July 306 CE to May 337 CE) and situation leading up to and also following the construction of the Arch of Constantine (315 CE) in Rome via articles and research publications [106] [110]. On referring to some of these articles and publications we see that historic value dominates the expert discussions surrounding the Arch. These publications also cover the architectural and aesthetic values that form a part of the expert discussions surrounding the Arch [39]. Non-expert reviews shared by tourists who have visited the Arch, on platforms like TripAdvisor or Google reviews show that the aesthetic value is appreciated by the visitors to the site. The religious value of the Arch is also highlighted by both experts and users. It is also evident to us that the symbolism of the Arch and its contextual relation to the Battle of the Milvian bridge seems to be underappreciated by the visitors.

The responses to a questionnaire designed to initiate dialogue among the stakeholders and the assessments regarding CH value appreciation from available sources can help us arrive at a revised or a 'vetted' order of relative importance of the CH values associated with the selected heritage asset. It might also expose the communicator(s) to a situation where multiple perspectives have been put forth and their relative importance is not immediately fathomable. One group of stakeholders may not necessarily be 'more important' than another group and there may be a need for a nuanced or balanced approach.

## **Stage 4 - Multiple Perspectives as a Design Tool for DCHComm**

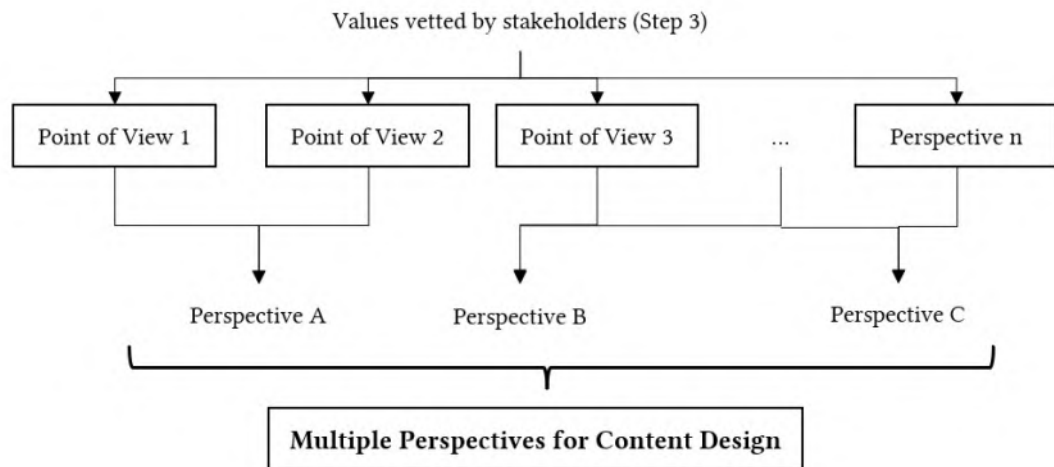
The dialogic design process is expected to lead to a wide array of perspectives

with multiple value associations. The inherent diversity of perceptions relating to a cultural heritage asset emerges requires a multiperspective approach. For example, in the discussion concerning the serious historical video game based on the World War II era occupation of Czechoslovakia we have seen how the authors implemented multiperspectivity successfully by recording the testimonials from survivors of the wartime or their descendants (Eg-V, Section 3.3.2). Figure 4.5 shows the flowchart to arrive at multiple perspectives from individual points of view.

This is another subjective design process that a communicator has to judge from their standpoint. In the case of the interactive website made for the White Bastion fortress in Sarajevo (Eg-IV, Section 3.3.2) and also the above mentioned serious historical video game (Eg-V, Section 3.3.2) the communicators involved multiple experts from allied fields. The design process of the serious historical video game took in the expert help to collate various original testimonies with individual points of view into a few characters that were created for the video game. The collation of multiple individual testimonies helped to protect their identity and also combined similar perspectives across testimonies into one. For the interactive website based application, experts from varying backgrounds such as psychologists and film-makers were asked to share their perspectives on the project as would have been done in the previous dialogic inquiry stage and their input was also used to refine the subsequent versions of the project. While we do suggest collecting feedback and making improved iterations in the later stages of this workflow, the expert input at this earlier design stage appears to be the better way to use multiple perspectives.

In this step we start with the CH value arrangement vetted by the stakeholders and tackle what can be a difficult decision of making judgements on how certain perspectives can be presented. In service of authenticity and holistic presentation, designers of CHComm applications are required to represent the value associations and the perspectives provided to them. There can be situations where some perspectives associated with a heritage asset are relevant to the goals of a CHComm project while others might not be critical.

For example - The Rome Reborn project recreates the World heritage site that is the Historic Center of Rome as it was in the early 4th century CE [111]. A project like this, which is geared towards making a faithful virtual reconstruction of a heritage site in a specific time period, might allocate more resources to execute this goal and might not always address the deeper meanings that are inherent in the sculptures or iconography on one of the monuments as being part of a group of monuments. One of the applications that is part of the Rome Reborn project recreates the Colosseum district and this recreation includes the Arch of Constantine. The reconstruction goes



**Figure 4.5:** A flowchart to depict the process of arriving at multiple perspectives from a possible ‘n’ different individual viewpoints and perspectives.

in-depth and tries to recreate the possible colours that would have been painted on the sculptures and frieze panels on the Arch. The accompanying audio within the application explains the cultural and religious perspectives of the time and the events that precede and follow the construction of the Arch. This particularly concerns Constantine’s actions and beliefs in relation to the Battle at Milvian bridge and the ascendancy of Christianity into the pre-eminent Roman religion. The more intricate details of the multiple sculptures on the Arch are not presented within this application to presumably avoid a cognitive overload. On the other hand, a video covering the specific architectural and artistic details on the Arch along with an accompanying webpage can be seen on the Smarthistory YouTube channel and their website. Here, the nature of the CHComm video puts the focus on the Arch and the specifics relating to the Arch. The history surrounding the Arch is also explained. Both of these CHComm instances covering the Arch of Constantine do not present the perspective of architects, urban planners and designers who were inspired by the layout of the Colosseum district which included the Arch and also found inspiration from the designs found on the Arch itself. An article which covers this view can be found on the Institute of Classical Architecture & Art’s (ICAA) website about the triumphal arch as a design resource (See footnote for link to article <sup>8</sup>). This perspective also contextualises the impact of the heritage asset (Arch of Constantine) on future generations. Admittedly,

<sup>8</sup>[classicist.org/articles/classical-comments-the-triumphal-arch-as-a-design-resource/](http://classicist.org/articles/classical-comments-the-triumphal-arch-as-a-design-resource/)



this perspective was not a priority for the conservation and communication goals of the Rome Reborn project but could have added another dimension to the specific CHComm instance that was developed by the SmartHistory channel. As it can be seen here, there are multiple perspectives when it comes to creating a CHComm application for the heritage property that is the Arch of Constantine. All the perspectives discussed here are authentic and potentially equally interesting and would be deemed important or relevant by more than one group of stakeholders. It is contingent upon the communicator to take a call on which perspective would come first in the order of presentation within the communication application and why. The previous step would of course provide a clue but the ultimate decision would have to be on a case by case basis and might even be a qualitative decision in some instances.

There can also be situations where mutually disagreeing perspectives may be shared by individuals or communities. In some cases, it might also turn out that one or more aspects of these perspectives are factually inaccurate based on the best of contemporary historic / heritage knowledge. When faced with disagreeing sets of CH values, the communicators would first need to verify them for factual accuracy by falling back on available sources of values. In case they are determined to be factually accurate, then the ideal choice would be to include the same in the communication application and give them due respect. The disagreement may not be ‘solved’ within the scope of the CHComm application so such an attempt would be unwarranted. Stating a disagreeing perspective was handled in the case of the game “Czechoslovakia 38-89” (See Eg-V - Section 3.3.2). Here the Romani community perspective was perceived as not a part of the ‘Czech national ideology’ and some users reacted negatively to the inclusion of that perspective. Regardless, the designers of the game found that the perspectives of the Romani community were valid and relevant at the time and within the cultural context being discussed in the game. Therefore, this perspective was left in the game and this led to emotional reactions arising out of negative reflections. In case of factual inaccuracy of a disagreeing value set (being a divergent discourse), then the question is to assess the extent of the CH value attachment within the potential users. This step would have to be done via a re-iteration of Stage 3 (Dialogic inquiry) or through the upcoming Stage 7 (Targeted evaluation). In case the factually inaccurate CH value association is commonly perceived as a valid association then the factual inaccuracies need to be highlighted in the application by addressing the errors in the discourse as directly as possible. Otherwise, it might even be prudent to not provide further ‘coverage’ to something that cannot be determined to be factually accurate. This call, on the case of factual inaccuracy within a disagreeing or divergent discourse will be the discretion of the heritage experts who are involved in the design of the digital

CHComm application. A truly comprehensive guideline for such a situation cannot be provided within the scope of our current discussion.

## **Stage 5 - Contextualization of communication project to highlight appropriate CH values of the heritage**

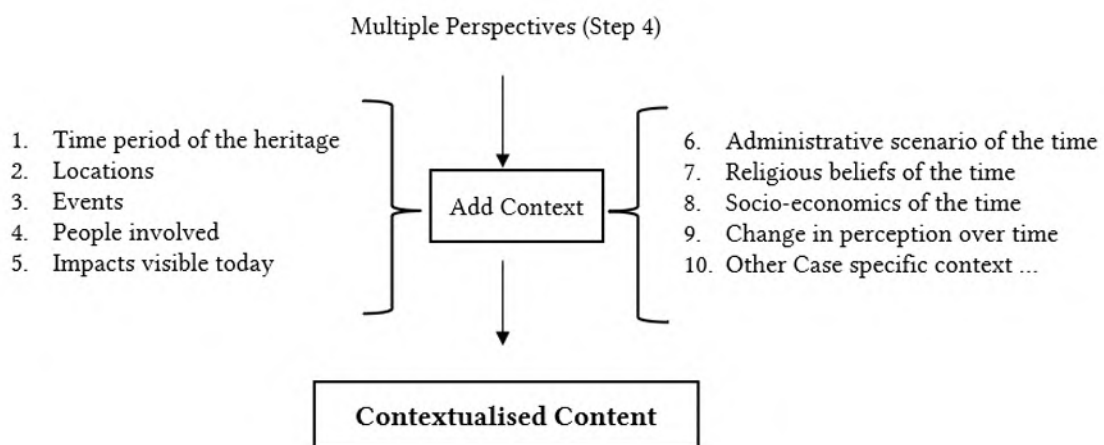
Contextualization of heritage can be best described as adding context to or about the heritage asset being communicated. This provides better engagement and understanding as can be seen in the Eg-IV discussed previously where contextualization led to transfer values. There are a few identifiable elements that can help with contextualising any heritage asset. These would be:

1. Time period that a heritage asset was / is present and the relevant global or regional scenario of that time (See Eg-I, Eg-IV, Eg-V - Section 3.3.2).
2. Locations that are associated with a heritage asset and the local scenario of that time (See Eg-I, Eg-II, Eg-III - Section 3.3.2).
3. Events surrounding and/or caused or are in some meaningful way related to the heritage asset over time (Eg-I, Eg-IV, Eg-V - Section 3.3.2).
4. People involved with or in the events related to the heritage asset and their historic significance over time (Eg-I, Eg-II, Eg-III, Eg-IV, Eg-V - Section 3.3.2).
5. Impacts of a heritage asset visible in our contemporary lives or in recent memory (Eg-I, Eg-II, Eg-V - Section 3.3.2).

Going further the context related to tangible and intangible heritage assets can include background information about the time that would be the peak or the most relevant time period in which the heritage asset was actively used by the community. This may be slightly different when talking about living heritage assets that could still be in active use by communities of today. When looking at elements that would help contextualise an asset in its historical time period our list expands to include the following:

6. Administrative scenario that led to the creation and active utilisation of the heritage asset in its time (See Eg-III, Eg-IV, Eg-V - Section 3.3.2).
7. Religious beliefs that would have impacted or even evolved from the heritage asset beyond any other socio-cultural relations to the asset at its time (See Eg-II - Section 3.3.2).

8. Socio-economic conditions of the time or times when the heritage asset was in active use (See Eg-I, Eg-II, Eg-III, Eg-V - Section 3.3.2).
9. Change in perception or value associations over time in relation to the heritage asset especially if it is a living heritage (See Eg-V - Section 3.3.2).
10. Case specific context in case of intangible or tangible association with other heritage assets both in its time or over the years (See Eg-V - Section 3.3.2 and the Crosscult experience discussed in the first half of Section 3.3.1).



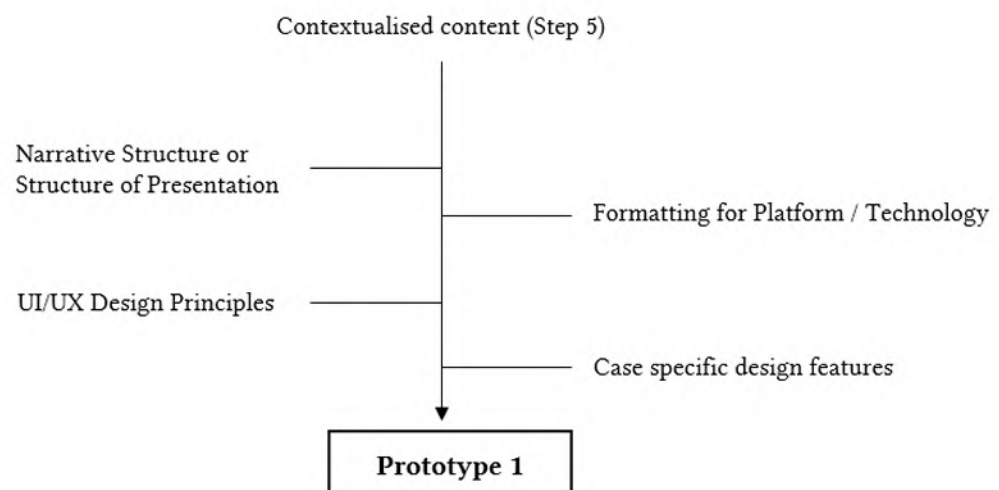
**Figure 4.6:** List of considerations that can help to add context to the CHComm for a specific heritage asset.

The above list has been summarised in the Figure 4.6. Once we consider all the above elements, we arrive at contextualised content and this content should help us tackle the multiple perspectives. Continuing with the example discussed in the previous stage, the Rome Reborn project does a great job in contextualising the various monuments within the historic centre of Rome as it appeared in what is arguably a high point of the Roman empire in the first quarter of the 4<sup>th</sup> century CE (300 CE - 325 CE). The commentary within the application also helps a user understand the context of Constantine as an emperor and the history of the Battle at the Milvian bridge. It also contextualises the changes in the socio-political and religious landscape of Rome which led to the construction of Constantinople and the rise of Christianity.

The only additional bit of context that could have been added would be the changes that occurred to the historic centre of Rome and how the heritage sites have influenced popular culture even as they fell into ruin.

## Stage 6 - Initial Prototype Design

An initial prototype which combines results from all the previous steps is used to outline and design the cultural heritage communication application. Design of CHComm applications in a real world scenario could be funded / supported by GLAM institutions to address a wider audience. The presentation structure of the applications are then decided based on the aim of the respective application. Users can be engaged using narratives that have information which contains CH value. There have been books written about the history, theory and practice of creating interactive digital narratives [112]. The communication features that can facilitate CH value appreciation in interactive digital narratives include some of the stages we have discussed here, such as contextualisation, use of multiple perspectives, dialogue facilitation and primarily the use of narrative structure to highlight the significance of certain value associations [113]. Other types of CHComm applications that are more descriptive in nature can use a uniting factor or theme. The Rome Reborn project is an example of a theme used to create a more descriptive CHComm experience.



**Figure 4.7:** Considerations for developing the first prototype of a CHComm application after all the previous stages for the inclusion of CH values have been completed.

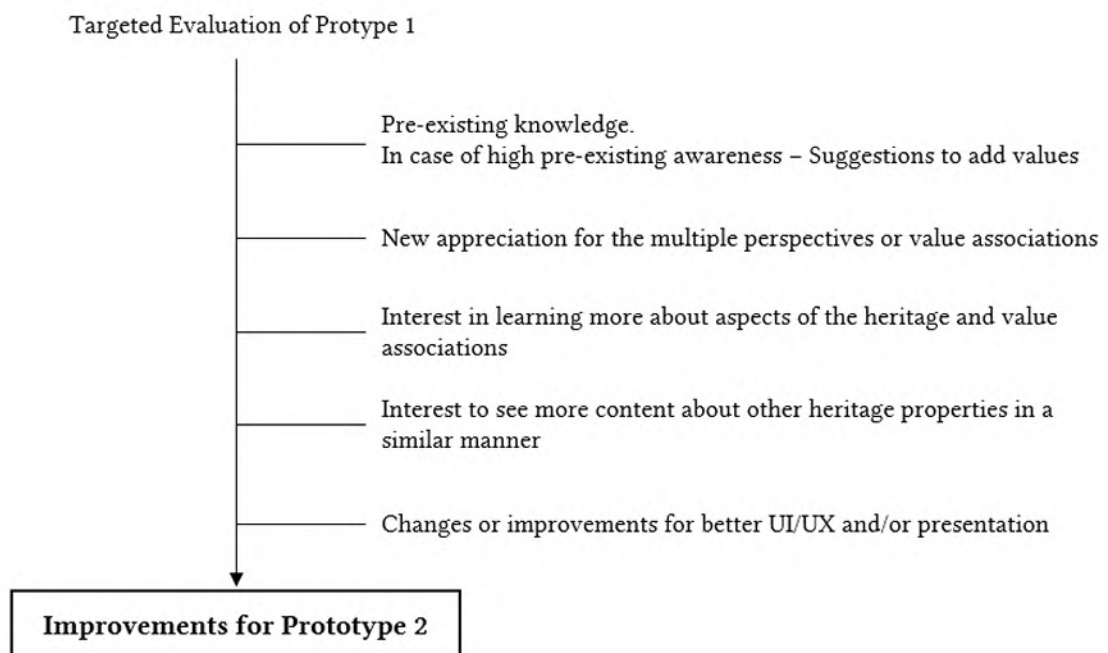
Whether a narrative application or a descriptive application, once the structure of the presentation of content is decided and other necessary considerations such as the digital platform or technological format is decided, the communicators need to incorporate features that improve the UI/UX and further adhere to any case specific needs (see Figure 4.7). This would result in the first iteration delivery of a minimum viable product that communicates the cultural heritage values of the heritage asset under consideration. This first iteration can be deemed as the Prototype 1 of the CHComm application.

## **Stage 7 - Targeted evaluation via User Feedback**

To judge the effectiveness of the communication application, especially communication of CH values, a targeted evaluation needs to be carried out. As far as can be determined from the literature, there are no predominant methodologies that can answer the question of ‘effectiveness of heritage communication’. The best approach used by examples reported previously is through the measurement of emotional responses determined either by self-reported descriptions or by observations of users of a digital CHComm application. Questions regarding the impact of the transfer of values are asked, focusing on the user’s appreciation of the Historic, Aesthetic and other identified CH values shared by the CHComm application. The users would be triggered to reflect upon the content that they consumed to describe how they feel about or think about a specific aspect or CH value association. An example question regarding the Arch of Constantine could be “How do you feel about the fact that the Arch of Constantine depicts the previous co-emperor Maxentius as a ‘Tyrant’?”. This can be expected to elicit a range of responses but the impact of the inclusion of this fact and the historic value association of a ‘Tyrant’ is something that can help the user form a thoughtful association with the heritage asset. Such a system of testing can measure the impact either through the analysis of descriptive responses or through responses received on a Likert scale. Ideally, determining the initial awareness of a user about the heritage asset and its values, needs to be done before a user is exposed to the digital CHComm application. The testing of the user post the experience of the application is then done to understand any differences in viewpoints or change in knowledge levels regarding the heritage asset, thereby evidencing new learning.

A similar approach has been done in the Crosscult experience implemented at the Archaeological Museum of Tripolis, Greece [81]. To evaluate visitor experiences after navigating through themed narrative series of exhibits, a formative visitor evaluation questionnaire was administered. This asked users to mention points during the visit that surprised them and any feelings or emotions that the narratives evoked. These

questions were included in the questionnaire to encourage reflection on the aspects of history that they were witnessing [81]. A digital storytelling experience which was implemented at the Neolithic site of Çatalhöyük had 96 questions laid out in 5 parts which included questions relating to the quality of experience, social presence questions and general impression apart from visitor demographics and Big 5 personality traits related questions. This exhaustive questionnaire was designed in response to the particular needs of this digital storytelling application. The authors reported that there were no readily available standards or evaluation methodologies that could be adapted to their needs. This encouraged them to apply a mix of testing strategies from relevant allied sectors like arts performance evaluation and gaming [114]. As can be seen, the application design and the existence of evaluation methodologies would heavily influence the type of questionnaire to be developed. There are some guidelines that can be followed for the purpose of assessing the effectiveness of the communication of CH values via the CHComm application designed based on our operational workflow for CH values motivated communication (See Figure 4.8).



**Figure 4.8:** Guidelines for targeted evaluation of the effectiveness of the communication of CH values via the CHComm application developed using the eight stage operational workflow

Feedback from the targeted evaluation is used to generate insights that would be used to improve the CHComm. In case users are aware of the heritage asset beforehand, they could suggest further CH value associations that might not have been included

or new perspectives that can enhance the effectiveness of the CHComm. This stage is also a point of validation for the CH Value associations deliberately included in the CHComm application, thus far. In addition to this, any divergent (factually incorrect) discourses that may have emerged in the previous stages can be tested for their extent of association with the intended audience. Questionnaire designs would have to be adjusted as necessary.

Checking for points of engagement with the intentionally included CH value associations from both users and experts can highlight the effectiveness of the operational workflow. Finding out any ‘hooks’ that surprise or interest any group of stakeholders into learning more about the aspects of heritage and its CH value associations is beneficial. Weighing user / stakeholder responses for emotional engagement with the content or design of the Prototype 1 can help identify points that can be highlighted in Prototype 2. This also works for the opposite consideration, as in, if any of the included and highlighted value associations do not draw much attention, a relook to remedy that situation would be necessary. Gauging any interest in experiencing further CHComm content even about other heritage assets developed in a similar fashion can also be advantageous.

Since CH values may have commonalities across multiple types of heritage, the points of interest within a certain CHComm application created for one heritage asset may also be applicable to another. For example, another video on the Smarthistory YouTube channel uses the footage from within the Rome Reborn application to explain the history of multiple heritage sites and buildings from the historic centre of Rome including the Colosseum and the Arch of Constantine (see footnote for link <sup>9</sup>). The 3D virtual reconstruction was a point of interest for users of Rome Reborn so much so that it helped the descriptive approach of the Smarthistory videos by providing period accurate visualisations for their viewers. While this type of cross-application utility might not always be possible, a targeted evaluation of one application can definitely show points of effective CH value communication that can be further explored for such opportunities.

## **Stage 8 - Prototype (Re)Design**

Feedback received from the users, both expert and non-experts, should be used to refine the design and presentation of the digital CHComm application. For example, a couple of the previously discussed projects such as the Czechoslovakia 38-89 (Eg-V, Section 3.3.2) and the White Bastion Fortress project (Eg-IV, Section 3.3.2) improved

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<sup>9</sup><https://www.youtube.com/watch?v=f8hqR208HiM>



their digital content or created newer iterations of the project to carry forward their work. The Rome Reborn project began before the year 2000 and has reached version 3.0 as of 2020 while also having expanded in scope. Reiteration of the initial prototype application and re-evaluation of the CH values included within the content with each iteration is a necessary and unavoidable step for the effective communication and long-term conservation of CHComm and the CH asset being communicated.

## 4.2 Application of Eight-Stage Operational Workflow to analyse existing Digital CHComm

All through the description of the eight stage operational workflow for CH Values motivated communication in the previous section we used a few examples to explain the stages. Starting from Stage 1 we have repeatedly mentioned two CHComm instances communicating about the Arch of Constantine in Rome, Italy. One is the instance which is a part of the much larger Rome Reborn project and the second was a YouTube video and an associated webpage from SmartHistory. To better understand the application process of the operational workflow we pitch these two existing applications against a hypothetical CHComm instance that would be descriptive but try to incorporate all the possible value associations of the Arch of Constantine in Rome.

The Table 4.1 below compares the two existing CHComm instances against our hypothetical descriptive CHComm in the following manner:

- Column 1 -

Lists all the eight stages of the operational workflow. We omit the value collection stage. We use the broad value socio-cultural typologies for categorization across the columns as and when possible.

- Column 2 -

Pertains to the Colosseum district application available via the Google Play store for Android smartphones (See footnote for link <sup>10</sup>). The application is meant to be experienced using a Google Cardboard or Google Daydream device which are virtual reality platforms. The screenshot of how the Arch of Constantine appears within this application is shown in Figure 4.9. Note that the application presents a stereoscopic view when a screenshot is taken as it is meant to be used within specific VR platforms.

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<sup>10</sup><https://play.google.com/store/apps/details?id=com.flyoverzoneproductions.thecolosseumdistrict&hl=en&gl=US> (Last accessed on April 10 2023)





**Figure 4.9:** Screenshot showing the Arch of Constantine as it appeared in 320 CE within the Rome Reborn: The Colosseum District, virtual tour available on Google Play Store as of the end of 2022. This is to be used within the Google Cardboard or Google Daydream VR platform and therefore the image presents a stereoscopic view (above), a screenshot from a video of the project (below).

- Column 3 -

Pertains to the CHComm video and webpage covering the Arch of Constantine by the Smarthistory YouTube channel. One of the explanatory images from the webpage of Smarthistory which also links the video on their YouTube channel is shown in Figure 4.10.

- Column 4 -

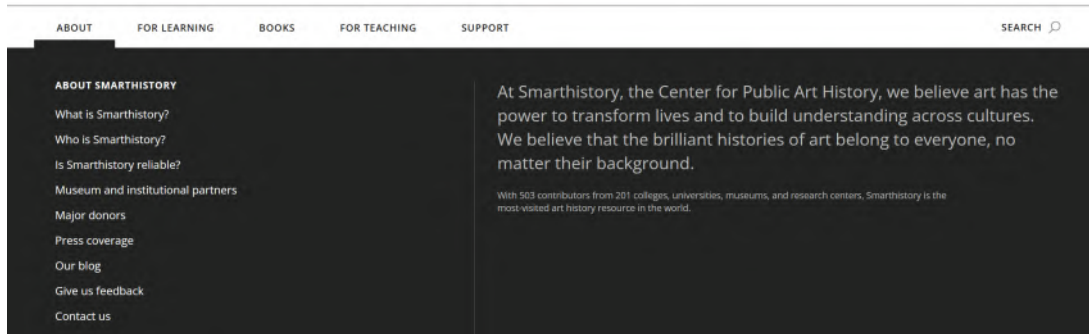
Describes the development of a hypothetical application that would focus on

communicating about the Arch of Constantine and its CH value associations. This application is developed using the eight stage operational workflow and therefore the salient differences are mentioned in the table. Note that we are able to take the best of what each of the existing examples has to offer in terms of CH information and value associations as a part of our process. We seek to add anything that they may not have covered, in order to present a holistic picture while communicating about the heritage asset in question which is the Arch of Constantine in Rome.



**Figure 4.10:** Explanatory image shared on the webpage of the Smarthistory site which covers the Arch of Constantine in Rome and also links their YouTube video of the Arch. Highlights show the artistic and architectural features and spolia while mentioning the periods and names of associated historical figures and respective architectural terms.

As we can see from the Table 4.1 there are quite a few CH value associations already covered by the pre-existing applications. This is completely expected as eminent experts from heritage, art history and allied fields have contributed to both of these efforts. The Rome Reborn project started in 1996 as purely a virtual reconstruction and has now become an entire ecosystem that is commercially available for purchase across multiple platforms and has community forums and modules to support educators. The scope of this now privately funded project evolved from an international university collaboration to a commercialised cultural heritage communication and education resource. The second instance is from Smarthistory which describes itself as “the most-visited art history resource in the world” and reports that they have “503 contributors



**Figure 4.11:** Smarthistory webpage at <https://smarthistory.org/> showing their description.

from 201 colleges, universities, museums, and research centres” (See Figure 4.11).

The point worth stressing here is that both of these CHComm instances were made from varying viewpoints. The Rome Reborn project application we considered here tries to immerse users through a virtual tour of the Colosseum district and presents the Arch of Constantine as a part of the experience while the Smarthistory webpage and video cover the artistic and historic merits of the Arch. Both instances of CHComm go over the cultural, socio-political and religious value associations to the Arch. Even so, there are additional CH value associations that the eight-stage operational workflow has uncovered, which are listed below with their broad based socio-cultural typology and detailed description of CH value association:

1. Aesthetic, Architectural, Artistic, Cultural - Architects and urban planners throughout the years have been inspired by the design and layout of the Arch of Constantine and its siting in the Colosseum district. This value association is important to Architects and Urban Planners apart from the users who would like to know more about the long-term cultural and artistic impact of the Arch.
2. Cultural/Symbolic, Historic - The modern day conservation process and the challenges faced by contemporary experts in conserving the Arch while keeping it accessible to the constant tourist pressure is a perspective that can engage users and encourage awareness among visitors.
3. Social, Cultural/Symbolic, Historic - A perspective on what happened to the Arch after 310 CE - 320 CE, through the middle ages can be presented. The differing expert perspectives on whether the Arch was started by Maxentius could also be presented.

A full-fledged application of the eight-stage operational workflow to the Arch of Constantine is out of scope of the current discussion and the above three points come purely from a hypothetical exercise. The fact that even a hypothetical exercise building on top of two excellent digital CHComm instances, is able to bring out three further CH value associations shows us that the application of the eight-stage operational workflow is a worthwhile exercise for adding CH values. It is very likely that a descriptive CHComm application built using this process can effectively communicate CH values to interested audiences.

### **4.3 Interim Conclusions - Eight Stage Operational Workflow**

Having discussed the operational workflow in detail in this chapter along with a hypothetical case in comparison to two existing CHComm projects on the Arch of Constantine, we can proceed to the testing of the operational workflow. We have currently established the feasibility of the operational workflow that can benefit communicators who are developing CH values motivated communication.

At the end of Section 3.1 in the previous chapter we had posed a question, which was -

“Can digital environments for CHComm effectively communicate cultural heritage information and value associations from one generation to the next as well as the oral traditions, folktales, books and built structures of our past?”

We can now answer this question with a conditional affirmation, as follows:

Digital environments for CHComm have the potential to communicate cultural heritage information and value associations from one generation to the next provided that the requisite attention is paid to the communication of CH values. It is a sobering reminder that much of the intentional CHComm from our recent past has been shaped by the guidelines for interpretation/presentation and combined efforts of teams of experts. This level of attention is yet to be given to the communication of heritage within digital environments. Very few digital CHComm instances have the benefit of nurturing by groups of interdisciplinary experts as most projects are being developed by disparate teams that sometimes use different technology formats. As the time and effort required to sort out the technological aspects keeps mounting the focus on effective communication of CH values has reduced. Additionally, the institutional adoption of reductionist CH value systems ends up omitting the details and nuances of wider community value associations. The eight-stage operational workflow for CH values

motivated communication attempts to remedy this through the use of both institutional categorization and holistic approach to significance assessment. Further, we use techniques such as dialogic inquiry, multiple perspectives, contextualisation, targeted evaluation and re-iteration to enhance the effectiveness of CH value communication in the design of digital CHComm (DCHComm). The longevity of any form of digital communication remains unknown. We can conservatively state that, as long as the infrastructure for digital communication is well-supported, the digital CHComm instances can last long with constant updation and technological supervision.

The next chapter deals with the realisation and practical application of the eight stage operational workflow in real-world situations. We test the operational workflow within a museum setting and use a control group and an experimental group with a targeted evaluation system that highlights the effectiveness of the communication of CH values.



**Table 4.1:** A comparison of the two existing CHComm instances for the Arch of Constantine in Rome against a hypothetical descriptive CHComm instance that follows the eight-stage operational framework and adds CH values.

Step of Operational Framework	Existing - Rome Reborn - Colosseum district, communicating about the Arch of Const.	Existing - Smart History channel video and webpage on the Arch of Const.	Hypothetical - Descriptive CHComm instance about the Arch of Constantine that follows the eight-stage operational framework and adds CH values
Step 1: Initial vocabulary of values	Presents a wide variety of values with the possible exception of a contemporary architectural and aesthetic perspective	Presents a wide variety of values with the possible exception of a historic “sense of place” when compared to Rome Reborn	Collect all possible value associations such as those discussed in stage 1 (Historic, Aesthetic, Cultural / Symbolic) and the socio-political meanings and Religious values that associate to the rise of Christianity. Note that “sense of place” and the contemporary architectural and aesthetic perspective needs to be incorporated
Step 2: Relative importance	Accurate 3D virtual reconstruction of Rome in 320 AD is given the highest importance	Description of the history of the Arch and analysis of the meanings of the iconography on the Arch is given the most attention	Starts with the history of the Arch by discussing the Battle at Milvian bridge and covers the cultural/symbolic values, religious values and contemporary architectural influences in that order. This would align with the chronology of the value associations for the Arch.
Step 3: Dialogic inquiry	User feedback is possible to see for this application using platforms like Google App Store and online reviews. Expert comments are incorporated in app.	User feedback is possible using platforms like the Youtube comment section	Actively encourage user feedback through online platforms and a survey of user and expert preferences or requirements regarding the contents which is done before outlining the initial design of the CHComm app.
Step 4: Multiple perspectives	Covers multiple expert perspectives by having two different experts sharing views on the religious, socio-political and cultural values of the ancient times.	Covers multiple expert perspectives and focuses on the religious, symbolic and aesthetic meanings of the Arch both in the ancient times and in today’s world.	Would cover as many perspectives as possible ranging from religious, socio-political to the symbolic and aesthetic impacts for both the ancient times and today. This would include any new perspectives uncovered from the previous stage. An interesting additional perspective would the status of current conservation as shared by current authorities and conservation pro. of Arch and Colosseum dist.
Step 5: Contextualisation	Contextualises the Arch in its time and space and also provides information on the longer term impacts such as the evolution of Christianity.	Contextualises the Arch as a symbol of Constantine’s life and times and also as the harbinger of an ancient shift in religious values.	Contextualises the Arch in its space and time and also in our contemporary society in terms of aesthetic, socio-political, religious impacts. Discuss the transformation of the Arch and the nearby locations over the intervening 2000 or so years.
Step 6: Prototype 1	The earliest prototype was developed before 2000 and attempted to use cutting edge technology for its time apart from UI/UX based considerations.	The video on the Arch was a 2D image presentation with descriptive voice over and highlighted illustrations. The webpage adds some more details with texts and script of the video also presented	Any suitable technological platform can be used. Presenting a reliable virtual reconstruction using images or videos if not a full 3D reconstruction would be ideal. There would also be contextualising illustrations / videos and some additional graphic content to highlight the multiple perspectives.
Step 7: Targeted evaluation	No particular targeted evaluation system exists as far as we know but the user feedback through the digital platforms have helped improve the future iterations of the application apart from any expert commentary.	No particular targeted evaluation system exists as far as we know.	A targeted evaluation system attempting to understand points of user interest and effectiveness of CH value communication is to be deployed alongside Prototype 1. This could be done through a linked survey form either administered online or face to face interactions if possible. Best case is that the application is accessed at or near the actual site of the Arch and users respond to a survey.
Step 8: Re-iteration	Upgraded versions of Rome Reborn have been periodically released which feature significant visual upgrades.	A second newer video on the channel discusses the historic centre of Rome as seen in the Rome Reborn 3D reconstruction.	Results of the targeted evaluation can be used to improve the Prototype 1.

## Chapter 5

# First Application of the Operational Workflow: Menorah Collection, Hecht Museum, Haifa, Israel

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*This chapter addresses the testing of the eight stage operational workflow for CH values motivated communication through the design of an application for a collection of artefacts in a museum. The application was developed for the Menorah collection of artefacts at the Hecht Museum in Haifa, Israel and has two versions. The control group version (or Info version) was made with descriptive information that was already available at the Hecht Museum and the experimental version (or Info + Values version) was based on the outcomes of the eight stages. The first prototype for both the versions was used to obtain an understanding of how the application would be perceived and then the second prototype was suggested which was based on the findings. Prior to the implementation and user feedback based testing of the eight-stage operational workflow, the complete workflow and intended implementation at the Hecht Museum was presented to a group of seven experts for validation and suitability of application. Their suggestions were used to improve the process. The chapter concludes with observations and interim conclusions.*

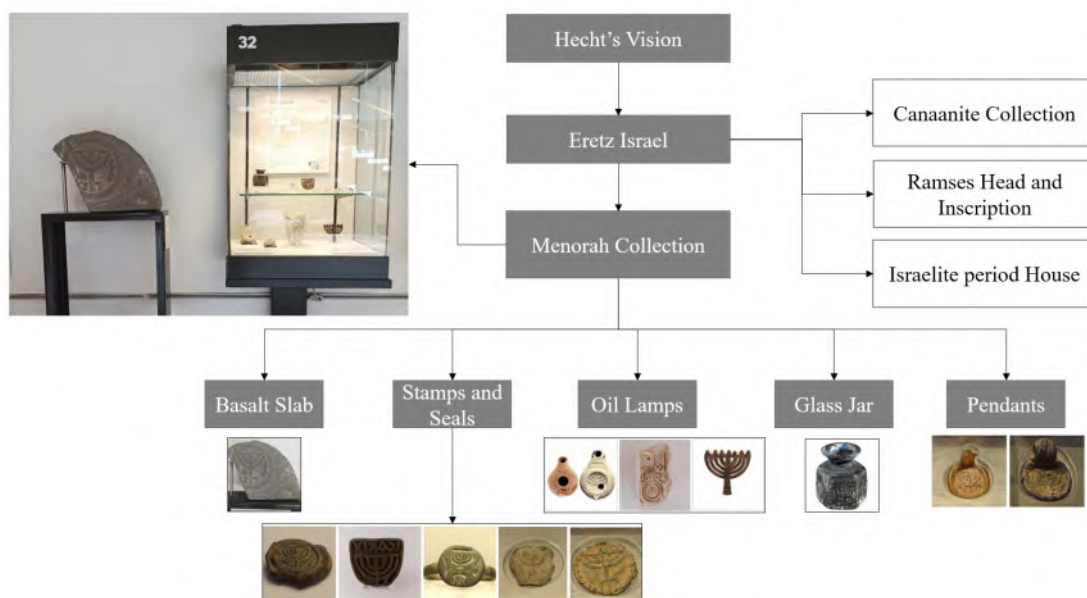
Note: This study has been published [115].

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Digital CHComm applications made for museums are a likely scenario for heritage communicators. In such situations, communicators face the challenge of having to link disparate objects that may not have obvious connections to each other. This could mean that some selected objects are included in a digital communication experience, while others are left out. Additionally, the constraints of the environment such as the sheer number of thematically disparate artefact collections might require designers to make such decisions. We have seen such efforts succeed with reasonably encouraging results [81]. Before we present our approach to the design and implementation of the application, it is imperative to briefly touch upon the background of the institution for which the application has been developed, namely the Hecht Museum at Haifa, Israel.

## 5.1 Background - Dr. Reuben Hecht and Eretz Israel

In 1984, Dr. Reuben Hecht established the Hecht Museum at the University of Haifa, to house his own collections of artefacts from ancient civilizations and artworks from the 19<sup>th</sup> century. His goal was to demonstrate the bond between the Israelites and “Eretz Israel.” Eretz is the Hebrew word for land, Eretz Israel signifies the “Land of Israel”. He thought that Zionism could be expressed through archaeology. As a result, the museum’s collection of artefacts spans the time period of his interest, which is from the Canaanite era (2000 BCE) to the Roman/Byzantine era (500–550 CE), demonstrating their influence on the area of present-day Israel <sup>11</sup>.



**Figure 5.1:** Recommended groups of artefacts in the Hecht Museum for the digital multimedia application with the final selection (Menorah collection) and its component sub-groups highlighted.

We had an interaction with the museum staff to choose a collection of artefacts for creating a digital multimedia application. They suggested four categories of artefacts as being very significant, and we chose the artefacts from the Menorah collection. The Menorah itself is a seven-branched candelabrum that was used for worship in the Jewish temple at Jerusalem. The original temple was destroyed first in 586 BCE by the Neo-Babylonian empire and the reconstructed second temple was destroyed by the Roman Empire in 70 CE. The original temple Menorah, which was likely covered in gold or made of gold, was carried away by the Romans after the destruction of

<sup>11</sup><https://mushecht.haifa.ac.il/index.php?lang=en>



the second temple. All the artefacts in the Menorah collection depict the Menorah symbol on them. Since the Menorah symbol serves as Israel's current national emblem, we chose the Menorah collection as the subject of our communication application. In Figure 5.1, all the recommended artefact collections are mentioned together with the content of the Menorah collection which was chosen from their suggestions. The administrative significance attached to the Menorah emblem and the fact that many of these artefacts were everyday items gave us a chance to investigate how visitors currently perceive the symbol and the artefacts. It was decided at this early stage that the CH value associations promoted by Dr. Reuben Hecht through his vision for the museum would be integrated into the content design because the application was to be built within the setting of the museum.

## **5.2 Design of Digital Multimedia Application for the Menorah Collection at the Hecht Museum**

We used the eight-stage approach described in the previous chapter to develop content that reflected the CH values associated with the artefacts in the Menorah collection for a digital multimedia application. Prior to the first application of the operational workflow the entire system of the eight-stage operational workflow was discussed in detail with two experts at the University of Haifa. One of these experts works with information systems at the faculty of social sciences. This expert had previously been part of the development of a web-based multimedia presentation for the Hecht Museum in 2011. The other expert works in heritage communication particularly dealing with the issue of connecting museum experiences to the outside world. The experts had commented on the structuring of the eight stages and suggested a method used for validation of the efficacy and usefulness of including CH values in CHComm. This method of validation was implemented in the application of the eight-stage operational workflow at Hecht Museum. This method envisioned the use of one 'control' group that viewed the 'Info version' of the Menorah collection of artefacts and comparing their outcomes with an 'experimental' group that viewed the 'Info+Values' version. After incorporating the comments, finalising the structure of the operational workflow and arriving at the 'compare and contrast' method for testing, the complete methodology used at the Hecht Museum was presented to a group of five other experts apart from the first two. This meeting was exclusively organised at the University of Haifa to discuss the eight-stage operational workflow and the proposed implementation with the 'compare and contrast' method for validation that was to be implemented at the

Hecht Museum in Haifa Israel. The experts involved in this discussion with their respective comments and the authors responses are listed below:

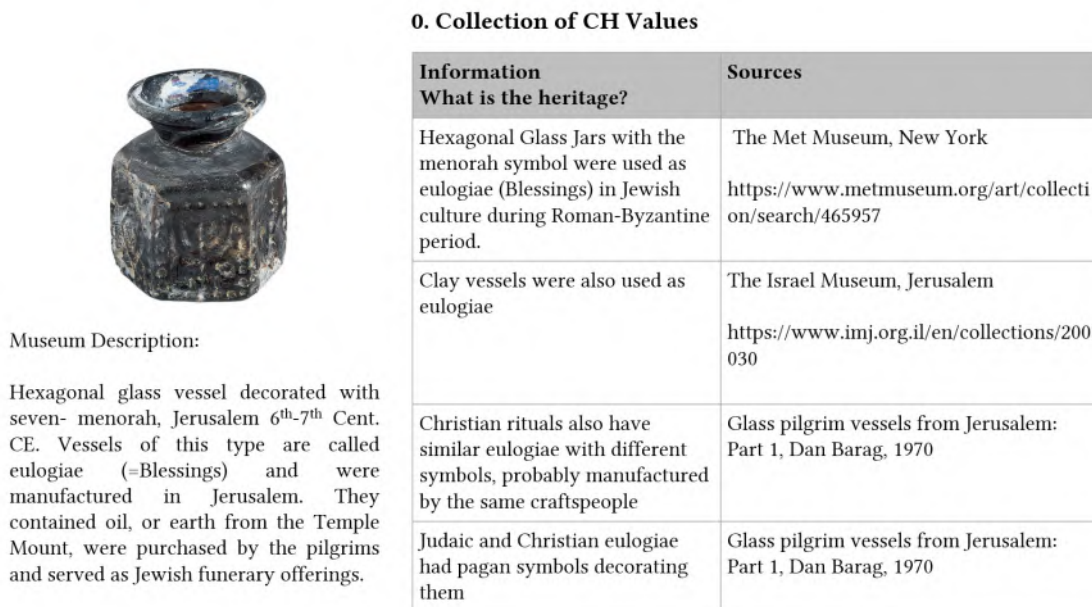
- HCI expert – Suggested that the distinction between the content of the ‘information only’ version and the ‘information + values version’ is not very clear and the description of the process would benefit if the values are highlighted.
  - In response, the content which added values were highlighted in detail and the writing of Case 1 (Chapter 5) always explicitly mentions when content and perspectives with added values are being discussed. This format was also adopted for the publication of a journal paper.
- Expert from International Council of Museums (ICOM) – Suggested exploring the tenets of the Faro convention for its stance on cultural heritage values.
  - In response, the author studied the Faro convention and has described it in appropriate sections of Chapters 1 & 2 of the present thesis. This provided further grounding for the exploration of CH values in CHComm.
- Expert on interactive storytelling – Suggested exploration of the creation of narratives to communicate CH values. They described the concept of values that are associated to characters in storytelling and how it might be beneficial to use a similar approach when creating CHComm content.
  - In response, the stages 4 and 5 (Multiple perspectives and Contextualisation) were relooked at and a more ‘descriptive’ or ‘chronicle’ narrative approach was used to encapsulate CH value associations shared by the interested stakeholders. This approach has been consistently adapted through all cases.
- Computer Science expert who has previously worked on AI and intelligent technologies for cultural heritage appreciation – Suggested studying the changes of CH value associations over time and how this would impact cultural perceptions and the need for CHComm to change with time and shifting perspectives.
  - In response, the stage 7 (Targeted evaluation) included questions that tried to understand how non-experts and users view the heritage artefacts and intangible associations in modern context. All the cases were implemented with this change and Cases 1 & 2 (Hecht Museum and Virupaksha temple) discusses the changes of perspectives in detail.
- Heritage communication expert who lead the project for the web-based multimedia presentation for the Hecht Museum – Suggested that the operational

workflow was appropriate and the ‘compare and contrast’ method of testing the impact of deliberate CH value inclusion in CHComm would be beneficial.

Here we describe our efforts by sharing how the eight-stage operational workflow was implemented stage by stage and how it was assessed for efficacy of communication of CH values. The description showcases the content creation process for the “Glass Jar” artefact under the Menorah collection. This is provided as a running example of the content design process so that the deliberate collection and inclusion of CH Value associations and its changes over each stage in the content development can be highlighted.

### Stage 0—Collection of CH values

The Hecht Museum’s Menorah collection is linked to a variety of CH values and many of these values are shared by the Museum itself and tied to the founder’s beliefs. Zionism, Judaism’s religious principles, the historical significance of diverse cultural sites, and the social and symbolic significance of the Menorah in contemporary society are a few of these values that are also a part of the cornucopia of values that may be attached to the museum itself. The Menorah collection puts the religious significance and administrative significance of the Menorah symbol front and centre. A few intriguing facts were discovered during the data collection process, such as how the Menorah symbol’s meaning evolved over time.



**Figure 5.2:** Collection of CH information and their sources for the ‘Glass jar’ artefact in the Menorah collection.

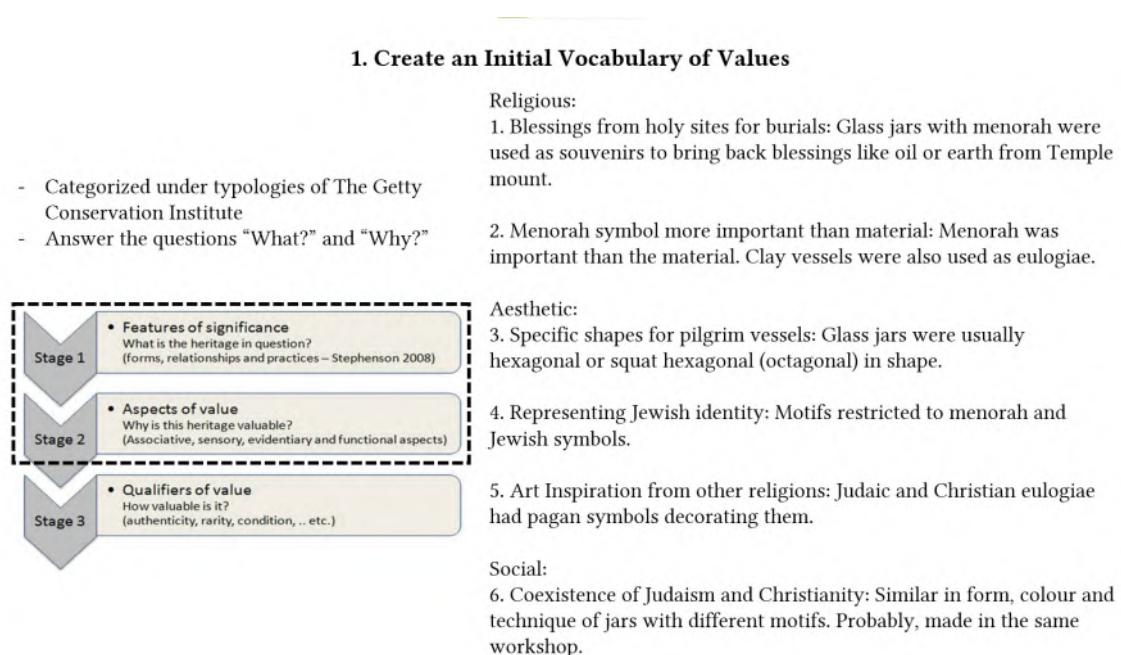
The Menorah was once carried away by Roman conquerors after the second Jewish

temple in Jerusalem was destroyed, as a result of a battle. This is shown on the Arch of Titus in Rome, which was constructed in 81 CE. This portrayal may have caused the Jewish perspective of the time to associate the Menorah with “defeat”, which is probably why the image was not included on Jewish coinage produced during the Bar Kokhba revolt of 132-136 CE. On the other hand, the Menorah is now the official emblem of the State of Israel.

When compiling the CH values related to the Menorah symbol and the objects in the collection, we consulted a number of academic sources and had open discussions with heritage experts and non-experts who contributed their opinions and background knowledge on the Menorah. Figure 5.2 displays a sample of the CH information gathered for the “Glass jar” artefact along with the pertinent data sources. It should be highlighted that while the museum’s information on the object was sufficient, there was undoubtedly more information and possible value associations accessible from other sources, which were utilised to improve the communication application.

## Stage 1—Create an Initial Vocabulary of Values

At this point, regular consultations with the experts at the museum and the university served to confirm the facts and their associations with CH values. We were able to verify the accuracy of the compiled content. We also ensured that crucial historical information and their value associations were not omitted. Figure 5.3 displays the initial vocabulary of values and the information about the “Glass jar” artefact.



**Figure 5.3:** Initial vocabulary of values categorised by type and the descriptive value associations with information for the ‘Glass Jar’ artefact.

The Glass Jars were used by pilgrims to carry blessings from holy sites. The presence of the Menorah symbol on these jars shows us that they were used by Jewish pilgrims. We identified six value associations with this artefact. They are listed below with their broad typology and the detailed description for each value association.

**Religious:**

1. *Blessings from holy sites for burials:* Glass jars with menorah were used as souvenirs to bring back blessings like oil or earth from Temple mount.
2. *Menorah symbol was more important than material:* Menorah was important than the material. Clay vessels were also used as eulogiae.

**Aesthetic:**

3. *Specific shapes for pilgrim vessels:* Glass jars were usually hexagonal or squat hexagonal (octagonal) in shape.
4. *Representing Jewish identity:* Motifs restricted to menorah and Jewish symbols.
5. *Art Inspiration from other religions:* Judaic and Christian eulogiae had pagan symbols decorating them.

**Social:**

6. *Coexistence of Judaism and Christianity:* Different motifs used for jars similar in form, colour and technique. Probably, made in the same workshop

The religious significance of each item in the Menorah collection was noted, and other relevant values for every artefact was listed.

For instance,

- The glass pendants were historically regarded as luxury items, which gave the artefact an economic value at the time (2<sup>nd</sup> century CE).
- A menorah with five branches was depicted on a basalt slab from the Roman-Byzantine era, in contrast to the seven-branch menorah representation that serves as the emblem of the state of Israel and the original menorah of the second Jewish temple.

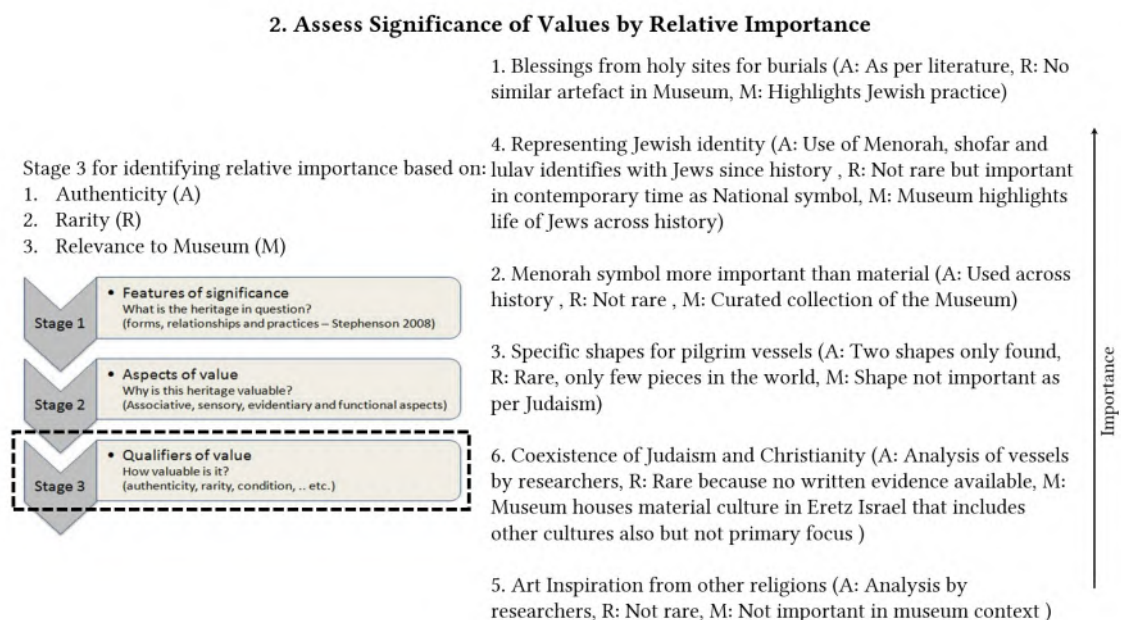
This discrepancy in depiction results from a religious rule that forbids depicting seven branch menorahs on structures other than the Temple in Jerusalem. Due to the fact that this prohibition is no longer enforced or adhered to, the seven-branch

representation has become common. This knowledge has both religious and historical significance in addition to being pertinent to the social context of today.

## Stage 2—Assess Significance of Values by Relative Importance

In this stage we were to answer the question “How valuable is it?” and this answer was based on Authenticity, Rarity and their Relevance when considering the parameters of this communication effort. The artefacts that are part of the collection are all related to each other and are in good condition with a long history of research backing them up. They are not particularly rare when compared to other artefacts of a similar type but they are part of a group of rare representatives of a culture from a particular period in time within a specific geographic region. The theme of the collection itself has value associations that are significant hence the communication about this collection would be built around the CH values of the collection and the statements that each artefact in the collection were trying to make within the collection.

To put it simply the question we tried to answer was - “What is this collection and why is this particular artefact a part of this collection?”. As this was a museum setting, a similar question would have been answered by the museum curators when the display was put together. This meant that we were able to have fruitful discussions with the curators at the museum for this step.



**Figure 5.4:** Information relating to the ‘Glass Jar’ artefact is rearranged based on our understanding of its significance based on the Authenticity (A) of the heritage information, the Rarity (R) of the artefact itself and the relevance of the artefact to the Museum context (M). The numbering is kept the same as in Figure 5.3 to highlight the changes created by this rearrangement.



We ended up rearranging our points or descriptions of value associations for each artefact as a result of our response to this question. The authenticity (A) of the heritage information, rarity (R) of the artefact itself, and significance of the artefact to the museum context served as our criterion at this step (M). Our comprehension of these three factors served as the foundation for this rearrangement. Figure 5.4 depicts the reorganised list of descriptions of value association for the “Glass Jar” artefact.

After the reorganisation, a table was created for each artefact and associated concepts that would explain the collection’s subject, such as Dr. Hecht’s vision for the museum and the concept and meaning of the term “Eretz Israel.” The tables created for the content design of Dr. Reuben Hecht’s vision for the museum and “Glass Jar” in the menorah collection are shown in Figures 5.5 and 5.6.

**Reuben Hecht**

<b>Information</b> What is the heritage?	<b>Values</b> Why is the heritage valuable?	<b>Sources</b>	<b>Relative significance</b> How valuable is it?
Hecht museum was established in Haifa	Hecht believed that Haifa was the center for revival of the Jewish State	Reuben Hecht – Vision and Fulfilment By Moshe Shamir	This information is highlighted in the museum.
Hecht spent sixty years collecting archaeological items that represented the Eretz Israel’s material culture.	Ancient relics were proof of the Jewish people’s connection to Eretz Israel, and archaeology would be an expression of Zionism	Hecht Museum website	
Hecht used to collect coins from childhood and had funded many archaeologists and their excavation projects.	Hecht was a Jew who believed in the concept of “Eretz Israel” and connection between People and Land of Israel.	Reuben Hecht – Vision and Fulfilment By Moshe Shamir	


**Figure 5.5:** Content design structure showing the relative importance of the information and values associated with Dr. Reuben Hecht’s vision.

After the significance assessments were completed, certain CH value associations increased in relative importance while others had them became less relevant. As the communicators we deliberately chose to highlight the aspect of potential peaceful co-existence of religions from the fact that Jewish and Christian pilgrim vessels may have been made by the same manufacturers in Jerusalem, as can be seen in Figure 5.6. However, the experts did not place much importance on the association of Pagan symbology with the designs on glass pilgrim vessels, hence this value association was removed from the content.

### **Stage 3—Dialogic Inquiry for the Importance of Values**

The values that were chosen so far had been ranked according to their relative



**Glass Jars** 

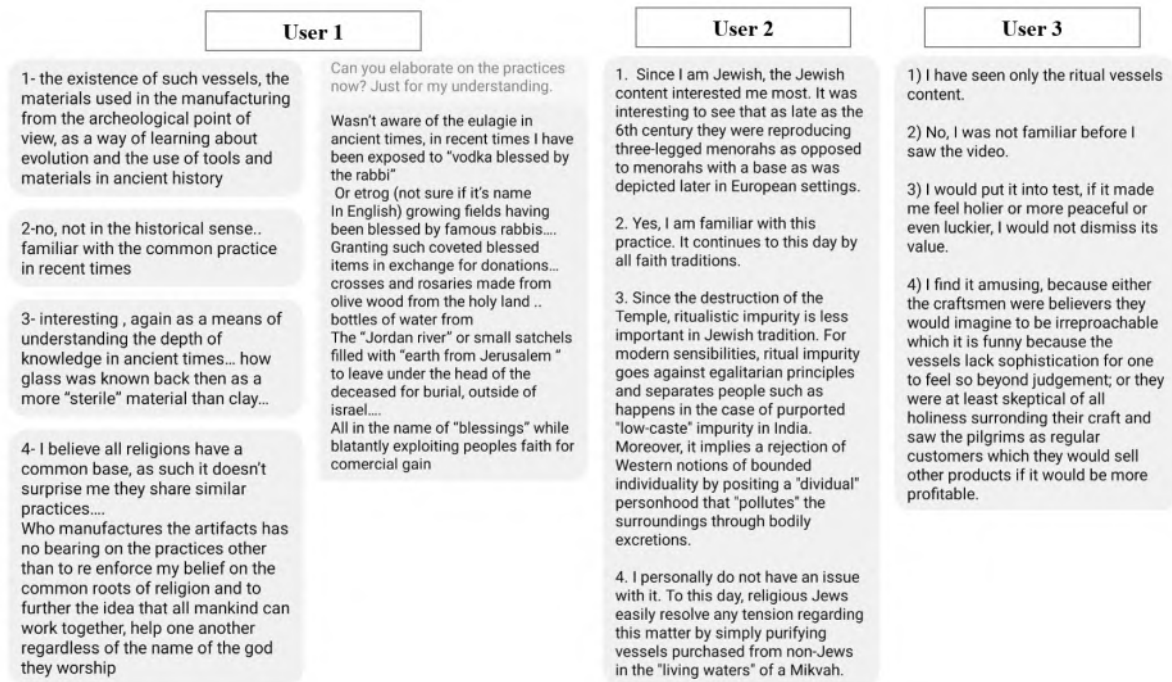
Information What is the heritage?	Values Why is the heritage valuable?	Sources	Relative significance How valuable is it?
Glass vessel with the menorah symbol were used as eulogiae (Blessings) in Jewish culture	Religious significance - pilgrims when they visited the holy sites was to take something of the blessing of the site back home with them, to serve as a remedy or source of protection. Such "souvenirs" often consisted of oil from the lamps that burned at the holy sites, water from the Jordan River, or earth from a place associated with a holy person.	The Israel Museum, Jerusalem	This information is highlighted in the museum.  The contemporary equivalent of this practice (if any) can be highlighted
Clay vessels with the menorah symbol were also used as eulogiae	The menorah symbolism is the point of significance, and the material of the vessel is not as important. The belief is anchored by the symbology		This explains how and why the menorah symbol is significant and why the glass jar is worth preserving
Christian rituals also have similar eulogiae with different symbols, probably manufactured by the same craftspeople	There may have been a historic period when both the religions peacefully coexisted, and their rituals were practiced side-by-side	Glass Pilgrim Vessels in Jerusalem: Part I by Dan Barag	This is an important point that can be highlighted as a call out to religious harmony. May be more relevant in other contexts.
Judaic and Christian eulogiae had pagan symbols decorating them	Common ancestry and pagan roots were carried over in the religious practices		This may not be as important in the current context

**Figure 5.6:** Content design structure showing the relative importance of the information and values associated with the ‘Glass Jar’ artefact in the Menorah collection.

importance which was based on our understanding as communicators and influenced by expert opinions. As a part of the dialogic inquiry, potential visitors would be asked about their opinions of the Menorah as a symbol. Their level of familiarity with artefacts in the Menorah collection such as the Glass Jar would have to be assessed before further perspectives could be collected. Convenience sampling would be used to choose the participants in this dialogic inquiry process, which should include individuals of various countries and cultural backgrounds. The tables for each artefact, as those in Figures 5.5 and 5.6, illustrate the essential content that was to be included for a pilot video used for dialogic inquiry.

The preliminary content created at this point was compiled for the dialogic inquiry stage and the user perspectives and some more expert views on the CH values were obtained. We created a video that used the textual content from the previous stage using voice-over narration and pertinent photos from the museum. The videos about the artefacts were shared in select Facebook groups and potential users were prompted to answer a few questions. These facebook groups had expats living in Haifa, Israel who were from diverse cultural backgrounds and communicated primarily in English. Some users who were from Jewish backgrounds had an almost complete understanding of the Menorah symbol. Their awareness of the values associated with the artefacts was evident in their responses. Others had a definite appreciation for the CH values incorporated into the content at this stage.

Figure 5.7 displays an example of the answers to four questions on the video shared



**Figure 5.7:** A sample of responses to four questions for the content shared on the Glass Jar artefact received via Facebook.

about the “Glass Jar” artefact through Facebook.

- Which piece of content related to the ‘Glass Jar’ interested you the most? Why?
- Are you familiar with the practice of bringing back Eulogiae (Blessings) from religious sites?
- What are your thoughts on ritualistic purity of material?
- What are your thoughts on the same crafts-person creating pilgrim vessels for different religions?

Similar questions were put forth to experts and personnel associated with the museum and also to frequent museum visitors who were familiar with the artefacts and their history. This was done in order to further improve the content design as much as feasible. Figure 5.8 displays an example of this group’s comments, which were given in response to three rather than four questions.

We learnt from the user and expert responses that ideas like “ritualistic purity” were subjects with a variety of viewpoints. We came to the conclusion that the initial content design had neglected to explain why a particular item was a part of the Menorah collection. By going through this stage, we were able to measure user interest in the heritage as well as improve the presentation of the content.

### 3. Dialogic Inquiry for the Importance of Values

#### Museum Description:

Hexagonal glass vessel decorated with seven- menorah, Jerusalem 6<sup>th</sup>-7<sup>th</sup> Cent. CE. Vessels of this type are called eulogiae (=Blessings) and were manufactured in Jerusalem. They contained oil, or earth from the Temple Mount, were purchased by the pilgrims and served as Jewish funerary offerings.



Q1. Does this artefact interest you? Why?

Q2. What more do you want to know about this artefact? Why?

Q3. Do you know about pilgrim vessels or funerary offerings?

Senior guide at the Museum and Event coordinator: (Q2) Hexagonal shapes were common for Roman jars, maybe the inspiration. No relevance in Judaism. Highlight "Why is it part of this collection?".

Museum Guide: (Q2) Stone and glass were considered pure for rituals by Jews because they don't react. Menorah makes it Jewish.

Graduate Student, Sociology: (Q3) Every year Jews visit the graves of the ancestors on religious festivals, generally carry stones and keep on the grave.

PhD student, Computer Science: (Q3) Muslims also have a similar tradition of carrying water from Mecca back as blessings.

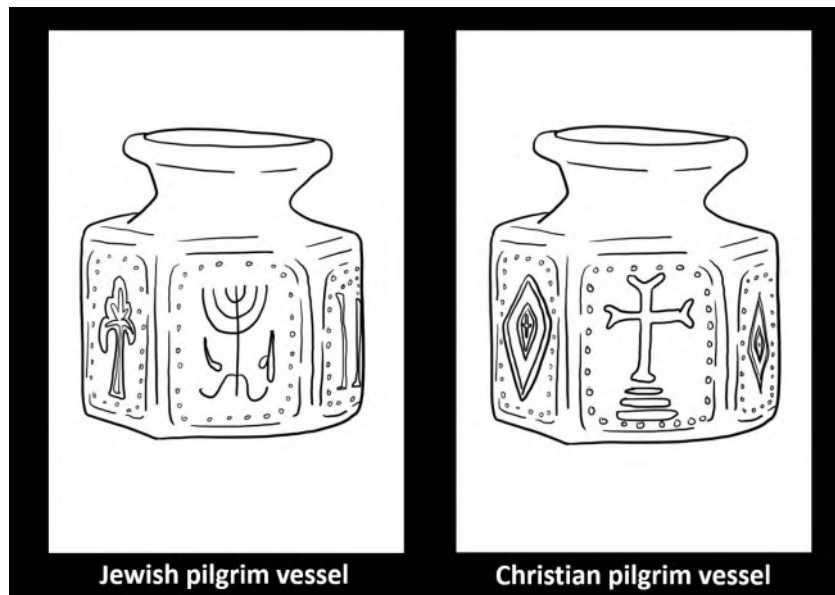
**Figure 5.8:** A sample of responses from experts and knowledgeable users to three questions for the content shared on the Glass Jar artefact.

## Stage 4—Multiple Perspectives as a Design Tool

CHComm projects need to present a variety of perspectives for effective and holistic values motivated communication. Stage 3 had provided us with multiple perspectives for the content that we had developed. In addition to Jewish religious values, certain associations with sacred artefacts have pertinent non-Jewish viewpoints. In the case of the "Glass Jar," multiple religions share the custom of bringing Eulogiae (Blessings) from a religious location as souvenirs. Users expressed a desire to talk about this aspect, so it was important to incorporate this viewpoint into the content design.

At this juncture, the earlier decision to emphasise the harmonious coexistence of religions seems to have had an effect. A custom-made illustration, as seen in Figure 5.9, was added to the video with an accompanying voice-over to help emphasise this concept. Mentioning other artefacts and other CH associations which were not under the purview of the Hecht museum collection was necessary in order to include all the diverse perspectives.

The same might apply to other museums, historical places, or collections of intangible heritage. Comparing and contrasting relevant value associations for any CH property or intangible heritage is beneficial for the communication of CH values. Different viewpoints on heritage can help to inspire user reflection, foster conversation, and aid in the spread of CH values, as was stated in the context of the serious video game example discussed previously. In our experience at the Hecht Museum we found that multiple perspectives was an effective design tool in raising CH awareness.



**Figure 5.9:** An illustration of Glass Jars with Menorah symbol and a symbol of the Cross which pointed to the possibility of the same manufacturer making the ‘Glass Jars’ and a potentially peaceful co-existence of both the religions at that point in time was added to include a new perspective in the content.

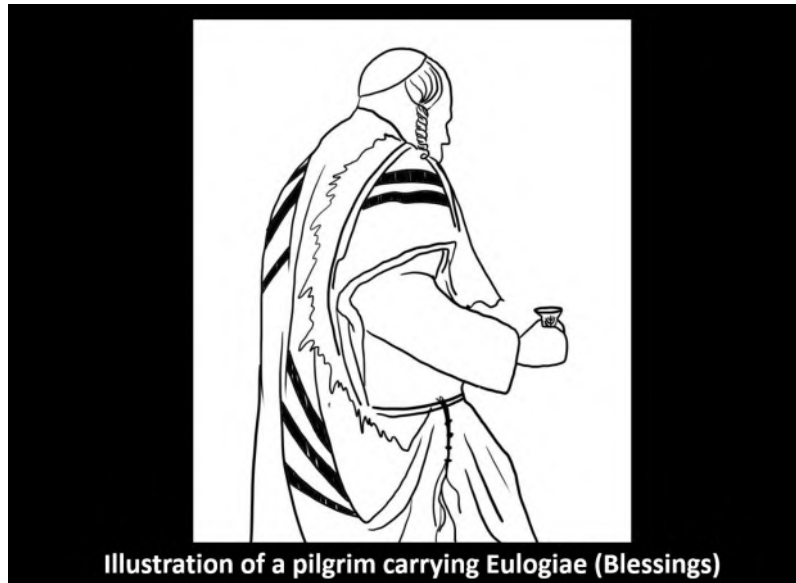
### **Stage 5—Contextualisation of heritage to highlight appropriate CH values**

Contextualisation is the use of design components or techniques in a digital CHComm application to convey the fundamental knowledge of a historical or culturally significant asset in its time or place. The best way to contextualise any heritage asset is through the inclusion of “relatable” examples that explain the historic fact or value association with a contemporary implication whenever possible. The communicator has the responsibility of choosing an optimum contextualization strategy for each scenario. This would depend on which values can be contextualised most effectively and which values definitely require contextualisation for a better understanding.

In our application, we made the decision to develop custom-made illustrations and alter the script of the voice-over narration in order to obtain better contextualisation. In the case of the “Glass Jar” from the Menorah collection, explanatory voice-over lines and an illustration showing the use of Eulogiae was added to clarify the meaning of the term (see Figure 5.10 for illustration and Figure 5.11 for the altered script). Another illustration, shown in Figure 5.9, was used to contextualize the viewpoint of peaceful co-existence of Judaism and Christianity.

### **Stage 6—Initial prototype design for testing: Prototype 1**

The value associations for the artefacts (Tangible) and the concepts (Intangible) that were thought to be necessary for the application about the Menorah collection



**Figure 5.10:** An illustration of the act of using Eulogiae created to explain the use of the Glass Jars with Menorah symbol.

Pilgrims who visited the holy sites were to take something as a blessing from the site back home , to serve as a remedy or source of protection. Such "souvenirs" often consisted of oil from the lamps that burned at the holy sites, water from the Jordan River, or earth from the Temple Mount or a place associated with a holy person.

Bringing back holy water from religious sites is an important practice even today. Many religions like Judaism, Christianity, Islam, Buddhism, Hinduism used holy water as blessings or spiritual cleansing.

**Figure 5.11:** Lines added to the content designed for the Glass Jar artefact to better contextualise the meaning of the term ‘Eulogiae’.

are listed in Table 5.1 at the end of the chapter.

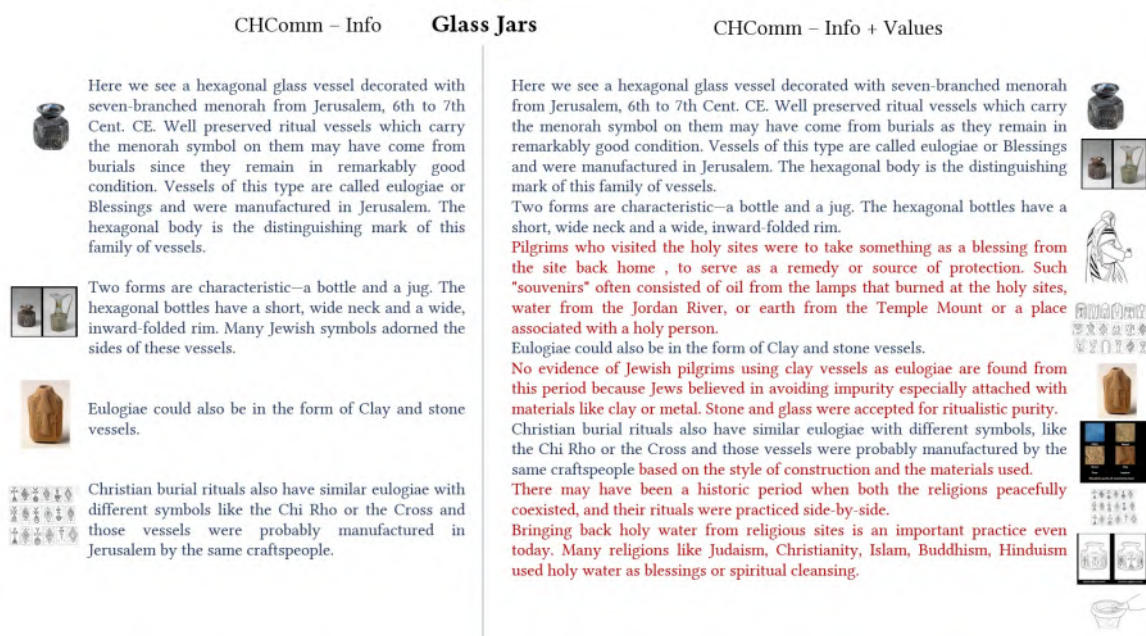
The categorization of values based on the broad typologies demonstrates the value correlations that we were able to establish. For each of the artefacts shown in Figure 5.1 and the museum concepts, two sets of videos were made, and this was our Prototype 1.

The heritage information and CH values that the user can learn through carefully studying every panel displayed inside the museum was the basis for one set of videos that would be accessed via a simple web-based application. The “CHComm Info” or “info version” application was the name given to this collection of videos. Further information and values that were chosen and improved through expert and user interactions outlined in the preceding stages were incorporated in another batch of videos. This application was known as the “CHComm Info+Values” or “values version”.

In order to improve the presentation’s flow and ensure that the facts were understood



clearly, the Info version did include certain additional information, pictures, and CH values that would not be readily available within the museum’s walls. The final version included considerably more information and was presented as clearly as we could with custom-made illustrations. Figure 5.12 depicts a comparative slide demonstrating the variations in the voice-over script and the added graphics for the “Glass Jar” artefact in both versions. Two versions of the digital application were made in order to assess whether there were any discrepancies in how the CH values were perceived by museum visitors who opted to watch the videos. The “CHComm Info+Values” version served as our experimental group, while the “CHComm Info” version served as essentially the control group.



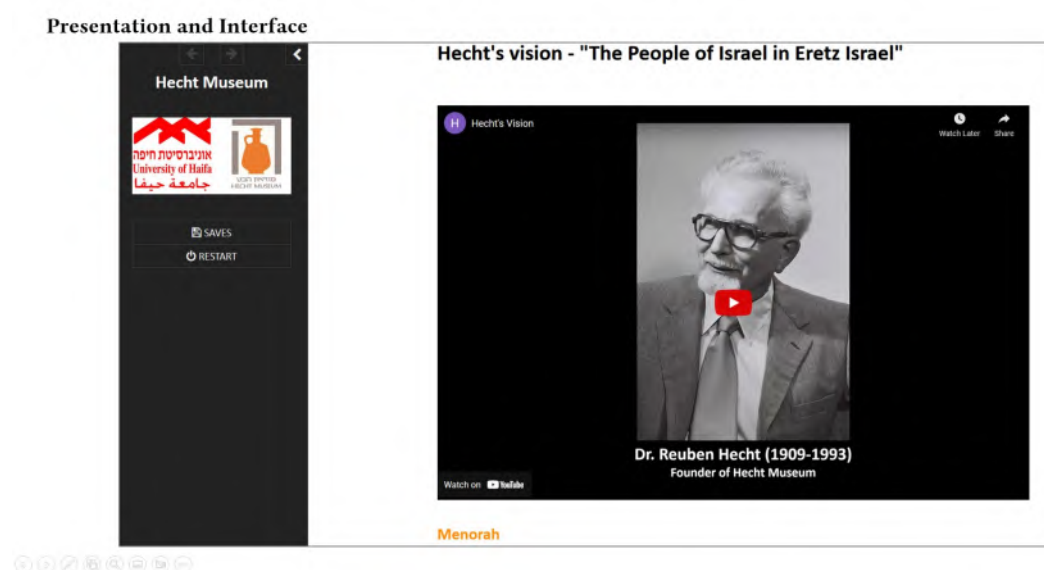
**Figure 5.12:** Comparative slide showing the differences between the script for voice-over and the additional illustrations in the videos made as part of the CHComm Info and the CHComm Info + Values applications for the ‘Glass Jar’ artefact.

The first video incorporated information on Dr. Reuben Hecht’s plans for the museum with an explanation of the idea of “Eretz Israel,” while the second one detailed the religious artefact known as the original Menorah from the second Jewish temple in Jerusalem. The second video also provided an overview of history illustrating how the Menorah symbol came to be a significant Jewish symbol.

Following the highlighted structure shared in Figure 5.1, a web-based application that allowed users to explore videos associated with the Menorah artefact collection was developed. Videos for specific artefacts were all limited to three minutes or less, with the majority being just one minute and thirty seconds long. Figure 5.13 displays a screenshot of the web-based application with the thumbnail of the introduction

video.

### Prototype 1: Multimedia Application



**Figure 5.13:** A screenshot of the web-based application with the introductory video.

The values version of the application ended up being lengthier than the info version due to the integration of the CH values uncovered through our analysis. To make a direct comparison, the values version of the material describing the “Glass Jar” artefact was 1 minute and 58 seconds long, while the Info version was 58 seconds long. When taken at face value, this length disparity could seem bothersome, yet it was essential to our strategy.

The quintessential problem we want to address is that the communication of CH has to share the CH values of the heritage. Instead, many CHComm projects have been under-reporting CH value associations due to a laser-focus on a single question - “What is the heritage in question?”. The professionals in the field of heritage are aware of the answers to the other two queries being - “Why is the (specific) heritage significant?” and “How valuable is it?,” but they are not well-communicated even in the current museum environment. Studies have shown that users would like to understand the values of cultural heritage. A study was done on the user preferences for an application that was to be created about traditional Malay houses. Authors reported that the results of their study “*suggest the importance of highlighting to the users the significance and the value of traditional Malay house, mostly focusing on the “why” and the “how” type of information rather than simply telling them the descriptive nature (the architectural what-is) of the architectural heritage*” [109]. The value associations of a heritage are not considered to be “central” in the communication of a heritage and are left out when information is delivered in a reductionist manner. Yet we see a



lot of the expert discourse and guidelines around conservation has increasingly veered towards understanding both the institutional and the community value associations before making heritage management decisions.

After reviewing the material, a museum guide expressed surprise at the volume of data gathered and wanted to know the sources of the data and the CH values that would be conveyed in our application. The fact that these sources were going to be included in the museum's collection emphasises the significance of values in any attempt to communicate heritage. In this instance, the additional text and visuals served to contextualise the value associations. They also offered various, authentic perspectives on the heritage at appropriate moments within the video. A deliberate and meticulous refinement of the content had been undertaken to incorporate all the information and CH values with their significance and nuances, as previously described in the stages. The obvious outcome was the difference in content length.

### **Stage 7—Targeted evaluation via User Feedback**

After viewing the menorah collection on display at the museum, visitors were asked whether they would want to watch videos to learn more about the artefacts. The menorah collection itself is displayed almost at the end of the museum visit and most visitors would have seen the other artefacts before reaching the collection of our study. The Prototype 1 of the web-based application was utilised by fourteen visitors to watch videos about the Menorah collection over the course of a week at various times of the day. The Info version of the application was shown to seven of these visitors, and the Values version was shown to the other seven. Visitors were not informed that there was another version, and the same questions were posed to both groups. It was not expected that any one user would watch videos about each and every artefact in the Menorah collection. While some users opted to watch videos for more than one artefact, the majority of users watched a video pertaining to just one artefact. All users were asked at least five questions, and based on their responses, one or two more questions were asked.

The first three questions, which applied to all users, gauged their understanding of Dr. Hecht's vision, the idea of "Eretz Israel," and the background of the Menorah as an object and a symbol. The final two inquiries were dependent on the particular artefact video that the user had watched. For example, the last two questions posed to visitors who viewed the "Glass Jar" artefact attempted to gauge the user's knowledge of Eulogiae and their feelings toward the possibility that the same maker may have produced jars for both Christian and Jewish pilgrims. In the event that they stated that they were of Jewish ancestry (cultural insiders), they were also asked to share

their opinions on the concept of the “ritualistic purity of specific materials”.

Users with a Jewish heritage had no trouble interpreting the content, while some non-Jewish and non-Israeli visitors seemed to struggle to understand the values behind the symbolic representation of the Menorah. The responses showed that users were happy to have been provided with the content and many were eager to discuss their views on certain aspects of heritage. A user with Jewish ancestry who watched the values version stated that after seeing the video on the “Lamps” artefact, they could see how the “bronze menorah” lamp handle would have been a component of a clay oil lamp. We had included a custom-made illustration to clearly show how the bronze menorah lamp handle would have been attached to a clay oil lamp to contextualise its use.

After watching the video, a different user who was neither Jewish nor an Israeli citizen said they now understand why the Menorah emblem etched on the “Basalt Slab ” artefact only has five branches instead of the customary seven. When they first saw the actual artefact, they had the wrong idea that this representation was a “barbarization” (an inaccurate representation), but the video that described its significance changed their perception. This made it apparent to us that our efforts to incorporate values was improving the CH communication for the visitors. The same individual also expressed their inability to understand how the Menorah symbol was connected to “rebirth.” This informed us that we might need to rework the script describing this specific association in the “CHComm Info+Values” version and add further illustrations. Another non-Israeli, non-Jewish user who viewed at the values version of the application and described themselves as non-religious said the following after doing so:

*“The Israeli people have traditionally owned this territory (sic). I’ve never been to Palestine, therefore I’m unable to speak to the reality. I might be able to claim it belongs to Israel given the content.”*

This statement highlighted how that specific user perceived the region’s current socio political landscape, although the Prototype 1 did not make any overt mention of this. The museum is themed on the “People of Israel in Eretz Israel”, and the artefacts of the Menorah collection, a central Jewish symbol and the symbol of the current state of Israel, was chosen as the target group of artefacts covered by the application. This influenced the application’s design up until this point and would have affected the conclusions reached by this specific user, who is a complete outsider to the cultural setting. In light of this response, we made the decision to incorporate a timeline of the history of Israel and a brief overview showing where the museum’s treasures would fit into that timeline. As part of the presentation of the application, it was important to

expressly recognise the historic and modern spatio-temporal boundaries of Israel. A few more changes were made to the prototype 2. Detailed takeaways relating to the changes from Prototype 1 and additional takeaways have been discussed further along in Chapter 6.

## **Stage 8—Iterative design: Prototype 2**

There were bound to be issues with the prototype created and assessed utilising the previous seven stages, therefore an improved iteration was required before a thorough evaluation to assess the effectiveness of communication of CH values. This was done since we anticipated that the first design would have some blind spots and now the user evaluation had pointed them out.

Users of Prototype 1 appreciated the material, according to the targeted evaluation, but two rather obvious problems emerged.

- Non-Jewish visitors had a difficult time appreciating the Menorah’s values. This demonstrated to us that this area of the content needed to be better. There was a need for some reinforcement, particularly in the contextualization and explanation of religious values.
- The content needed to be shortened, according to viewers of the longer video segments. As a result, it was decided to divide and reorganise the videos so that the longest one would not be longer than two minutes.

We noticed that all the users of Prototype 1 seemed to appreciate the CH values that were included. The replies demonstrated to us that users comprehended the ramifications of the shared content more thoroughly than they would have by focusing solely on the museum’s artefacts and explanations shared via panels. Even those who were familiar with the majority of the topics covered in the videos felt that what they had seen had improved their understanding. Since some of the videos were split or trimmed to make them shorter the questionnaire format also had to change. The updated Prototype 2 version of the program is also the version that is evaluated to validate our position.

The following links are for the final version (Prototype 2) available online:

- CHComm Info version:  
<https://universityofturinitaly.on.driv.tw/I2HechtMuseum.html>
- CHComm Info + Values version:  
<https://universityofturinitaly.on.driv.tw/V2HechtMuseum.html>

We also determined that the application’s User Interface needed to be improved. That was a component that received the least attention in the initial application prototype. A final round of assessment was performed once the revised content had been polished, re-recorded with an enhanced voice-over narration, and a new questionnaire had been developed.

There were a total of six questions in the new survey format. The users’ interpretation of Dr. Hecht’s vision and their view of the Menorah symbol were the topics of the first two open-ended questions. The purpose of the next two questions was to determine why the users selected to watch the video on a certain artefact above others and what piqued their curiosity about the subject matter. They were also asked if they had previous knowledge about the artefact. In order to determine whether the user thought the content was worthwhile, a few more follow-up questions were posed after their initial responses. The user’s choice of the specific artefact related video directed the fifth and sixth questions, which were both content-specific. The fifth question sought to ascertain how much of the CH value associations we intentionally included was being communicated. It was anticipated that users of the values version would have more to say about the artefacts and that users of the info version would have more queries that they would like to have received answers for. The majority of the collection’s artefacts have some relation to a contemporary use or an implication for the modern day. For instance, jewellery continues to be a luxury item with contemporary uses, there are lamps used for religious rituals, and there are culinary objects that adhere to religious tenets. As a result, the sixth question was a contemporary-use question created to inspire user reflection on the artefacts, history, and their significance in both historical and present contexts.

### **5.3 Experimental Setup**

The experiment was conducted using two tablets that were pre-loaded with the application. The Info + Values version was in one, and the Info version was in the other. After seeing the museum’s Menorah collection, visitors who agreed to participate in the study were handed tablets, earbuds, and were asked to watch videos. The participants were requested to watch the first three videos which would explain the background topics and then at least one or more videos created for the collection’s artefacts based on their interest. Each survey required a participant to spend between 10 and 15 minutes going through the application and watching the videos, and 5 to 10 minutes responding to the open-ended evaluation questions.

There were cases where some viewers chose not to participate in the survey and

also some viewers who only watched partly through the artefact videos but chose to respond. Similar to the structure of the Prototype 1, the first three videos described the history of the museum, Dr. Hecht's vision and the Menorah as a symbol and an artefact. A total of 25 people saw all these three videos and then proceeded to view at least one artefact-related video in its entirety. Twelve participants watched the Prototype 2's Info version, and the remaining thirteen watched the Info + values version. As before, no participant was aware of the availability of a different version, and all participants were given the identical set of questions that were created using the redesigned questionnaire philosophy that was previously discussed. With the user's knowledge and permission, questions were posed to them and their responses were recorded as audio files. No identifiable personal information was recorded; however, certain demographic information and a self-reporting of religious preferences were gathered. In the section that follows, the findings from the analysis of these open-ended responses are discussed (See the questionnaire in Appendix 1 and the link to audio files of responses <sup>12</sup>).

## 5.4 Analysis of the Hecht Museum Project

Every participant of the questionnaire survey had at least a high school level education and spoke English fluently, which was required to understand the survey. Nonetheless, just three of the 25 participants were native English speakers. The six questions and their open-ended responses were recorded and transcribed for the purpose of the analysis. The text files produced by this transcription were processed with the help of AntConc version 4.1.3, which is a free program that can be used for concordance and text analysis of a corpus of text files. By using this technique, word counts and investigations into the patterns in the responses were obtained. A qualitative analysis that was created as a component of the targeted evaluation questionnaire was another part of the study. The answers to the questions based on specific knowledge and content appreciation were examined in light of the visitor demographics. To validate our efforts regarding the communication of CH values, the responses were also examined for indications of how CH values were perceived to be present or not perceived in their absence.

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<sup>12</sup>Audio files of Interviews Prototype 1 and Prototype 2, Hecht Museum, Haifa, Israel

### 5.4.1 Summary of Analysis

According to all participants, the Menorah is understood to be a significant religious and national symbol, and users who were also Israeli citizens felt that their perspective was represented in the content. Based on user feedback, the application helped users of both versions better understand Dr. Hecht's vision than the panels explaining the same, which were placed on the walls of the museum. After viewing the content, users of the Info + Values version said it was obvious how the land and the people of Israel were represented through the other collections at the museum (not only the Menorah collection). Additionally, they said that the discovery of these artefacts and knowledge of the Menorah's historical development supported their belief that Jews had inhabited this region in the past. Some readers felt that this supported their conviction that Israel was a Jewish homeland in antiquity. The knowledge from the application appeared to support the belief that they already.

Jewish users expressed their opinions about the Menorah by quoting religious doctrines and philosophies along with anecdotal experiences. One user even translated a Hebrew proverb into English, saying, *"If you light a candle with my light, we both have shared the light."*

All participants who identified as followers of Judaism and viewed the Info + Values version said they were familiar with the facts and CH values discussed about the Menorah and thought the material might be utilised to educate others on the topic. One user acknowledged the application's attempt at genuine and reliable knowledge-sharing and expressed appreciation for it. Two users who identified as Jewish said they were curious to learn more about the stamps and had discovered a new aspect of its historical use from the videos. The stamps had the image of the seven-branched Menorah on them and were used to mark the unique "matzah" bread baked by Jewish bakers during the Jewish religious holiday of Passover. According to the museum's description, the stamp belonged to a Jewish baker during the Roman-Byzantine era. This does not explain how the stamp was utilised to indicate the bread was ritually pure for Jewish consumption. The stamp is displayed, and its "description" is given, but neither an "explanation" of how it was used nor the "significance" detailing why it was used by a community during a particular time in history is provided. In case of a guided tour, some of this information may have been shared by the guide. It is also possible that other significant value associations were being explained. The problem here was that in practice most visitors went through the museum without a guide. Users highlighting their increased understanding of the significance of the stamp let us know that the intentional inclusion of value was having the desired effect.

Participants who did not practise Judaism but watched either version made comments about how their respective religious belief systems had symbols or representations of similar significance to that of the Menorah, such as the Cross for Roman Catholics, the Crescent moon for Muslims, or the Om symbol for Hindus. This case is particularly intriguing, because some non-Jewish users failed to grasp the idea that the Jewish Temple in Jerusalem serves as the religion's focal point. They revealed that they had missed this point after being informed of the distinction of the ancient Jewish temple in Jerusalem and the other Jewish synagogues. Some participants of the survey who were tourists couldn't comprehend the significance of the Menorah as a sign of regeneration or atonement. This may be connected to the earlier finding that non-Jewish users were unable to distinguish between a synagogue and the Jewish Temple. In contrast, those who identified as practising Judaism spoke clearly about the Menorah being in the Jewish temple at Jerusalem and the other synagogues being a representation. Visitors who did not have Jewish ancestry or who were not citizens of Israel said that they had not been able to comprehend the significance of the Menorah or why it was depicted in so many places (such as the Israeli passport). They reported that they were able to understand and recognize its significance because of the content that they watched.

One user of the Info + Values version believed that the museum was unable to convey the significance of the artefacts to those who had no prior understanding of Judaism. This user said that although the application can be somewhat helpful, a non-Jew would likely experience the information in the content with a reduced emotional impact as compared to a Jew. The message seems to be that regardless of their level of religious conviction or historical understanding, anyone with a Jewish lineage may be emotionally invested in the artefacts and their past. This is in line with our previous understanding that cultural insiders are more interested in the conservation and communication of the heritage that they associate themselves with. Even so, the same user agreed that for people without an understanding of the Jewish heritage, the experience of using the application would enhance their understanding and convey more meaning because of the additional information and values offered by the videos. Two users commented on the specific content and their artefact video choices, stating that they selected to watch videos on the stamps/tokens because they thought it looked like jewellery and they like jewellery. Another user commented on modern applications of the artefacts, saying that seeing manufactured (modern) lamps fashioned after religious icons like the Star of David or the Menorah was significant to them because it was a means of maintaining their history and culture. A user who described themselves as be well-versed on the history of the various artefacts, shared a unique insight about the Basalt slab with the five-branched menorah representation



*“Basalt is a very hard stone to work. The stone is far away from Jerusalem and only available in Golan heights. The ancient community had the motivation to bring the stone, had the wealth to hire a craftsman who would put in the effort to carve the stone.”*

According to the user, this explains the significance of the level of attachment that the ancient community had for their religious structures and symbols. One user of the application’s Info version questioned why coins from a specific time period were the only ones to feature a Menorah image. Another user of the value version of the application loved knowing that the Menorah image was once viewed as a symbol of defeat, which is why the symbol of a Menorah was absent from coins minted in 130 CE. This is a direct example of user interest in understanding CH value associations for specific historical information. The museum setting did not convey this information and the Info version had also omitted this association. Other replies also followed the expected trends, and users who used the Info + Values version of the application expressed their appreciation for the CH values that were shared. The failure to convey the significance of the Jewish Temple in Jerusalem in Judaism and its connection to the Menorah symbol was unexpected. On the one hand, none of the museum artefacts had ever clearly addressed this, and on the other, we had also not made this information stand out.

Out of the 12 respondents that viewed the Info version, 4 participants said “they did not know something [that was presented in the videos]”, while three said they were able to learn “a little bit more [than what they previously knew]” from the content. This was seen after an N-Gram count of the responses with a 4-word restriction (see footnote <sup>13</sup>). This demonstrates that almost half of the participants were aware of the information presented in the application’s Info version. Despite the fact that the majority of the material in the Info version came from text panels and artefacts in the museum, 50% of viewers were still able to gain new knowledge. This can be because the application emphasised or highlighted specific facts and values from the information displayed at the museum. This demonstrates how a casual visitor might benefit even from a low-tech digital enhancement of the existing content.

The responses for the Info + Values version of the application were counted using the same methodology. According to the analysis, 70% of users said they were unaware of something they heard or saw in the content. By viewing the CH Info + Values version of the application, more than two-thirds of the users in this instance were able to gain new knowledge. From the other end of the spectrum, three users of the Info

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<sup>13</sup>N-Gram count was done using the AntConc software on the transcripts of the audio recordings of user responses. A N-Gram count is used to measure the number of repetitions of a sequence of N words. In this case we looked for the most repeated sequences of 4 words.

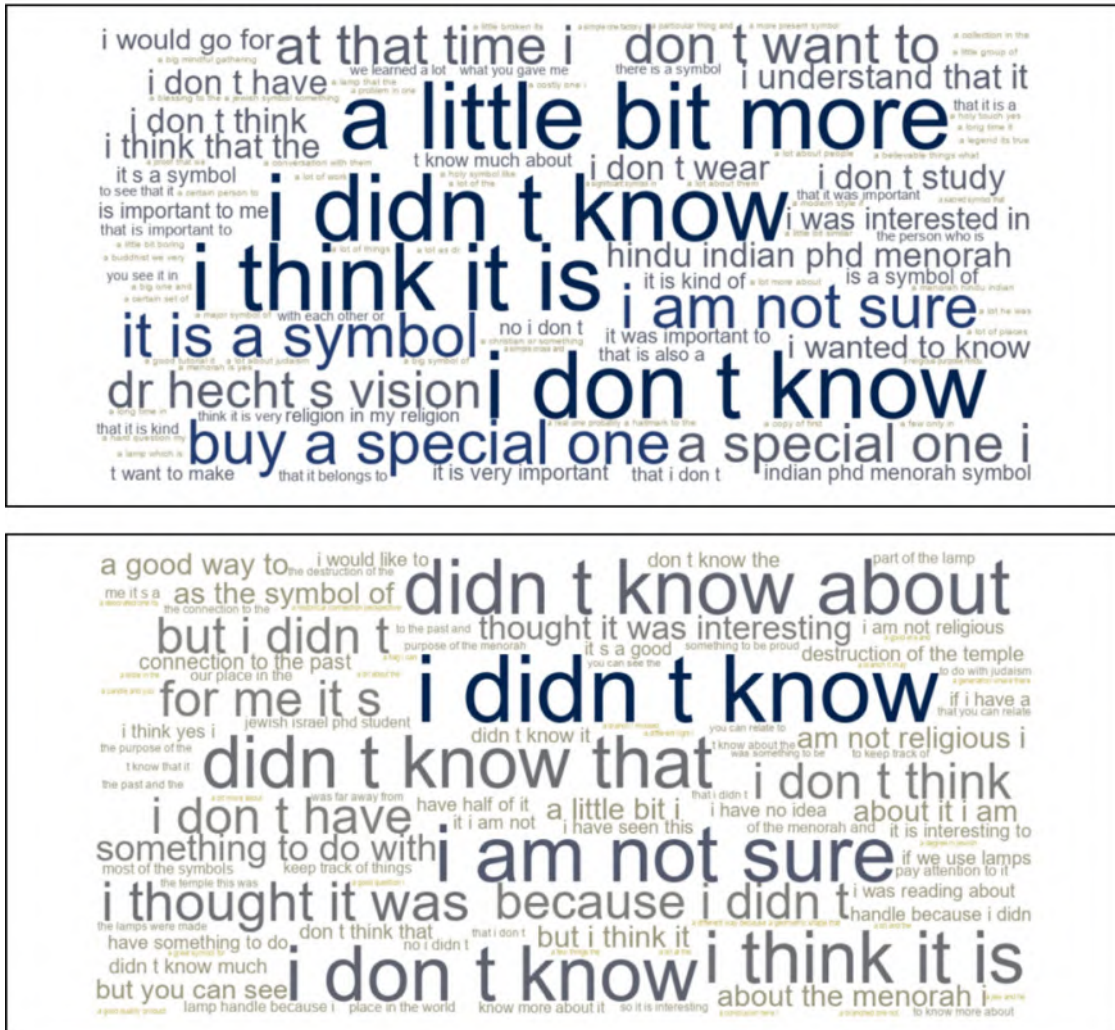
+ Values and Info versions of the application respectively reported that they were previously aware of or familiar with the material they saw.

Another frequently used four-word phrase is “I’m not sure” (as ‘I am not sure’ is 4 words) which was used six times by three distinct responders to the Info + Values version and three times by the same user in the Info version group. These users appeared to have difficulties in analysing and reflecting on the information that they received, leaving them uncertain about their interpretations. This was observed by the responses where those four words appeared when we tried to understand why the participants were ‘not sure’. The participants were shown the application at or close to the museum’s menorah collection display, and after videos of either version were viewed, they were asked the questions. This can be one of the causes for the users’ struggles with organising their thoughts in such a short space of time. Another factor is that the questionnaire and discussion were conducted in English, which is neither the local tongue in Israel nor the language of origin for the majority of the individuals who watched the videos. Having to respond in a language that they may not use in their daily lives would have been another hindrance.

Seven respondents had used some form of the term “interesting” in their answers. They had found something that piqued their curiosity, according to the analysis of the word or its variations using a keyword in context (KWIC) search. The KWIC method was used as it would return relevant phrases used before and after the keyword being searched for. The results implied that a marginally higher proportion of respondents who viewed the Info version than those that saw the Info + Values version were interested in the material. This is not unexpected considering that both versions had original illustrations and carefully edited voiceovers. Additionally, the script had been improved in response to feedback from Prototype 1 testing. However, the blatantly one-sided results that were seen in the dissemination of new knowledge was not observed here. KWIC search for the terms “feeling” and “meaning,” which were mentioned once each by users of both versions, yielded a similar result. The Info version of the application had a higher ratio of respondents when searching for the term “important” using the same strategy. In the Info version, seven out of every twelve respondents believed that a certain point in the text was crucial, but just five out of thirteen respondents in the Info + Values version used this word. This could be explained by the fact that the Info version required less time to watch than the Info + Values version simply because it had less content, which enhanced the effect of what was already present.

## 5.5 Observations and Interim Conclusions

Even though some users already knew the information and value associations delivered by the application, either version had given them new insights and sparked their interest. Figure 5.14 displays the outcome of a word cloud produced by the 4-word maximum N-Gram analysis carried out on the responses from both versions of the Prototype 2 surveys.



**Figure 5.14:** Word cloud generated by the 4-word N-Gram analysis done on the responses to the Info version (above) and the Info + Values version (below) for the Prototype 2.

A 4-word limit N-Gram was chosen over a greater or lower word limit N-Gram as those phrases showed more of the meaning that was intended by the respondents. The 3-word or 2-word N-Gram count would show more initiating or connecting phrases like “something to do” or “I think it,” as repeating among the responses. This was not a reliable indicator of user intentions. There were relatively very few instances of

more than five words being repeated among responses and the respondent's intention was already obvious when looking at 4-word phrases. The 4-word N-Gram word cloud clearly demonstrates that replies to both versions frequently included variations of "I did not know." 'A little bit more' is one of the primary 4-word responses in the Info version which was from users who said that they learnt a little bit more than they knew previously or were interested in learning a bit more.

The eight stage operational workflow for CH values motivated communication was working as intended. In comparing the impact of the info version with the values version it is evident that users are able to understand the significance of the CH value associations for the artefacts when the communication application is designed to do so using a process that collects CH values, filters them based on relative importance, uses a dialogic approach to verify their significance, includes multiple perspectives, contextualises their presentation and improves the delivery of the content via iterating on the first prototype.

In the next chapter we discuss the implications of the Hecht Museum case and look at two more cases where we have applied the operational framework under different circumstances. The next two cases of application have only one version of the application which is the values version. These applications were limited to one version as the values motivated approach has been tested out and found to have engaged users. The need for further comparison of content that has CH intentionally included against a more descriptive and direct information approach did not seem necessary. Both examples do go through one iteration. We also discuss the realities of developing CHComm applications in a world with ever increasing internet access. We then proceed to discuss the final results from all the applications with the various insights gained from them.

**Table 5.1:** Concepts and artefacts that form a part of the Menorah collection and their associated values along with a broad value typology based categorisation resulting from the previous steps.

Artefact (Tangible)/ Concept (Intangible)	Value Associations	Values Categorized
Dr. Reuben Hecht	<ol style="list-style-type: none"> <li>1. Haifa as the centre for revival of the new Jewish State</li> <li>2. Jewish peoples connection to Eretz Israel</li> <li>3. Archaeology as an expression of Zionism</li> </ol>	<ol style="list-style-type: none"> <li>1. National Identity—Social and Symbolic value</li> <li>2. Communal Identity—Historic, Social and Symbolic value</li> <li>3. Religious Identity—Social, Symbolic and Religious value</li> </ol>
Eretz Israel	<ol style="list-style-type: none"> <li>1. Religious origins of the state of Israel</li> <li>2. Ambiguously defined geographical area</li> </ol>	<ol style="list-style-type: none"> <li>1. Religious value</li> <li>2. Political motivations—Social and Economic values</li> </ol>
Menorah (as the symbol and the object)	<ol style="list-style-type: none"> <li>1. As the primary Jewish symbol that has “followed the Jewish people” over the centuries.</li> <li>2. As a symbol of hope, renewal and redemption</li> <li>3. A seven branched candelabrum used only within the Holy Temple of the Jews in Jerusalem</li> </ol>	<ol style="list-style-type: none"> <li>1. Communal Identity—Historic, Social and Symbolic value</li> <li>2. National Identity—Social and Symbolic value</li> <li>3. Historic Religious use—Historic and Religious value</li> <li>4. Contemporary religious symbol—Religious and Symbolic value</li> </ol>
Basalt Slab with a five-branch Menorah representation	<ol style="list-style-type: none"> <li>1. Assurance of Jewish existence in the region</li> <li>2. Respecting the Talmudic prohibition of seven branch menorah representation outside the Jewish temple</li> <li>3. Ritualistic significance of the menorah, shofar and lulav shown on the slab</li> </ol>	<ol style="list-style-type: none"> <li>1. Communal Identity—Historic, Social and Symbolic value</li> <li>2. Religious Identity—Social, Symbolic and Religious value</li> <li>3. Religious use—Historic and Religious value</li> <li>4. Architectural feature—Aesthetic value</li> </ol>
Oil lamp, Lamp handle with seven-branch Menorah and Handle mould	<ol style="list-style-type: none"> <li>1. Religious significance, rituals and practices</li> <li>2. Change in religious views over time—Synagogues begin to be seen as ‘mini-temples’ and the seven-branch menorah is represented outside the temple</li> </ol>	<ol style="list-style-type: none"> <li>1. Religious use—Historic and Religious value</li> <li>2. Historic manufacturing—Historic value</li> <li>3. Change of value association—Social, symbolic and religious value</li> </ol>
Tokens, Stamps and Seals, Coins	<ol style="list-style-type: none"> <li>1. Period of Jewish dominance of the region as shown in trade and commerce</li> <li>2. Understanding of hierarchy and historical record</li> <li>3. Religious adherence even when the Jewish dominance was fading</li> <li>4. Symbol of the community to mark the communal produce</li> </ol>	<ol style="list-style-type: none"> <li>1. Historic dominance—Historic and Social value</li> <li>2. Record of the regions history—Historic and Social value</li> <li>3. Historic Religious use—Historic and Religious</li> <li>4. Social and symbolic value</li> </ol>
Glass jars	<ol style="list-style-type: none"> <li>1. Pilgrims wish to take a blessing from the holy site</li> <li>2. Peaceful co-existence of religions</li> <li>3. Design adopted from Pagan religions</li> </ol>	<ol style="list-style-type: none"> <li>1. Historic Religious use—Historic and Religious value</li> <li>2. Religious harmony—Social and Religious value</li> <li>3. Religious and Social evolution —Social, Aesthetic and Religious value</li> </ol>
Glass Pendants	<ol style="list-style-type: none"> <li>1. Expression of the messianic hopes for the rebuilding of the Temple in Jerusalem</li> <li>2. Non-perishable luxuries that accumulate in administrative centres like Jerusalem points to a period of Jewish socio-economic dominance</li> </ol>	<ol style="list-style-type: none"> <li>1. Religious hopes and symbol of belief—Religious value</li> <li>2. Communal history—Social and Economic values</li> <li>3. Artistic expression—Aesthetic value</li> <li>4. Historic social order—Historic and Social value</li> <li>5. Historic manufacturing—Historic value</li> </ol>

## Chapter 6

# Evolution of the Operational Workflow with Digital Outreach

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*In this chapter we first discuss the specific conclusions from the first application of the operational workflow that was discussed in the previous chapter. We proceed to describe our efforts to improve the workflow through digital outreach. A short survey was conducted to understand how digital communities gain knowledge about cultural heritage. They were also asked as to why they used the particular sources of information that they used. These insights were then used to create two more applications that utilised the eight stage operational workflow. The second application was a standalone application created for the Virupaksha temple at Pattadakal in the state of Karnataka, India. The third instance is being developed as a companion application for the Be-A-ViR system of the BeArchaeo project which excavated the Tobiotsuka Kofun in Soja City of the Okayama Prefecture in Japan. We conclude the chapter with observations derived from all the three applications.*

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The first application of the eight-stage operational workflow for CH values motivated communication at the Hecht museum was showing us that its core tenets were sound but there was definite room for improvement. The workflow resulted in an application that was effectively communicating CH values but another issue with digital CHComm projects is their lack of long-term accessibility even for professionals and experts in the field. One more aspect of the digital nature of information is the constant outpouring of new data, information and applications that use or present them. Anyone, anywhere can create an application and if shared via relevant internet platforms, the application can reach anyone at any time. This has been diminishing the opportunity for expert created content on the internet related to cultural heritage to reach interested audiences. Digital outreach or reaching out to digital communities, wherever they may be, is now a necessity for wider impact. While statutes and charters are yet to catch up with the digital communication landscape for CH we have already discussed that many charters and especially the Ename charter highlight the need to encourage inclusiveness in the ‘interpretation and presentation’ of CH.

If one were to propose a professional guideline for communicators in this day and age of perpetual digital connectivity, it would be that - “we must endeavour to reach out and communicate cultural heritage knowledge with its associated values in their utmost authenticity over all forms of digital media through all available digital platforms.”

Before we proceed to look at the further evolution of the eight stage operational framework in terms of digital outreach, we take up the next section to present the important takeaways from the first implementation of the process.

## **6.1 Hecht Museum application - Discussion and Takeaways**

Here we highlight some of the specific conclusions from the first implementation of the workflow after our examination of the results and then discuss some of the limitations. We first mention our findings that are related to the “digital multimedia” component, and then we list our observations that are the result of the “deliberate inclusion of values.”

### **6.1.1 Points of Note for Digital CHComm Applications**

1. **Digital companion application** - Users can benefit from an app that summarises the details provided for each artefact collection in a museum. When people enter a museum, there are many details that are not easily accessed, both at the surface level and even deeper into the heritage and history. Sometimes the information is found on panels of text and sometimes is shared by a museum guide. A companion application can make it easy for a user to access the information at their own pace. It is not necessary to develop such a companion application for every single collection of artefacts or heritage subject, but it is necessary to make the broad goals and motivations digitally available via a companion application, especially for the big collections. For any museum, and by extension any GLAM (Galleries, Libraries, Archives, and Museums) institution, this is not a difficult assignment. As mentioned, it is likely that the walls of the museum and other display panels could provide this information. The transmission of the CH knowledge within the museum is substantially improved by complementing it with relevant bits of information that are accessible online via mobile devices.
2. **Enhance accessibility and visitor awareness** - Only one of the four primary artefact collections at the Hecht museum, previously chosen from 12 thematic



collections and 3 archaeological collections, was the subject of this study. Each collection includes a number of previously created videos that are available online in English, Hebrew and occasionally in Arabic. Aside from Arabic panels on the museum walls, there are also related write-ups in English and Hebrew that are displayed on the website. Despite these commendable efforts, not every visitor was familiar with the website content. The visit itself must include educating the tourists about different sources of knowledge and actively encourage them to browse these collections. In reality, as noted in the first paragraph, this can be smoothly linked with the application. Multimedia and other digital forms for the communication of CH are also feasible and important bearers of CHComm, in addition to brochures, books, and other printed materials, which are necessary and have been widely embraced.

3. **Glocal language**—Instead of English or other widely spoken languages (Spanish, French), digital applications should be developed in local languages or in a language that is widely spoken and understood in the area, whenever possible. This is required to ensure that the user receives knowledge and CH values in a seamless and simple manner. All of the study participants at the Hecht museum expressed appreciation for the knowledge they gained, but it was clear that English, despite being a widely used communication language, has its own limitations. Not every program can support several languages, but it is necessary to use at least one local language in addition to a widely spoken language.

### 6.1.2 Points of Note from the Deliberate Inclusion of Values

1. **Cultural insider friendly communication bias** — Many CH value associations are well known to individuals who might be described as “cultural insiders”. Others who are not always familiar with the subtleties and historical or cultural circumstances associated with that community may not perceive these commonly understood concepts. One such concept was the ancient Jewish Temple, which was in Jerusalem and is still regarded as the religion’s main “Temple” today. Jews regard the Temple in Jerusalem as the most important place of worship out of all others in Judaism. Around 586 BCE, the “First Temple” was destroyed. It was then rebuilt as the “Second Temple,” which was later destroyed once again in 70 CE. As it stands, there is no physical Jewish temple in Jerusalem. It is a concept that can be described as a temple in the mind of Jewish believers which would be reconstructed in Jerusalem. A synagogue is a “subordinate” house of worship and does not take the place of this temple. One of the core

beliefs of Judaism is the hope that the Jerusalem Temple will be rebuilt. As a consequence of this belief, there is a symbolic meaning of “rebirth” and other CH values associated with the Menorah symbol. This was not always understood by individuals without a Jewish heritage. Some users were unable to understand this concept from the artefacts and explanations that were provided in the museum or within the videos that were a part of the Prototype 2 application. This means that the application needs to be enhanced, and it may also be worthwhile to have the museum’s thematic presentation take this into consideration. This is just one example for a particular situation, but there may be instances of this “cultural insider friendly” communication bias at many GLAM institutions.

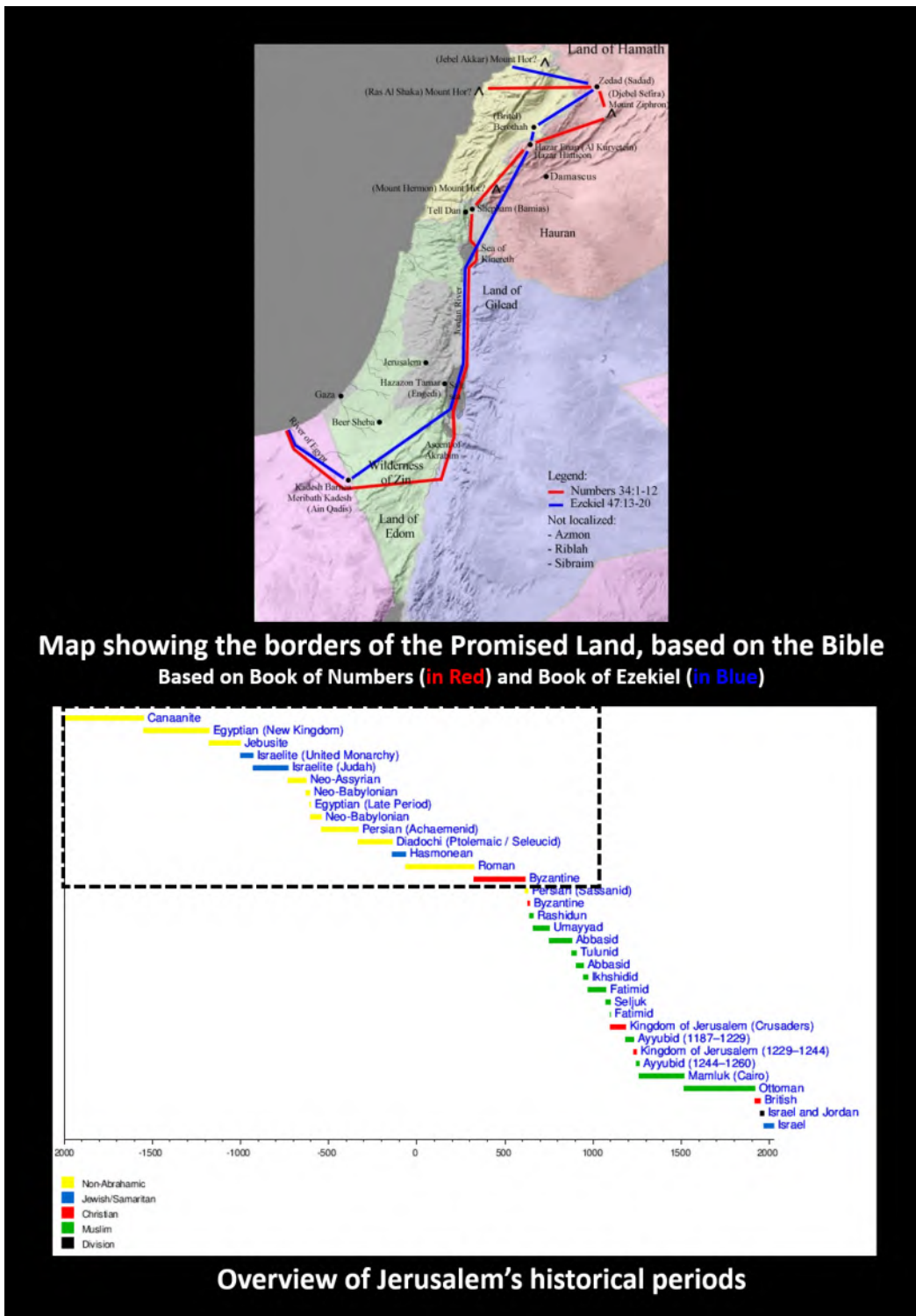
2. **Acknowledging boundaries** — As is the case with many other locations in the world that have ‘constantly contested’ legacies, the history of the modern State of Israel is intimately entwined with the political and religious unrest of the region. As a result, the Hecht museum, which was established by an eventual Israel Prize winner, is primarily concerned with the viewpoint of Jews. The museum’s artefact collections are centred on the time up to the 7<sup>th</sup> century CE, when Jews had the greatest influence in the area. The periods that followed experienced an increased Islamic influence leading into the 20<sup>th</sup> century. Physically expanding the collection at the Hecht museum (or any other museum) to include every possible historical epoch might not be achievable. It is commonly seen with GLAM institutions that they are established and supported with a focus on particular periods and goals. When designing digital applications that are to be used regularly, these sociocultural and political boundaries must be taken into consideration. To help visitors comprehend what is present in a museum or heritage site and occasionally what is not present, it is worthwhile to contextualise today’s borders within their larger chronology and trace their evolution. While we didn’t feel the need to stir up a debate, it was possible to state key facts and value associations and remain neutral by pointing out that the museum only presents a portion of history from a particular viewpoint. Figure 6.1 shows a timeline and an illustration map from the first two videos explaining Dr. Hecht’s vision and the idea of Eretz Israel.

It is important to respect and express, with the appropriate distinction, the political, social, and economic borders of our contemporary world. In this instance, we felt it was important to emphasise Dr. Hecht’s motives for founding the museum and how those values affected how the museum’s collection developed to cover a particular time period. Given that the founder’s intention resulted in

the museum having very few artefacts from the subsequent ages, it was crucial to explain that the museum was centred on those particular eras. This made it easier for us to explain to the viewers that the videos were part of a series covering a particular time period and point of view, and that it would not be wise to generalise from them in order to understand present socio-political overviews.

- 3. Engaging willing and interested participants** — Our research, even on a limited portion of existing collections, has convinced us that it is worthwhile to explore and purposefully use CH values in digital multimedia applications for CHComm. This is supported by both museum staff, who were impressed by the diversity of information provided in the application, and visitors, who appreciated the many value associations. The “Why?” and the “How?,” in addition to the “What?,” of tangible and intangible heritage, must be reintroduced into its communication. It wasn’t difficult to access the particular value associations of several CH properties in this case because they are well-known academically, but it made the experiences more engaging for those visitors who took the time to go through the application. It is important to emphasise that it is not advisable to lessen the complexity of the information in order to better serve an audience that might not be receptive to even the reduced version. The majority of the content design must be initially focused on engaging the willing and voluntary participants, as here is where a designer’s effort may be most profitably spent. It is the need of the hour to promote user reflection and provide accessibility to CHComm that purposefully incorporates values into their design. Design decisions that do not take values into account result in diminishing returns for willing visitors. This can start a bad cycle that ultimately devalues cultural heritage in and of itself.

CH Values were used as the basis to decide what to conserve and influenced the process of conservation itself. The same values must decide how CH is communicated. In fact, the communication and conservation of cultural heritage go hand in hand and are firmly founded in the CH value views of both historical and modern people and communities. It can be a difficult process to gather, filter, and show the value correlations of any given CH feature because they are numerous and intricate. We used a model of importance assessment that its creators referred to as “purposefully simple” and a broad typology for classifying values. We simply describe the typologies and importance assessment systems we used since they worked well with our operational framework; neither the classification system nor the system of importance assessment are being suggested as the ‘definitive methods’. Nevertheless, this technique produces



**Figure 6.1:** An illustrative map behind the concept of ‘Eretz Yisrael’ (above), the specific period of the artefacts in the museum highlighted on a complete timeline of the history of the contemporary state of Israel (below).

a satisfying experience for willing and interested participants and, as a result, it is a useful exercise for digital CHComm designers.

We want to draw attention to two limitations of this experiment:

1. We want to underline that the CH value correlations and their typologies that we described in relation to these artefacts are not the only ones that should be taken into account or even a complete list. Our search revealed associations that were known to some stakeholders but clearly “under-communicated” to many museum visitors. These connections were confirmed through a peer review that comprised heritage specialists and non-specialists, and they can thus be used as a starting point for additional research. Since the entire study took place over the course of three months, time restrictions forced us to restrict the scope of our survey and value collection to the more ‘obvious’ relationships. In order to improve the calibre of the information in the digital CHComm application with further iterations, we want to broaden the study to more collections and carry out a more in-depth analysis of value relationships.
2. Users of the application’s ‘CHComm Info’ version served as the study’s control group. We could possibly have learned more about the influence of a digital application on its own, without any deliberate incorporation of CH values, by measuring the value appreciation of museum visitors who did not use any applications. As highlighted previously, we see that users of the “CHComm Info” application also reported learning new material, and even in the “CHComm Info+Values” application, the impact of a digital application reinforcing cultural knowledge cannot be overlooked. The influence of the application being a digital summary of the artefacts that enables focused attention of the users by virtue of audio-visual engagement would ideally be able to be controlled for in a refined and enlarged study. However, as things stand, our current findings demonstrate the greater impact of a digital CHComm application which has intentional inclusion of CH values.

### **6.1.3 Takeaways - Hecht Museum**

The development, implementation, and assessment of an eight-stage process for incorporating CH values and communicating them to museum visitors at Hecht Museum has established that values motivated content for the communication of CH in digital applications is a necessary and beneficial exercise. By developing a digital CHComm application specifically for the Menorah collection of artefacts at the Hecht Museum we have learned the peculiarities of implementing the process within a museum setting. Apart from a few instances of misunderstanding or unintended communication, the prototype evaluation revealed a few predicted problems, and this resulted in a better iteration with a more polished presentation in “Prototype 2”. The findings suggest

that

- Willing participants' learning and engagement levels have improved almost universally. Although not every visitor wanted to utilise the application or was prepared to share their experiences, those that went above and beyond were highly rewarded for their efforts.
- A designer may never be able to persuade the vast majority of potential users to actually use a given application, but it is extremely conceivable and desirable to develop a singularly educational and impactful application that promotes cultural heritage values.
- Future work in a museum setting should broaden the application's focus to encompass more museum collections and evaluate how well it works with local language components.
- Investigations on how to streamline the content generation and value inclusion process possibly using repositories that hold the values gathered and evaluation data generated would be advantageous.

After having dealt with a museum setting for the eight-stage operational workflow, we began exploring other situations in which a digital CHComm application could be implemented. One immediate application that stood out to us was for an archaeological site. Users interested in learning about monuments or sites would likely find it difficult to go through every panel or information brochure available at the site. A guide could be a more reliable way of understanding the history of a site but it might not be possible for a guide to explain all the CH value associations and multiple perspectives involved with appropriate contextualisation. This would be dependent on the knowledge and communication ability of individual guides and might be inconsistent. Visitors to the Lalibela rock-hewn church in Ethiopia, which is a World Heritage Site have reported negative experiences pertaining to tour guides and lack of signages or maps at the location [116]. Studies that reviewed the efficacy of tour guides have also suggested training them as 'experience brokers' to benefit from the human element [117]. An application developed for a specific site or monument, covering as much historical information and values as possible can deliver a consistent quality and quantity of cultural heritage knowledge apart from maps and access information for visitors. This meant that using the operational framework for a real-world heritage site was one avenue to explore. Another challenge to tackle would be the addition of CH values that can be provided by this process to a pre-existing digital CHComm environment or project. Having made the case that current digital CHComm projects do not always

effectively communicate heritage values with adequate contextual information and do not present multiple perspectives or facilitate much dialogue, it was time to see what benefits could be achieved by the process in such a case.

## 6.2 Digital Outreach for CHComm

Literature discussing the long-term accessibility and utilisation of digital CHComm projects shows that many projects could end up being forgotten over the longer term. Authors have stated that digital heritage is vanishing faster than actual physical heritage of all kinds [118]. One factor that causes this are the multiple and varied data types which are sometimes made obsolete by newer technologies and also the vast amount of datasets that multiple sources of heritage conservation tends to produce. Naturally, the longevity and accessibility of digital CHComm applications created using the eight-stage operational workflow is also a concern. A straightforward solution to this situation would be to make the heritage communication application or at least the values motivated content be made available online in an easily accessible form.

Our previous effort showed us the merits of engaging willing and interested participants. Today, there exists multiple social media platforms on the Internet where digital communities are formed around the topics that interest the various participants of such communities. Many ‘content creators’ are also active in creating and sharing their own content or content sourced from other digital platforms. There are also multiple participants who may ‘re-share’ content from traditional and digital media sources without being involved in their creation process. These communities attract both casual and serious participants who may engage in discourse or debate particular points on their shared interest. Cultural heritage interest groups that are self sustained and moderated are part of this array of digital communities. As a result, we have a starting point to find interested and willing participants for digital CHComm projects. Reaching out to various digital communities and understanding their reasons for and approach to the cultural heritage knowledge gathering process was seen as a necessary step before we proceeded with our further application of the eight-stage operational workflow.

A random sample of digital communities related to cultural heritage were selected from various social media sites and internet forums. A short questionnaire asking direct questions was shared on these internet communities. The users were asked to mention what CH assets or properties interested them or they personally identified with and how they go about gaining CH knowledge regarding these assets or properties. Users were also asked to share why they chose specific sources for gaining the knowledge and



how they came across these sources in the first place. The questions were put forth to understand the perceived authenticity of the source of CH knowledge and the user perceptions regarding ease of access, ease of understanding and their preferences on type of digital engagement with the CH experience.

The digital communities selected for this questionnaire survey were 10 Facebook groups focused on cultural heritage that had at least 1000 members and featured at least one post every week on a pertinent subject. The questionnaire was posted to these groups as a ‘Facebook post’. More groups had been identified for sharing the questionnaire but certain groups had rejected the sharing of surveys to their group members. This points to the requirement of social proof or authority which was sometimes explicitly stated in the ‘group rules’. An individual researcher whose account was not very active on the platform in comparison to the regular users who were members and administrators of these Facebook groups, found no reason to share a survey even when they agreed that the knowledge gained through such an experiment would be relevant. Additionally, groups did not want to encourage such efforts as some group administrators felt that this might encourage more such surveys being conducted which was not seen as conducive to their group discussions. Ultimately, ten group administrators permitted the survey to be shared in their groups and one chose to actively encourage member responses. This led to a possible exposure of the survey to over 10,000 group members in total and we received 74 responses in the period of a week <sup>14</sup>. The survey was anonymous and group agnostic which was an intentional step as we decided to not categorise groups that were participating more or less. This was not an intended outcome but it might be another angle to explore at a later opportunity.

Participants were asked to describe what came to their mind when they heard the word “cultural heritage” and how they went about learning more about the cultural heritage-related topics that interested them. All of the respondents were graduates, and 81% of them were 30 or older; 50% of the respondents were in the 30 to 45-year-old age range. More than half of the responses were from nations where English is either the official language of communication or is spoken by the majority of the population. This result was anticipated because both the questionnaire and the chosen online discussion groups were predominantly in English. The poll should also be conducted in more commonly spoken languages (such as French, Spanish, etc.) in order to get a complete view of the world. This can be attempted as part of future study.

The responses to the questions revealed that at least 60% of the respondents primarily rely on the internet for their knowledge of cultural heritage. Only 10% of Internet

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<sup>14</sup>Digital Outreach - Facebook Survey

users preferred to search for particular websites that belonged to cultural heritage organisations. Google search results and YouTube lectures or videos were used as starting points for early information research on themes of interest in cultural heritage. Additionally, 10% of the respondents noted blogs. Only 20% of the respondents who primarily accessed the internet for their knowledge searched for books on the subject or visited libraries to find related literature. 12% of all respondents said they would be likely to visit museums or historic sites if they had access to such facilities, and affordability was a consideration that stopped them from accessing many sites. 15% of those polled said they would be open to speaking with those who were either specialists in the field of heritage or had ties to the neighbourhood that the heritage is most often associated with. This demonstrates the importance of having a search engine-friendly online presence for any significant cultural project.

The greatest way to reach a larger group of willing and active participants in the process of sharing heritage knowledge is through a digital outreach strategy. The survey's limitations in terms of language and the fact that it was carried out through online discussion boards may have resulted in respondents who primarily rely on the internet for knowledge exchange and general information gathering. However, it shows the effect of digital platforms and increasing interaction occurring on the Internet with respect to the exchange of cultural heritage knowledge.

### **6.3 Second application of the operational workflow with digital outreach: Virupaksha temple, Pattadakal, Karnataka, India**

In applying the operational workflow to a heritage site we decided to create an application that would be standalone and remain accessible online for all interested parties. The site selected for this attempt was a World heritage site called the Pattadakal group of monuments in the state of Karnataka, India. Once again, in an effort to limit our scope we chose the Virupaksha temple among the group of ten monuments that were present on site. The main objective of choosing this temple was that it is a living temple with active worship and the only one on site which was in active use. It is also one of the two temples on site which has been restored to a near complete and usable condition by the Archaeological Survey of India (ASI) and is the largest temple structure of the Dravidian temple style (South Indian temple style) in the group.

### **6.3.1 Background – The Virupaksha Temple at Pattadakal, Karnataka, India**

The Virupaksha Temple at Pattadakal in Karnataka, India is one of 10 temples built by the Chalukyan dynasty between 740 – 745 CE. The Chalukyan dynasty in various incarnations intermittently ruled the Deccan region of India from the mid 6th to the later part of the 12th century CE. The Chalukyan dynasty is divided into the Badami Chalukyans, the Eastern Chalukyans and the Western Chalukyans. Eight out of the ten temples at Pattadakal were built by the Badami or the Early Chalukyas. The Early Chalukyans chose Pattadakal as it was their coronation capital. The word Pattadakal can be broken down as “Patta ” meaning the Throne or Coronation and “Kallu” meaning stone, hence the name means coronation stone. The temple site is located on the left bank of river Malaprabha which was seen as a sacred location as this was close to the point where the river turned North and flowed towards the Himalayas. Mount Kailash among the Himalayas is believed to be the abode of the Hindu Gods Shiva and Parvati. In 1987, the Virupaksha temple and the other temples on site were declared to be a part of the Pattadakal group of monuments and received World Heritage status under the “Group of monuments at Pattadakal”. The Virupaksha temple is the only living temple on site where prayers are offered every day and annual festivals are conducted by devotees who live in the local area.

### **6.3.2 Standalone CH communication application with digital outreach for the Virupaksha temple**

The operational workflow for values as discussed can follow the sequence above, as in the case of the Menorah collection at the Hecht Museum, but depending on the specific case and the communicator, the order can be flexible. This is the case for the Virupaksha temple at Pattadakal in Karnataka, India, where the aim was to develop a digital application that communicates the values of the “Virupaksha Temple at Pattadakal” from its conception till date. One supporting factor in the development of this CHComm project is that an author of this study is a member of the community that can be described as ‘cultural insiders’ of the heritage as well as a qualified architect registered in India (see Author’s note in footnote<sup>15</sup>). As a result, when we started our

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<sup>15</sup>Author’s note: Srushti Goud describes herself as a believing Hindu and has lived in Karnataka for most of her adult life. She has grown up in a practising Hindu family and is familiar with the Hindu community of the Karnataka state that worships the God Shiva, in Linga form. Having a bachelor’s in architecture from a University in Karnataka and being able to speak the local language fluently makes her sound in both the cultural background and history of the Temples while being able to move around and communicate easily in the region.

approach to the design with Stage 1, being the collection of values, we had easier access to multiple stakeholder groups. A variety of cultural heritage values and cultural values of the present day, associated with the heritage were well known to us. This presented us with a situation where we had Cultural Insider Advantage . The cultural insider advantage allowed us access to multiple sources of information and value associations from the local region and in the state of Karnataka. The authors were able to do a first hand survey of the heritage site and the authorities that were involved in the management of the heritage site. The advantage of being an insider manifested in the following ways:

1. Speaking Kannada, the local language spoken in Karnataka, we were able to converse with the residents who lived near the temple and the heritage site in general this helped us in gathering their perspective. The values attached to the temple were largely religious but there was a cultural and economic value attached to the tourism that the world heritage status brought.
2. The primary author of this study was a trained architect who had studied in the state of Karnataka and therefore identifying and meeting experts, historians, and archaeologists from the Archaeological Survey of India (ASI) and Indian academia was not a difficult task.
3. Knowing the various perspectives, such as the following: 1) historians concern about the authenticity of the information given out by tourist guides; 2) epigraphists explain the significance of epigraphy in uncovering facts written down as inscriptions; 3) conservationists express their concerns regarding the abuse of temple by the overeager devotees and the need for preservation to ensure the safety of the built monument. All of these perspectives were broken down into values and included during the design of the content.

## **Stage 0 – Collection of values**

A summary of the comments from the various in-person interviews done as a part of the value collection process is listed below.

1. Local community of temple devotees and residents of Pattadakal:
  - (a) The temple is an active site of worship where the nearby villages have a direct entry from the back gate and they don't need to pay a fee to enter.
  - (b) The Hindu devotees who use the temple for worship felt that they would preserve the temple differently than what is currently being done.

2. Heritage management experts and archaeologists:
  - (a) They discussed the issues at Pattadakal from the perspective of ASI (Archaeological Survey of India) and how the people might not be respecting their concerns for the integrity of the temple structure. It was felt that non-expert communities failed to understand the meaning of words like authenticity or integrity. People did not particularly care for UNESCO and why this group of monuments had world heritage status.
  - (b) An expert felt that the local devotees do care about the living temple. They go pray and give offerings. During festivals they conduct elaborate religious rituals (pooja). People have expressed their interest in wanting to celebrate the temple by painting a lime wash on the temple and then colouring it with red paint, and oiling the sculptures in view of religious celebrations. They do not seem to be able to appreciate the damage such actions would do to the stone.
  - (c) A retired heritage management professional pointed out that the local devotees at Pattadakal were not provided with the technical information or awareness to understand the motivation behind the current preservation actions. ASI outlines the “DOs and DON’Ts” but no reasoning as to “Why?” something is allowed or not allowed has never been communicated.
  - (d) During floods the temple grounds are used as rehabilitation space as the housing settlements fill up with water. The people had to be told that the insufficient drainage provisions was why the residential areas were flooding and not the temple area.
  - (e) Some experts feel that people at large do not feel attached with the monument as there is no livelihood creation for them. ASI has currently fenced up the monument but tourism efforts need to involve the locals and facilitate some livelihood creation for the community.
3. Epigraphist, Department of Epigraphy, ASI: Epigraphy is becoming a forgotten field due to the lack of enough funding from ASI / government and lesser appointments for posts every year. It was due to the pioneering work of epigraphists that we were able to decipher the meanings of the older inscriptions and the symbolism from sculptures and artefacts. There is now a serious shortage of skilled personnel in ASI in this department.
4. Historian and Academician who worked on the Pattadakal temple site and wrote a book on the temple discussed the iconography of the temple in-depth and pointed

out that sometimes the local guides also have incomplete or wrong information. This is possible as their source of information might not be authentic or verified.

## **Stages 1 & 2 – Create an Initial Vocabulary of Values and Assess their Significance through Relative Importance**

To create an initial vocabulary of values it was necessary to filter the extensive series of discussions that had been conducted as a part of the previous stage. Additionally, the digital outreach that would be required for this application necessitated an understanding of the digital interpretation of the Pattadakal group of monuments. Communication regarding cultural heritage assets may be centred around a limited range of values such as the religious value in case of a historically noted place of worship. This gets propagated in popular culture. An observational social media survey was done to understand the perception of the Group of monuments at Pattadakal across various internet platforms (See footnotes for the link <sup>16</sup>). This showed us that people paid a lot of attention to the Historic and Aesthetic value over any other values. People also appreciated the efforts by ASI in the preservation of the monuments at Pattadakal, especially the Mallikarjuna and the Virupaksha temples. The information available online also seemed to highlight the UNESCO World Heritage list inclusion. The current communication media available on the official websites of Archaeological Survey of India (ASI) and the Karnataka Tourism also highlighted similar values. Religious, Social and Cultural values held due to the living temple status of the Virupaksha temple and the value associations by the local community of Hindus was often side-lined. The lack of holistic value communication was seen as an opportunity to test out the operational workflow for values and highlight these lacunae. The relative importance of values that are perceived by communities that associate themselves with the Virupaksha temple at Pattadakal can be summarised by:

1. Religious worship and values of the Virupaksha temple
2. History that led up to its construction

The values that we deemed as necessary to include were:

3. Iconography - Meanings and values shared by the temple
4. Epigraphy - Contribution to archaeology and current situation
5. Contrasting perspectives on conservation - ASI and the local people

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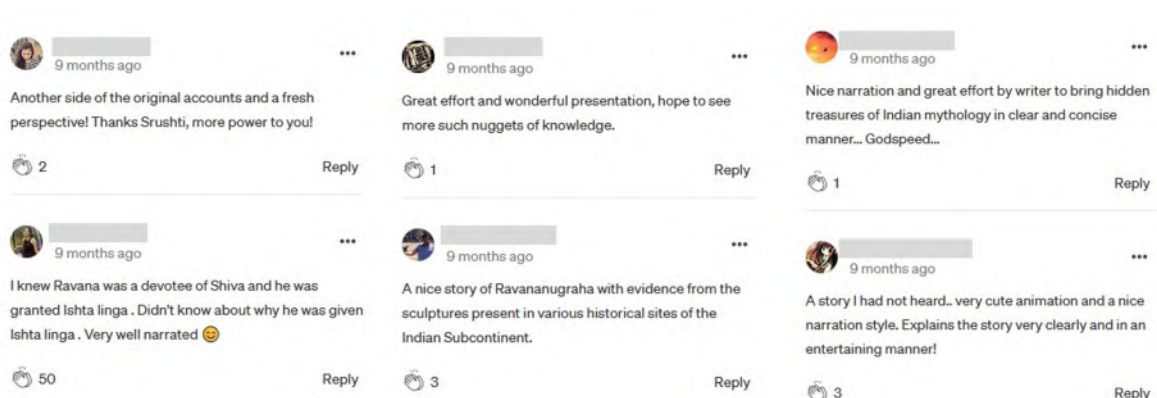
<sup>16</sup>Study of internet sources for communication on the Group of Monuments, Pattadakal

6. Timeline of the temple history - After the Chalukya dynasty leading up to the present day

The above points are summaries of the value associations that we chose to include in the digital CHComm application in the order of their relative importance as we perceived at this stage.

### Stage 3 – Dialogic Inquiry with Digital Communities

A pilot study was carried out to understand the appreciation of religious values, cultural facets such as oral tradition and awareness of meanings behind the iconography among the online community with respect to the Hindu culture. This was done by selecting a story from one of the sculptures on the walls of the Virupaksha temple which was then animated and presented to a digital community through the Digital Storytelling Festival by Europeana (See footnote for link <sup>17</sup>). The mythological story which was selected for this purpose was the story of ‘Ravanaanugraha’ or ‘Ravana’s blessing’ which holds an important place in the Hindu religious tradition. The characters of this story are important and well known to present day Hindu believers, for example ‘Shiva’, one of the central Gods in Hinduism and Ravana the antagonistic character from the Hindu epic of Ramayana. We produced a simplified version of the Ravanaanugraha story that was under 3 minutes and it was uploaded to Youtube apart from being shared on Medium as a part of the ‘Digital Storytelling Festival’. A few of the comments received as feedback from the online community is shown in the Figure 6.2.



**Figure 6.2:** Comments received for the story of Ravanaanugraha on Medium.com (Link in footnote)

The comments show us that viewers received new knowledge, “Story I had not

<sup>17</sup>The story of Ravanaanugraha presented in the Digital Storytelling Festival 2022 organised by Europeana - <https://medium.com/digital-storytelling-festival/the-story-of-ravanaanugraha-86e61f0a31d3>



heard”; appreciated the presentation and narration; gained religious insights; “Didn’t know about why he was given Ishta linga” (A stone linga given to a Shiva devotee); and showed contextual appreciation, “present in various historical sites of the Indian Subcontinent”. Do note that even though contextualization is a separate stage (stage 5), we had included contextual information with this video. The jurors of the competition also commented “Very charming animation. Beautiful in its simplicity.” and “Great animation style and accessible language”. These comments from the jurors and the earlier comments on presentation from the viewers cannot be directly associated with CH value appreciation. Even so, it showed us that the presentation was not lacking and the other viewer comments showed that we were able to engage and add value to their understanding.

Unlike in the Hecht museum case, we did not receive any comments that caused us to make any major changes to our approach at this stage. It may be due to the fact that we had been able to conduct an extensive collection of values in Stage 1 and also possibly due to the Cultural Insider Advantage.

#### **Stage 4 – Multiple Perspectives as a Design Tool**

Looking at the information we collected in Stage 1, it is clear that at least three perspectives came to the forefront:

1. The expert community;
2. The cultural insider community;
3. The community of tourists and casual visitors;

The application was proposed for a digital audience hence the following considerations were also included:

4. Community of Non-Hindu, Indian residents who may be aware of the Hindu culture and Indian society in general but are not aware of the specific Hindu religious practices and value associations of the local community in Pattadakal;
5. Others or the community which would be unaware of India and its culture and Hinduism.

The structure of the final application reflects this by including optional sections that explain concepts in Hinduism and basics of Temple architecture in India for members who would be part of groups 4 and 5.

#### **Stage 5 – Contextualization of Heritage to Highlight Appropriate CH Values**

The dialogue with the experts and the insider community showed a disjunction in perspectives between the two but there are some compromises made by both sides such as the expert community facilitating a continued practice of worship at the Virupaksha temple for the local community. This needs to be highlighted as it is a contemporary cultural and administrative policy that is working as intended. A section was added to include values associated with the Virupaksha temple after the construction of the temple until today. This section also discussed the timeline of the temple after the decline of the Chalukyas. Two stories related to Iconography were added as optional sections. One was the Ravananugraha story tested in Stage 3 and another was the story of Lingodbhava which was illustrated and animated in the same style. These stories would contextualise the sculptures seen on the temple and engage the members of the audience who sought to understand more about the significance of the iconography.

### **Stage 6—Initial prototype design for testing: Prototype 1**

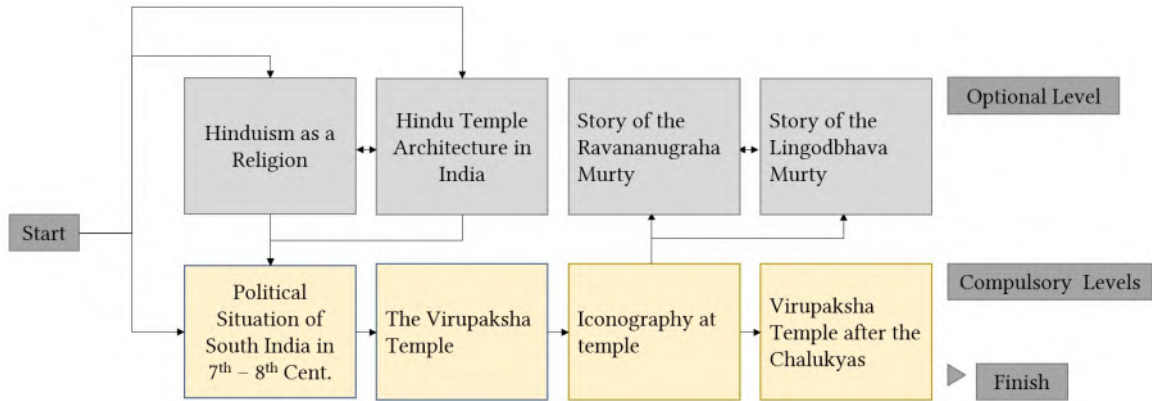
The initial proposal for communication was based on the insights we gained from the previous stages. The application was composed of 8 videos which were all under 2 minutes to 5 minutes in duration and would take 23 minutes to go through fully.

The prototype 1 application can be explored at:

[https://universityofturinitaly.on.driv.tw/Virupaksha\\_of\\_Pattadakal.html](https://universityofturinitaly.on.driv.tw/Virupaksha_of_Pattadakal.html)

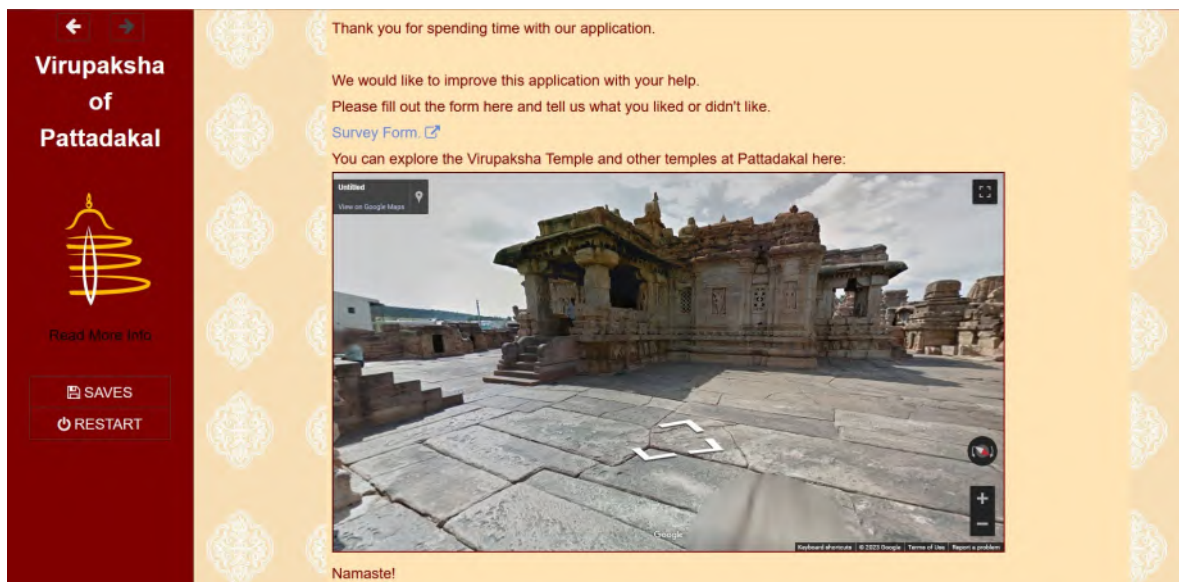
If perused in order, the user would see videos about the battle between Chalukyas and the Pallavas which led to the construction of the temple by King Vikramaditya II's queens followed by the values of the Chalukyans which led to the design and construction choices made for the Virupaksha temple. This gave a chronological narration of temple history based on an archaeologically verifiable series of events. At a conceptual level, the design had 'compulsory' levels and 'optional' levels, where the compulsory levels presented descriptions of the political situation in the 7<sup>th</sup> century, details about the temple and the aesthetics of the temple (Iconography) ending with the timeline of the temple after the Chalukya period. The optional levels provided other values-based information like explanation of the concepts in the Hindu religion, Hindu temple architecture in India and the stories of the two selected sculptures on the temple. Figure 6.3 shows a flowchart of the design for Prototype 1.

An option to explore the Virupaksha temple exterior using the 360 degree images via Google Maps and a list of all videos apart from a feedback survey form was added to the last section of the application (See Figure 6.4). The collection of value associations that were intentionally included in the respective videos for Prototype 1 are laid out



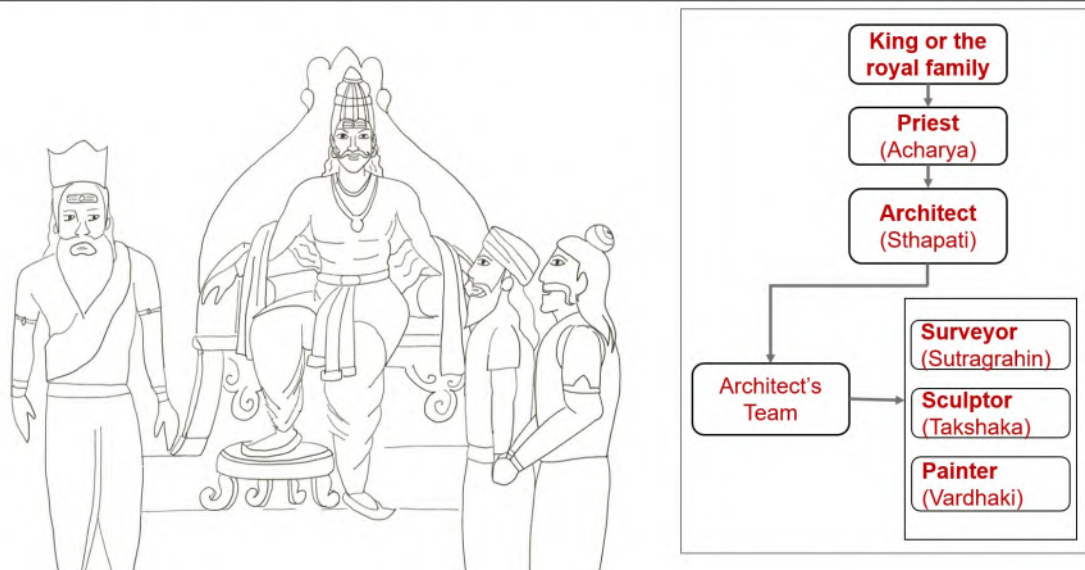
**Figure 6.3:** Flowchart for the design of the application and how the eight videos for the Prototype 1 of the application for the Virupaksha temple, Pattadakal

in the Table 6.1 at the end of the chapter.



**Figure 6.4:** The end page of the application for the Virupaksha temple, Pattadakal

As can be seen from the table, the Virupaksha temple has many religious and cultural associations. This is to be expected for an active place of worship. The Chalukya kings and the name Chalukya holds a place in the mind of the people especially in the local area. They associate a perceived ‘golden age’ with this period due to the magnificence of the structures built on site. This brings an element of place attachment and heritage attachment to the heritage and the sites in the area. Figure 6.5 shows a scene illustrated for the video covering the political situation in South India during the 6<sup>th</sup> and 7<sup>th</sup> century CE; where the hierarchy of temple builders is explained.



**Figure 6.5:** An illustration of the King Vikramaditya, his Acharya (Priest), the Sthapathi (Architect) and another member of the team alongside a chart depicting the hierarchy of temple builders for a Hindu temple in the early mediaeval period (600 CE - 1200 CE).

## Stage 7 - Targeted Evaluation via User Feedback and Digital Outreach

The digital application was shared on selected public groups on Facebook and Reddit. This was an attempt at reaching out to interested digital communities. Every group post was written to let the members know that the application was a series of videos developed as part of a research project. They were also asked to respond to an optional questionnaire (survey form) at the end or to leave comments under the post in the group. The groups selected were public groups on the subjects related to cultural heritage, archeology and history. Groups specific to the heritage of India, Hinduism and Temples were selected. All groups had at least a 1000 participants and were actively discussing pertinent topics every week. Some groups decided to remove the posts as they wanted regular and active participation before links could be shared. This highlighted the necessity of social proof on social media. Researchers have noted that social proof does depend on interaction and also promotion on social media [119].

Unlike the Hecht Museum implementation there was only one set of 8 videos this time and this was a standalone web-based application so there was no predetermined source of potential users (like museum visitors) other than anyone on the internet who may come across the post on these particular groups. The posts on Facebook groups regarding the web-based application received an average of 5 likes across a total of 10

groups over the period of one week. On Reddit the response was mixed, one group (subreddit) for topics related to Indian history showed 17 likes (upvotes) with over 2400 views while three other groups which were themed around Hinduism showed only 2 likes and less than 700 views each. This may be a function of the activity levels of these groups and the commonly shared information / post types. On Reddit, the posts themselves received no comments and on Facebook two individuals in two separate groups commented their appreciation of the effort.

The questionnaire survey which was administered online had a total of 15 questions out of which 4 were optional (see Appendix 1 for the Questionnaire for Virupaksha Temple, Pattadakal, Karnataka, India). The link to the survey form was shown on the last page of the application and was not particularly highlighted or made to stand out in any other way. The intention here was to collect responses from interested and willing participants. The questionnaire had five points related to demographics; these were age, nationality, country of residence, educational level and profession. Eleven questions were listed as ‘required / mandatory’ and the first three of these asked users to select radio buttons on a likert scale of 1-5. The three questions asked users to share based on their own assessment, how religious they were, how much they knew about the Virupaksha temple and if they felt that they had more knowledge after seeing the application. The following two questions were ‘Yes or No’ questions that asked if the user would like to visit the temple with an option to pick if they had already visited the temple and a question on whether they liked what they saw or not. The following six questions were descriptive or had an option to write descriptive answers apart from a ‘Yes or No’ choice. These questions asked the users to mention something they liked / disliked, share if they had any difficulty in understanding the language, share if they learned anything new from the application, share any aspects that they would like to know more about, share names of any other cultural heritage asset around the world that they would like to know more about and also to share if they did spend time learning about cultural heritage and how they learn more about cultural heritage in case they did spend time learning about CH.

The four optional questions had one question with two radio button options and space to share a descriptive response while the other three were descriptive. The first optional question asked users to think about what could be the priorities of conservation and provided the options ‘Religious buildings be available for public access as far as possible’ or ‘Preserved as much as possible by limiting public access’. Users could still add any comments after picking one of these options or choose to not pick an option and just type out a response to the question or even skip the question entirely. The next two questions asked users to share any thoughts they may have

about the practice of royalty constructing religious monuments in historic times and if any part of the application or videos personally related to them. The last optional question was about suggestions to improve the application as a whole.

A total of 19 responses were received through the survey form in a span of a week (Link in the footnote <sup>18</sup>). In contrast, not every video that was presented in the ‘compulsory’ section of the application received 19 views. The video covering the timeline of the temple after Chalukyas received only 14 views and 22 people watched the Iconography video which was just before the timeline. The main video about the Virupaksha temple itself received 29 views while 52 people viewed the video on the Political situation in South India during the 7th century which was also the first video that users would see if they chose to skip the optional videos explaining the concepts of Hinduism and Indian temple architecture. The number of views dropped as the users got farther into the application which can be seen as an expected outcome and when presented with the last video at least 5 of the eventual respondents chose to directly exit the application. On exiting, the users were taken to the last section which had the 360 image of the temple exterior and the link to the survey form. The optional level videos on the Ravananugraha and Lingodbhava received 8 and 7 views respectively while the videos on Hinduism as a Religion showed 10 views and the one on Temple Architecture and Worship showed 13 views.

Among the 19 respondents of the survey, 17 were Indian nationals either living in India or abroad and 2 were non-Indians. The age range was between 22 - 70. 60% of the respondents stated that they would like to visit the temple and 40% of the respondents had already visited the temple. All the respondents unanimously gained more knowledge after viewing the application and liked what they saw. There was one individual who stated that they had visited the temple but did not feel as if they knew much about the temple before viewing the application (self-assessed as 2 out of 5) and then shared that they learnt a lot after viewing the application (self-assessed as 5 out of 5). Users appreciated the ‘flow of the narration’ and the ‘structure of the application’. Multiple respondents stated that they learnt a lot from the explanations relating to architecture and iconography of the temple. They also pointed out that certain connections such as the historic relationship between the Kailasanatha temple in Kanchipuram and the Virupaksha temple at Pattadakal was interesting information. This was added to contextualise the historic reasons that led up to the construction of the temple.

All respondents found the language easy to understand and one respondent reported using subtitles but found the language to be clear. A user also appreciated the ‘3D

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<sup>18</sup>Online Responses for Virupaksha Temple, Pattadakal, Karnataka, India.



map' at the end of the application which was the 360 image linked from Google and stated that having the option to explore made them want to visit the temple. On the question which asked users to share any other CH asset that they would like to see a similar application for, many responses named other temples either in India or within the state of Karnataka. Considering that a majority of the respondents were Indian nationals, this was not unexpected. There were some responses that suggested heritage properties like the Tower of London, Great Wall of China, Angkor Wat, Bagan (World heritage site in Myanmar) and the country of Indonesia (possibly heritage from the country). One respondent wanted applications "for many, or all the monuments". Over 80% of the respondents stated that they spend time learning about heritage and over 50% of total respondents stated that they use the internet and watch videos, lectures or listen to podcasts apart from reading articles, blogs or going to Wikipedia and sites like the UNESCO website. Unlike the survey mentioned in Section 6.2, over half of the respondents mentioned looking for journals or research articles apart from reading books and looking for similar authentic sources. This could be due to the fact that the previous survey had more participants, all of whom did not have to go through an application before filling in the survey form. The respondents to this study could reasonably be expected to do more self-motivated research.

The three questions that directly pertained to value associations were in the optional section and at least 14 responses were received for each of them. Every respondent had an opinion on the preservation priorities and 70% of them felt that religious monuments should be made accessible to members of the public as far as possible. Only 15% felt that public access should be limited and preservation should be prioritised. That said, 30% of the respondents also advocated for a balanced approach by writing a descriptive comment. At least two respondents wrote a comment on the approach to preservation after selecting an option. A nuanced understanding of the challenges and necessities of preservation against the realities of living cultural heritage can be seen in these responses. For example, one user commented:

*"People must be aware and proud of their heritage and the scientific value of it so that they wouldn't vandalise them. Preserving them without using will make them showpieces and not something that our culture was meant for. These temples were built to be used and benefit the people."*

On the question regarding the practice of temple construction by kings, varied responses were received. Some users felt that it was necessary and the patronage of kings encouraged the cultural development in Early Medieval India. Others went in a different direction and stated that smaller centres of worship 'under a banyan tree' also had their charm. One user felt that this was a power play on their part and stated an



interest in understanding the ‘science behind the construction’ or ‘any special stories’ (related to the construction). The set of comments showed that users are possibly interested in learning more about the historic context and technical details relating to the temple. This information would have to be carefully collated and contextualised to the modern day as the long-term impacts of immortalising aspects of a culture in stone are subtle but not as easily appreciated by everyone. There were a few suggestions for improvement regarding the user interface and some other aspects of the application which are discussed in the next stage.

## **Stage 8 - Reiteration and Design of the Final Version**

There were 16 responses to the question regarding suggestions to improve the application and over 40% of the responses stated a need to improve the user interface, use videos instead of photos in the presentation and also have a different English accent for the narrator. As was the case with the Hecht Museum application, the videos in the first prototype for this study was also a combination of images with voice-over narration and the user interface was made to be functional and nothing more. In contrast to the previous application, there were no suggestions regarding the video length or organisation of the videos. This could be due to the fact that museum visitors may not want to spend more time looking at videos within a museum context for one specific artefact collection while users on the internet have already allocated a time to spend watching and learning about anything they may find interesting. The application was shared among groups where a large number of interested participants may come across it and the posts clearly stated that it could take up to 20 minutes of their time. The setting of expectations may have avoided any comments on the length of the videos this time.

As the study is directed to understanding the effectiveness of communicating CH values, a higher time investment on developing an impressive interface was not seen as a priority. Also considering that about 50% of the respondents had no complaints with any aspect of the application, it was clear that the UI was serving its purpose and it was likely that people who were exposed to much better UI / UX on the internet wanted a higher standard. User experience expectations improve with levels of exposure to technology and the familiarity with interfaces also increase, meaning that simplistic interfaces feel inadequate. Involvement of UI/UX design experts in the development phase of an application has become a necessary task at this point. This is something we had explored in a previous study [2]. While that covers the UI / UX or presentation related feedback which we would improve in our final prototype, the suggestions for changes in content were relatively few.

One user expressed interest in learning more about the construction techniques and another specifically mentioned Vastu Shastra (Sanskrit term for ‘science of architecture’) as something they would like to see more about. Since this topic is essentially the basis for most of the temple construction activity throughout Indian history and has been mentioned briefly at a relevant point already, we noted this as a topic that can be covered in the ‘Optional’ levels. A separate video covering this topic was prepared for the final version of the application. Another comment that was repeated was an interest in knowing more about the ‘lifestyle during the Chalukya period’. This topic would fall under the contextualisation aspect and would stretch away from the core discussion of the application. A couple of lines mentioning the life of common people in the 7<sup>th</sup> century was included in the final version of the application. Detailed discussion of the insights and takeaways relating to the final version are discussed in the next chapter. Further scope of research and future vision have also been shared in the final chapter. The next section deals with a comparative assessment of the outcome of the operational workflow with a guided visit of the group of monuments at Pattadakal.

### **6.3.3 Comparisons to On-site Experience - Observations and Discussion**

Having created a standalone web-based application for the Virupaksha temple at Pattadakal, the merits and demerits of undertaking such an exercise will have to be compared against a visit to the heritage site itself. While the web-based application is not a replacement to an actual visit, it intends to communicate the significant value associations that are held about the Virupaksha temple. Unlike the Hecht Museum application, there would not be much benefit derived from creating another ‘information-only’ version of the web-based application that did not intentionally include CH values and did not follow the above-mentioned eight-stage process. The heritage site does not have lengthy signages and detailed panels that explain every aspect of the temples that are seen on site. There are a few plaques that explain some of the history of the temples and the conservation that was done on-site (see Figure 6.6). The web-based application delivers far more information and CH values to the user when compared to the on-site signages. For obvious reasons a comparison to the on-site information is therefore unnecessary.

The best or optimal experience for a visitor to the site would be to engage the services of a guide who would explain the site in detail. Taking this into consideration, we paid for and engaged the services of a heritage tour guide on site and acted as a regular tourist would do while visiting the group of monuments. The conversation

was in Kannada (local language) as it would be the most comfortable language for communication for the guide. The guide reported that they had received training and taken a test to qualify as a heritage tour guide for sites in the Karnataka state, this test was also in Kannada. The guide was not informed of any research intent on our part as we wanted to have a ‘regular visitor’ experience. The entire visit lasted approximately an hour and fifteen minutes. We proceed to make a few observations on the visit in general and particularly about the experience provided in relation to the Virupaksha temple. The below points highlight what was not explicitly covered in the content of Prototype 1 discussed by the web-based application pertaining to the Virupaksha temple:



**Figure 6.6:** Plaques with the information of the temples placed adjacent to the respective temples on the site.

- The guided tour covered the main site of the ‘Group of Monuments at Pattadakal’ as a whole but did not include the Papanatha temple and the Jaina temple which were approximately 300 metres and two kms away respectively, from all the other temples at the main site. This meant that Virupaksha temple itself was a focal point but it was not the only structure that was elaborated upon.
- The Virupaksha temple was presented as an evolution of temple construction by the Chalukyas. There are many smaller temple structures on site apart from the ten large temples that are standing on the heritage site. Each of these smaller structures were described as evidence of the temple construction attempts by the Chalukyan dynasty.
- The guide highlighted the fact that the temples constructed were built without

mortar and the large stone blocks were interlocked using crude 'metal clips'. This was presented as evidence of advanced metallurgy in the 6<sup>th</sup> and 7<sup>th</sup> century CE as the older and smaller temple structures on site also showed clear evidence of such metal clips used to interlock the stone.

- There was visible evidence of mortar used in the restoration of the temples and this was also highlighted in the visit. The Archaeological Survey of India has undertaken large scale restorations of almost all the temples and structures on site but despite their best efforts, not every detail could be accurately replicated.
- There is an older museum building on site that was initially built to house the ruins and stone artefacts that were recovered on site but the project was later moved to another location and hence many artefacts are now arranged out in the open for visitors to see. These artefacts were presented without context due to the limitations of the site. The guide mentioned the situation surrounding the open display of these artefacts but did not provide any additional context likely due to time limitations of a visit.
- There are pillars and wall sections within the Virupaksha temple and the other temples on site which are 'half-detailed' or just 'outlined'. This shows us that work was not completed before these monuments of today were opened for public worship, back in the 6<sup>th</sup> - 7<sup>th</sup> century CE. The tour covered these portions and highlighted how people could be the same across centuries. These sections were also contrasted with the sections restored by ASI. The faithful restorations had tried to replicate as many of the known features but there were blank areas in these restorations also.
- The guide described themselves as a local resident and was willing to converse about the opinions and views of the people from the region. It was highlighted that people who lived near the temples (just outside the walls) were willing to move to areas farther away provided the government could assure suitable compensation and land for relocation. This has been a bone of contention amongst the local residents and the conservation authorities but the reality of the situation is that the majority of the local residents are farmers who own nearby tracts of agricultural land and they would require significant areas of fertile land for a successful relocation.
- The guide also described how the local residents had to take refuge from a flood in 2019 by climbing atop the temples. This was further confirmed by the videos and images that they had captured on their smartphone during the natural

disaster (see Figure 6.7). The rescue operations were able to safely transport the trapped refugees at that point. The natural resilience of the heritage site itself was clearly shown by this incident.



**Figure 6.7:** Screenshot from a video captured by the local guide during the 2019 flood, taken while standing on top of the Sangameshwara Temple showing the Virupaksha temple at Pattadakal.

Two points that were mentioned by the guide and were also covered by the Prototype 1 of the Virupaksha temple application are also being highlighted to discuss their impacts on the online (digital) discourse about the temple:

- The Virupaksha temple iconography was explained in detail by the guide. This was curiously absent from almost all sources of online discourse relating to the temple but a visitor willing to take the services of a guide would definitely benefit from the experience and have a look into the religious, socio-cultural and historic heritage values that are on display.
- The guide was eager to point out spots from which a tourist could photograph the monuments both with and without themselves in the frame. The Aesthetic values of the monument were in full display. This is likely a reaction to the increased tourist interest for images.

Throughout the tour, we were able to note that significant historic facts were always presented with an associated perspective of how the heritage monument would have been perceived at the time of its construction. The guide was utilizing a descriptive narrative that contextualised the heritage in its time and place while also sharing tidbits that can be reasonably categorised as multiple perspectives. The Prototype 1 of the Virupaksha temple application had thoroughly covered every historic fact and perspective that was presented by the guide other than the ones mentioned above.

Even so, it was clear that certain perspectives such as the one about the metal clips being an evidence of advanced metallurgy in the 6<sup>th</sup> and 7<sup>th</sup> centuries would have to be added to the content of the web-based multimedia application. In light of this and the other observations, we can see that there are still points of CH value associations that can be derived and aspects that can be used to contextualise the heritage better. We decided to make a few more additions to the revised content of the web application. The final re-iterated version of the standalone web-based application will be disseminated widely through a larger selection of social media and internet based media platforms. To underscore the benefits of the eight-stage operational workflow in the communication of CH via digital media, we now look at an on-going study of a digital heritage application on which the workflow has been applied.

## **6.4 Third application of the operational workflow with digital outreach: Communicating about Prehistoric Japan through a companion application to the Be-A-ViR system (BeArchaeo project)**

After having applied the operational workflow to a museum and a heritage site, a completely different setting was selected for the implementation of the process. The third setting we chose for the workflow was the collaborative research project by the name BeArchaeo. The full title of the archaeology and archaeometry based research project is - BE-ARCHAEO, “BEyond ARCHAEOlogy: an advanced approach linking East to West through science, field archaeology, interactive museum experiences” - EU project <sup>19</sup>. This time the eight stage process would be applied to develop a companion application that could be used alongside the other communication applications or systems made to disseminate the findings from excavation and related studies done under this project .

### **6.4.1 Background – The BeArchaeo project and the Be-A-ViR system**

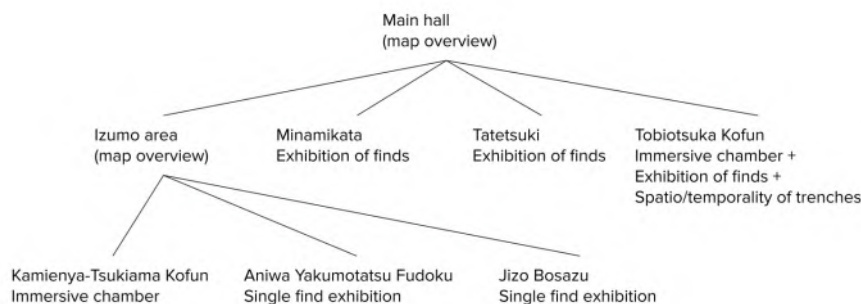
The BeA-ViR system was made as a part of the BeArchaeo project which is a collaborative effort by multiple institutions from Europe and Japan. Archaeology and

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<sup>19</sup><https://www.bearchaeo.com/>



archaeometry experts worked together primarily on the excavation of the Tobiotsuka Kofun (burial mound at Tobiotsuka) at the Soja city in the Okayama prefecture of Japan. It is a virtual reality system created to exhibit the findings from archaeological research of the BeArchaeo project. It covers sites and artefacts related to Japan's prehistoric Kofun and Yayoi periods [120]. The flowchart of the Be-A-ViR system is shown in Figure 6.8.



**Figure 6.8:** Flowchart of the exhibits within the Be-A-ViR system

The primary objective of the BeArchaeo project was to excavate the Tobiotsuka Kofun in Soja City, Okayama Prefecture, Japan. This was done as a collaboration between archaeologists from Japan, Italy and Portugal. Archaeometry experts (i.e.: chemists, physicists, biologists, geologists, soil scientists) from Europe and Japan analysed the finds from the excavation and also finds from previous excavations done at the Tatetsuki Kofun site, Minamikata site and the Izumo area. A selection of the finds from the Tobiotsuka Kofun and a few artefacts from the other sites were displayed within the virtual exhibition hall made with the Be-A-ViR system.

The companion application aims to communicate the findings of the BeArchaeo project and also about the Kofuns of Japan and the prehistory of Japan in general. The contextualisation of Kofuns, would require the additional description of Kofun period and prehistory of Japan after which the Tobiotsuka Kofun and the BeArchaeo project can be discussed. The BeArchaeo project has an existing communication team and as a part of the dissemination efforts, an exhibition was conducted from 7<sup>th</sup> of October 2022 to 4<sup>th</sup> of December 2022 at the Shimane Museum of Ancient Izumo in Izumo city, Shimane Prefecture, Japan. This attempt at creating a companion application for the Be-A-ViR system is meant to add CH values to the content that is included in the system. We used the eight stage operational workflow to develop one video that could reliably communicate the CH value associations with the Japanese prehistoric periods, the Kofuns and the findings of the BeArchaeo project. The following subsections report on our process which includes digital outreach.



## 6.4.2 Companion CH communication application with digital outreach for the Be-A-Vir system

In a stark contrast to both the previous implementations of the operational workflow, we did not access the site or the people living near the site, and the language of many publications related to the Tobiotsuka Kofun was in Japanese. The development of a companion application occurs after the excavation work at Tobiotsuka and the on-site study in Japan. Digital outreach is a necessary step even in the early phases of development of this communication application. The other side of this is the ultimate presentation was to be aimed at people who could not be expected to know much about Japanese culture and history. The information and values would have to cross a language barrier and cultural boundaries in this case. The changes in the process start to appear straight away from the collection of value stage onwards.

### Stage 0 - Collection of Values

As of April 2023, the BeArchaeo project is still a current project and has a website ([www.bearchaeo.com](http://www.bearchaeo.com)) with the associated social media accounts and also shares the database of the archaeological record online. All of the information related to the BeArchaeo project is available in Japanese and English. As a consequence, a Google search for the term ‘Tobiotsuka Kofun’, done in English, yields multiple results covering the various research publications and websites related to or reporting on the BeArchaeo project right in the first page of the results, as of the beginning of March 2023. This is a testament to the efforts of the project to disseminate its gathered information. Even so, the Youtube channel for the BeArchaeo project has a total subscriber count in the low double digits with similarly low views and limited interaction. On the one hand, the project is a very recent project and the re-discovery of the Kofun was less than a decade ago even though the site itself is almost 1500 years old. On the other hand, it can be stated that information on the heritage properties from countries where English is not a majority or official language of communication might not be available on the internet when searched for in English. A similar search done in Japanese does bring up a link to the BeArchaeo site as the first result but the following results lead to independent public efforts to document the Tobiotsuka Kofun site online. This is possibly evidence of the level of public interest in Kofuns and the culture among a small group of Japanese people that go out to visit Kofuns and other heritage sites that are accessible to the people.

Much of the information and values for the Tobiotsuka Kofun and the related sites that were studied by the BeArchaeo project came from the research publications done

by the project members. As mentioned previously, it was also necessary to collect the CH value associations surrounding the Kofuns, Kofun period and Japanese attitudes to their own heritage and history. Some of the value associations we uncovered were anticipated as Kofuns are burial mounds for important people from the prehistoric periods. The earliest Kofuns known to us are from the late Yayoi period, such as the Tatetsuki site studied by the BeArchaeo project, from the mid 2<sup>nd</sup> century CE. The last Kofuns were built in late 6<sup>th</sup> or early 7<sup>th</sup> century CE and the Tobiotsuka Kofun is dated to this period.

One aspect of Japanese heritage is the ubiquitous presence of the Imperial House of Japan which has the exclusive right to many heritage properties and as a result multiple important Kofuns are not accessible for archaeological excavations. For example, the Hashihaka Kofun which is regarded as the oldest keyhole-shaped Kofun is currently inaccessible to archaeologists. The pottery found on the mound itself has been radiocarbon dated which is why we know the approximate date of construction of the mound [121]. Another aspect of this under-researched era of Japanese prehistory is that apart from lacking any native written records, there appears to be a series of migrations from East Asia, South-East Asia and North-East Asia into Japan that occurred during both the Yayoi and Kofun periods. These migrations brought rice paddy field agriculture, iron working and possibly horses to the archipelago apart from Buddhism. The advent of Buddhism in Japan is considered the reason for the end of Kofun construction among other socio-political changes that occurred in tandem. Considering that these are periods which saw a lot of socio-cultural developments, our initial vocabulary was developed to cover all the information available across both periods (Yayoi and Kofun). These periods also have implications for the current Japanese people as there are constant updates to the information regarding the genetic makeup of modern day Japanese [122] [123].

## **Stage 1 - Create an Initial Vocabulary of Values**

The Tobiotsuka Kofun and the artefacts within it all displayed multiple facets of historic value associations. The Kofun period itself saw the further stratification of the society which had started with larger scale farming seen in the Yayoi period. The Kofun itself was relatively small at 23 metres in diameter which indicated that it would have been the burial mound of a local clan leader or chieftain and most likely was not the final resting place of any member of the royalty. The Kofun was likely looted at some point after its construction and the main burial chamber was empty. An iron nail with traces of wood on it was excavated from the burial chamber, pointing to the existence of at least one Wooden Coffin. A piece of what has been identified as the part

of a Jar Coffin (Haji ware pottery) was also recovered from the burial chamber and this formed the basis of the suggestion that there were likely two individuals buried in the Kofun. A selected summary of certain other value associations and related information are listed here:

- Social, Symbolic, Historic - The interred individuals would have been important personages from the historic Bitchū area which is a part of the modern day Okayama prefecture, where the mound is located.
- Social, Cultural / Symbolic, Historic - A lot of effort was taken to construct the Kofun, since the main burial chamber has large stone blocks forming its back wall and the roof.
- Social, Cultural / Symbolic, Historic - Presence of metal weapons such as an iron blade and arrowheads, suggests that one of the buried individuals must have been a local warlord who is most likely a male.
- Aesthetic, Cultural / Symbolic, Historic - High-ranking nobles from this period would have had special grave goods like ‘deity and beast’ mirrors made out of bronze, called Shinju-kyo in Japanese. The lack of such an artefact at the Tobiotsuka site could point to the fact that this was not the burial site of a high-ranking noble but since the site was robbed, we cannot state this with certainty.

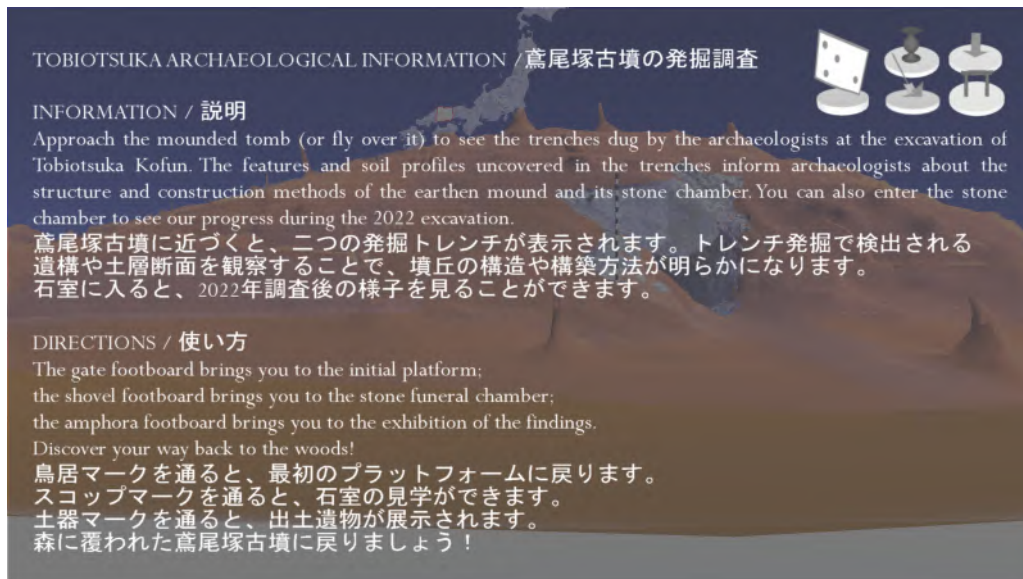
The importance of value associations within CHComm projects can be reiterated at this point. All of the above statements and many other similar statements may appear to be part and parcel of the interpretation process of CH site to experienced CH practitioners. It is unfortunate then that none of this information is currently available to users within the Be-A-ViR system. The current extent of information available within the system is shown in Figure 6.9, 6.10, 6.11, 6.12.

It is imperative to note that some of the information and their value associations shared in points above can be gleaned from a specific video on the Youtube channel of the BeArchaeo project titled “Interview with Akira Seike” (Link in footnote <sup>20</sup>) and other sources like the published research papers and some articles reporting on the excavation. Further, the lacunae of such information does not imply any lack of effort on the part of the team that developed the Be-A-ViR system.

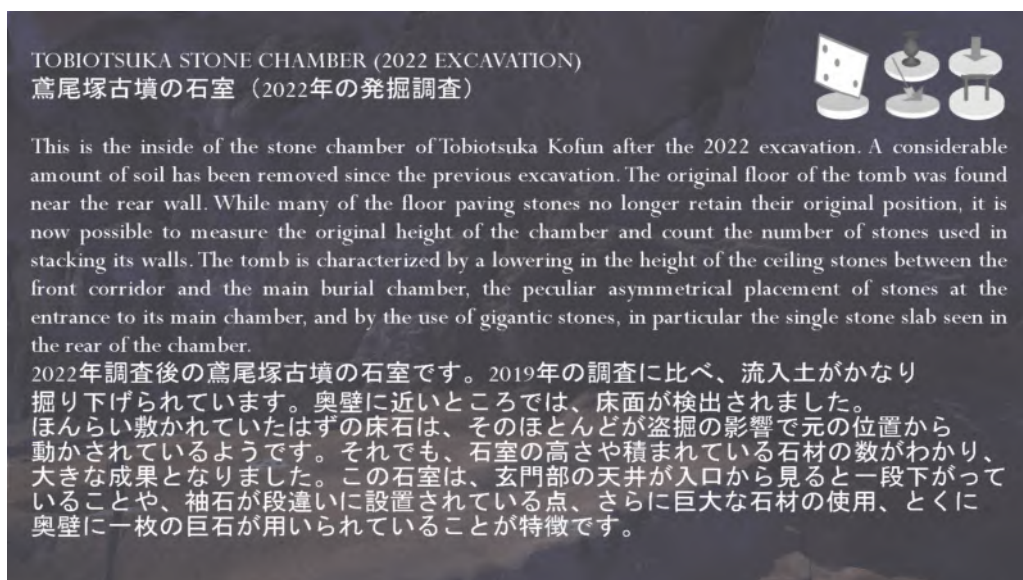
It is simply that the effort taken to produce the communication environment and its technological implementation in itself is a larger undertaking which causes the communication of CH values to be sidelined. This is a clear use case for the application

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<sup>20</sup><https://youtu.be/YCh8sT2eaFE>



**Figure 6.9:** All images are taken from within the Be-A-ViR system as it was in January of 2023. The general information screen for the Tobioticsuka Kofun.



**Figure 6.10:** The information screen within the burial chamber of the Kofun.

of the eight-stage operational workflow that can be used to include the CH values alongside the information that would be eventually shared with willing and interested participants. We believe that the engagement and communication benefits of doing so has been abundantly evidenced in the previous two applications.

## Stage 2 - Assess Significance of Values by Relative Importance

The value associations of the Tobioticsuka Kofun could only be alluded to if a basic understanding of the topic was present. This made it necessary to explain



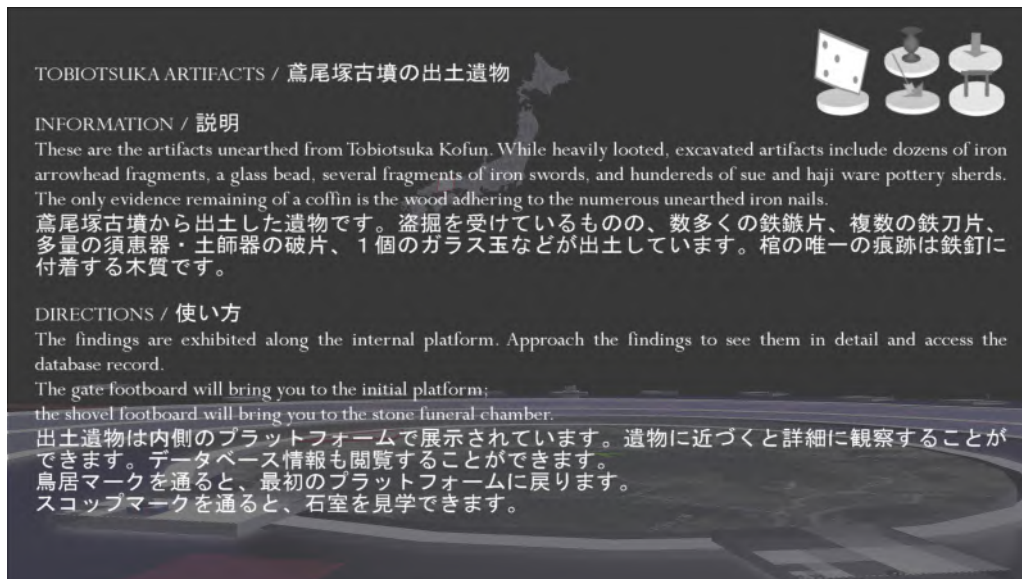


Figure 6.11: The general information screen for all artefacts.

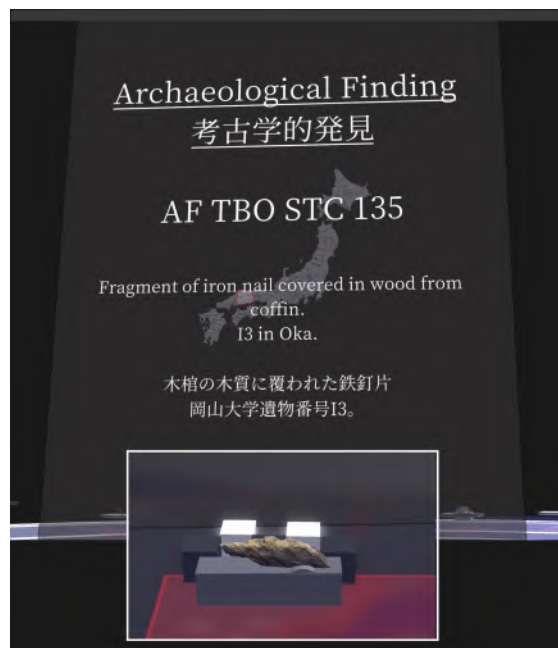


Figure 6.12: The description of the iron nail artefact.

the context of kofuns beforehand, since prehistoric Japan is not a well-known topic outside interested circles. The BeArchaeo project conducted an exhibition in the museum at Shimane prefecture, Japan, as mentioned previously. In that situation a lot of the contextual information would either have been known to the visitors since a majority would have been Japanese citizens or long-term residents of Japan. Even for those who might not be familiar with these topics, the museum environment and other explanatory aids would have helped on-site. This is not something that can be expected to accompany the BeA-ViR system and ideally the companion application

would let Be-A-ViR function as a standalone self-contained application that lets the user explore the 3D recreations while providing CH values motivated communication. With this in mind, the relative importance of values that need to be communicated to communities that may not be familiar with Japanese prehistory can be summarised by:

1. Japanese prehistory and the differences in its periodization
2. Kofun period and the cultural context surrounding this era
3. Kofuns themselves as a structure and the symbolism of it as a burial mound

The values that we deemed as necessary to include were:

4. BeArchaeo project and the international collaboration effort
5. Tobiotsuka Kofun - all the information and value associations
6. Tatetsuki site - Information and values with associated local legends
7. Haniwa - The clay pottery and figurines with their associated meanings
8. Contemporary implications of haniwa and other contextualising aspects

The above points are also in order of their relative importance as we deemed fit at this stage.

### **Stage 3 – Dialogic inquiry with Digital Communities**

A draft video with the above listed value associations was created for the digital CHComm application (can be seen at - <https://www.youtube.com/watch?v=y9aBGmuu3yY>). This was just under 15 minutes in length and was uploaded to Youtube as an unlisted video. At this point we proceeded to identify digital communities and especially the willing and interested participants in these communities who either shared information, news or viewpoints related to Japanese heritage or created digital content that communicated CH from the Yayoi and Kofun periods. Over 20 such individuals were identified across Youtube, Instagram, Reddit and Facebook. Many of these individuals had accounts on multiple social media and digital platforms (including Twitter and personal or business websites). As the draft video was not meant for public testing it was shared via emails and messages within the respective social media platforms, if available. It was explained that the video was part of research and their obvious interest in the Yayoi or Kofun period (or both) was the reason for contacting them. The selected individuals were asked if they would be willing to share feedback on the video across three questions:

1. Is any part of Japanese history or culture misrepresented in the video?
2. Did you like what the video is trying to say? Was there any new information?
3. Please share any suggestions that you may have with regards to improving the video.

The questions were broad-based in nature and this was intentional. The idea was to facilitate open discussion and the questions would help structure the discussion. Not everyone chose to respond even though we noted that the video had received at least 10 views in 3 days. We received 5 responses within the same period and there were a few lengthy and insightful responses among them. All respondents appreciated the depth of the content and found no inaccuracies or misrepresentations of Japanese culture. It is crucial to mention that at least one of the respondents was a Japanese person living in Japan and another was a person of Chinese origin who was familiar with the language and culture of East Asia. Every respondent showed an in-depth understanding of Japanese culture and history. They also provided us with differing perspectives and new avenues to explore, which was always the intended outcome of this stage.

#### **Stage 4 — Multiple Perspectives as a Design Tool**

While it would be exciting, from our perspective, to dissect every aspect of the every point raised during the dialogic inquiry stage, in the interest of brevity, we proceed to highlight certain quotes from the respondents:

- A respondent of Chinese origin - *All they [Japanese people] have is a collection of archeological remains, so they have to investigate their past like detectives. So, I think the question that carries more emotional weight is: “Who are the Japanese, really?”*
- A respondent of Australasian origin - *While the Japanese did not have a written language yet, they of course still had their own spoken language.*
- A respondent of Japanese origin - *I am glad that you are researching ancient Japanese history and I also like Kofun and Japanese myths that’s related each other. Did you check Saitobaru large kofun group in Miyazaki prefecture, Kyushu? (sic).*
- A respondent of unknown origin who described themselves as an enjoyer of Asian artefacts - *You may want to spend a little time on horse riding related artefacts, which are often found in Kofun, and transformed Japanese society/warfare at the*



*time. And perhaps a bit of information on material similarities with Southern Korea, especially the kingdom of Baekje and the Gaya Confederacy, which are both culturally related to Yamato Japan.*

The responses also suggested certain improvements to the presentation style of the video. Curiously, only one out of five respondents commented on the new learning that they received from the video related to a point about the use of agricultural soil for the shaping of the Tobiotsuka Kofun [124]. This was unexpected as the section about BeArchaeo and excavation information related to the Tobiotsuka Kofun must have been new information to more people. We concluded that we need to enhance the sections which communicated the information and values related to BeArchaeo project and Tobiotsuka Kofun in particular since that was the original point of the communication project and we might not be getting it across as effectively as we intended to.

## **Stage 5 — Contextualization of Heritage to Highlight Appropriate CH Values**

Quite a lot of the initial stage was focused on contextualising the Japanese prehistory and the topic of Kofuns. Even so, the new perspectives that we received from the dialogic inquiry process and the related research avenues we proceeded with, told us that there was some more contextual information that we could include. A summary of the information and values that would be contextualised are listed below:

1. Magatama beads as an artefact that indicated socio-economic and cultural changes in the Yayoi and Kofun periods. Their ritualistic, religious and aesthetic associations.
2. The arrival of horses on the Japanese archipelago and the changes this may have caused to the socio-cultural order at the time.
3. The situation of prehistoric Japan which had a spoken language but not a written language and how that has impacted the search for archaeological information today.
4. What the excavation of the Tobiotsuka Kofun and the information from it means to a modern day Japanese person.

## **Stage 6 — Initial Prototype Design for Testing: Prototype 1**

In creating the Prototype 1 of this companion application, we have adopted a structure that is different from what was shared previously. Now the sections are presented in the following order:

1. BeArchaeo project and the international collaboration effort
2. Japanese prehistory and the differences in its periodization
3. Yayoi period and the cultural context for the era
4. Minamikata Site - Information and values with necessary contextualisation
5. Tatetsuki site - Information and values with associated local legends
6. Kofun period and the cultural context surrounding this era
7. Kofuns themselves as a structure and the symbolism of it as a burial mound
8. Haniwa - The clay pottery and figurines with their associated meanings
9. Magatama beads, deity and beast mirrors and other artefacts from this period
10. Tobiotsuka Kofun - all the information and value associations
11. Contemporary implications of kofun and haniwa
12. Perception of Kofuns in Japan and a few other contextualising aspects

As can be seen from the above, we have expanded the scope of the contents as multiple aspects relating to the Japanese prehistory and various periods are under-represented in the more accessible digital sources of information for English-speaking populations. The context of the development of this application is also being emphasised by this new arrangement as the BeArchaeo project is being mentioned upfront. The Minamikata site which was studied by the BeArchaeo project has been added to the list of content. This site is a Yayoi period habitation site that would chronologically come before the Tatetsuki site and the Tobiotsuka Kofun. In fact, only the Tobiotsuka Kofun is from the Kofun period. The importance of the BeArchaeo project and the excavations conducted at the Tobiotsuka Kofun needs to be contextualised. There were only few artefacts at this site as the Kofun was robbed at some point in its existence. Even so, it does conform with what is expected from most Kofuns in the region and is quite close to a few other larger Kofuns. After all the other sections of the application are presented the closing section would be needed to cover a few contextual aspects. The perception of Kofuns in Japan is something that is not known to the outside world.

At this point, the initial prototype of a digital multimedia communication application is being worked on and therefore the next two stages namely, Stage 7 - Targeted evaluation via user feedback and digital outreach and Stage 8 - Reiteration

and design of the Final version are out of the scope of our current discussion. The Be-A-ViRsystem can be accessed online at the link - <https://vr.bearchaeo.unito.it/>. The final version of the content developed for the multimedia application is expected to contribute to the Be-A-ViR system

## **6.5 Observations from Three Applications in Brief and Conclusion of the Chapter**

Our study has given us confidence that following the eight-stage operational workflow can help heritage communicators develop content for digital applications that do justice to the heritage value associations, multiple perspectives and relevant cultural contexts for both museum and heritage sites. We would like to draw attention to the following findings that may be drawn from implementing the eight-stage operational workflow for digital applications that communicate heritage:

- When cultural values are communicated online, there is a clear sense of involvement and appreciation among willing and interested participants. When based on a foundation of verifiably authentic information, an ideal cultural heritage communication environment can profit from the deliberate inclusion of CH value-based knowledge exchange alongside appropriate user experience design through the utilisation of suitable technology.
- Media and communication specialists are needed to help GLAM institutions and experts in the domains of archaeology, history, and associated sciences. Heritage experts frequently have very little time on their hands to devote for the creation of impactful and effective communication of CH. This is likely because of the technical demands of the labour involved in adopting cutting-edge technology for CHComm apart from conducting and collating the heritage research necessary to conserve and reliably communicate about CH.
- The aforementioned issue is made even more crucial when taking into account the enormous potential offered by the immersive and emotive experiences that can be produced using AR, VR, and similar platforms made available by digital media technologies. The applications created using the eight-stage operational workflow have not used any of the spectacularization and immersive benefits offered by these technologies, but they were still capable of offering educational and entertaining experiences in a variety of contexts and, it could be argued, across a variety of cultural backgrounds.

- The absence of consistent access is a major problem in research on cultural heritage communication. After the active research phase is over, digital CHComm initiatives that were established to achieve their particular objectives sometimes become obsolete. In our study, CH values were collected, ordered in terms of relative significance and communicated using a digital application developed based on the eight-stage operational workflow. Future studies should focus on a system that can reuse the data and values gathered during such processes. A database that stores the information and CH value associations currently shared in Table 6.1 is necessary for most if not all digital heritage applications.

With regard to the final point mentioned above, the development of a database system that can reliably store the variety of information related to the implementation of the eight-stage operational workflow is theoretically possible with current technology. Such a theoretical database pertaining to a specific CHComm project can tentatively include:

1. The textual descriptions that consist identified CH value associations and the description of the tangible or intangible heritage to which these associations are being made.
2. The broad-based categorisation of the descriptive CH value associations to the respective heritage, if and where possible / applicable.
3. The relative importance in the ordering of the CH value associations for a particular heritage and optionally, the rationale for such an ordering.
4. Any audio-visual or other forms of multimedia content that may be the source of the CH value associations (such as expert / non-expert interviews etc.).
5. Any other audio-visual or digital content (3D recreations, virtual recreations) that help attach the CH value associations to the heritage under consideration.

Please note that an exhaustive detailing of a database structure for the long-term storage of CH value associations developed in service of a CHComm project is not being attempted here. Only an indicative list is provided for reference. Furthermore, a multimedia presentation for the application of the eight-stage workflow at the Hecht museum had been previously created. This presentation and subsequent applications of the workflow at the Virupaksha temple and also for the Be-A-ViR system include tables of CH value associations (see Table 6.1). These tables by themselves are a rudimentary arrangement that would be in the style of the suggested database. It is imperative to recognise that communication that pays necessary attention to the

cultural heritage value associations and the subtleties of heritage in contemporary as well as historical contexts is the need of the hour. The burgeoning collection of digital heritage assets cannot become artefacts in a storage that are devoid of meaning and context which end up losing their cultural significance over time.

In the next chapter we compare and contrast across the three applications by bringing out some salient features of the operational workflow and discuss multiple points of strength and also scope for improvement. We then conclude this study with a way forward for the future of this research.

**Table 6.1:** Concepts and artefacts that are a part of the Virupaksha Temple and their associated values along with a broad value typology based categorisation.

Artefact or building (Tangible)/ Concept (Intangible) covered by the video	Value Associations	Values Categorised
Hinduism as a Religion	<ol style="list-style-type: none"> <li>1. Ancient religious belief</li> <li>2. Living culture practiced in India and other South and South-East Asian countries.</li> <li>3. Way of Life in India: Santana Dharma</li> <li>4. Gods in Hinduism</li> <li>5. Temple worship and ritualistic practice not rigid</li> <li>6. Linga form of Shiva</li> <li>7. Process of Worship</li> </ol>	<ol style="list-style-type: none"> <li>1. Religious belief – Historic, cultural and religious value</li> <li>2. Geographical reach – Cultural and religious belief</li> <li>3. Religious value</li> <li>4. Religious value</li> <li>5. Religious, Cultural and Aesthetic</li> <li>6. Religious value</li> <li>7. Religious practice – Religious and cultural value</li> </ol>
Temple Architecture in India	<ol style="list-style-type: none"> <li>1. Ancient building science – Vaastu Shastra</li> <li>2. Text for Temple Construction</li> <li>3. Temples built to show power, remission (Belief)</li> <li>4. Temple Types with examples</li> <li>5. Details changed with geography.</li> <li>6. Organisation of the temple same</li> </ol>	<ol style="list-style-type: none"> <li>1. Building science – Historical and Aesthetic</li> <li>2. Rules for Construction – Historical, Aesthetic and Religious value</li> <li>3. Religious belief – Cultural and religious belief</li> <li>4. Temple type – Historical, Symbolic and Aesthetic value</li> <li>5. Geographical relevance – Historical and Aesthetic</li> <li>6. Temple Design – Historical, cultural and Aesthetic value</li> </ol>
Political Situation of South India in 7th - 8th Cent. CE	<ol style="list-style-type: none"> <li>1. Context before 7th century</li> <li>2. Start of Temple construction by Chalyukas</li> <li>3. Momentous victory over arch-rivals Pallavas</li> <li>4. Strong hold (Power) of Chalukyas in the South – Reach in the Deccan region.</li> <li>5. Benevolence towards Pallava capital, Kanchipuram</li> <li>6. Legacy – Prolific temple building activity.</li> </ol>	<ol style="list-style-type: none"> <li>1. Political situation – Historical value</li> <li>2. Religious identity – Cultural and religious value</li> <li>3. Historical event – Historical and social value</li> <li>4. Geographical extent – Historical and social value</li> <li>5. King's belief – Symbolic and Religious value</li> <li>6. Temple construction – Cultural, religious and aesthetic value</li> </ol>
The Virupaksha Temple	<ol style="list-style-type: none"> <li>1. Geographical reach</li> <li>2. Coronation capital</li> <li>3. Importance of the river and temple site</li> <li>4. Union of Nagara and Dravida style in one site</li> <li>5. Temple as an offering to Shiva</li> <li>6. Temple as dedication to God</li> <li>7. Details of the temple</li> <li>8. Epitome of Dravidian Style</li> </ol>	<ol style="list-style-type: none"> <li>1. Historical value</li> <li>2. Symbolical value</li> <li>3. Historical, religious and symbolic</li> <li>4. Aesthetic and symbolic value</li> <li>5. Religious and cultural value</li> <li>6. Religious and cultural value</li> <li>7. Aesthetic value</li> <li>8. Aesthetic and symbolic value</li> </ol>
Virupaksha after Chalukyas	<ol style="list-style-type: none"> <li>1. Temples on site</li> <li>2. Decline of Chalukyan Power</li> <li>3. Successors of Badami Chalukyas</li> <li>4. Battle between Vijayanagara Empire and Delhi Sultanate</li> <li>5. Arrival of British</li> <li>6. Establishment of ASI</li> <li>7. Importance of Epigraphy</li> <li>8. Kannada, language even today</li> <li>9. Physical repairs on Chalukyas</li> <li>10. Actions by Government of India</li> <li>11. UNESCO World Heritage Status</li> <li>12. Ecosystem of stakeholders</li> </ol>	<ol style="list-style-type: none"> <li>1. Historical and aesthetic value</li> <li>2. Symbolic value</li> <li>3. Historical value</li> <li>4. Historical and symbolic value</li> <li>5. Historical and symbolic value</li> <li>6. Historical and symbolic value</li> <li>7. Historical value</li> <li>8. Historical, cultural and social value</li> <li>9. Historical and aesthetic value</li> <li>10. Historical value</li> <li>11. Historical value</li> <li>12. Social, religious, and cultural value</li> </ol>
Iconography of the Virupaksha temple	<ol style="list-style-type: none"> <li>1. Chalukyas believed in the stories of shiva and other epics.</li> <li>2. Stories in stone represented their belief.</li> <li>3. Temple surface is a display of religious stories.</li> <li>4. Other Dravidians had similar beliefs.</li> <li>5. Sculptures have meaning today</li> </ol>	<ol style="list-style-type: none"> <li>1. Religious identity and belief - Historic, Social, Symbolic and Religious</li> <li>2. Religious identity and representation - Social, Symbolic and Religious value</li> <li>3. Aesthetic, Religious and Cultural</li> <li>4. Communal identity – Historical, Cultural and Religious</li> <li>5. Contemporary belief – Historical, Cultural, Religious and Social</li> </ol>

# Chapter 7

## Conclusions and Future Directions

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### 7.1 Summary of the Thesis

This thesis has introduced the notion of CH values motivated content design for digital environments that communicate cultural heritage. We have first reviewed how the conservation of cultural heritage became a formal and structured system with universal tenets. The idea of cultural heritage values started with academic discussions in the late 19<sup>th</sup> century which were then taken over by institutions that wished to purely conserve historically important monuments. Through multiple charters, declarations and documents that both supported and dismissed aspects of each other, we arrived towards the end of the 20<sup>th</sup> century. Cultural heritage values have been declared as the basis for conservation at this point. Every act of heritage conservation has been declared as a communicative act and by the turn of the century academia has realised the limits of an institutional and universal approach to heritage conservation. A few more points of discussion were introduced in the first chapter. These were the link between heritage conservation and communication and the digital age which has given us the digital cultural heritage communication scenario of today. At the end of the first chapter the need for a balance between technology adoption, heritage documentation and CH value communication when using digital environments was highlighted.

In the second chapter we looked at the literature that explained CH value typologies and set out the goals for communication of cultural heritage. By the turn of the century, academic research was pushing against the seams of the ‘universal’ or ‘institutional’ heritage value system. The community value associations went unrecorded or under-recorded as many systems of CH value classification did not have the ‘discipline’ or field of study necessary to report the significant value associations. We covered a broad CH value typology that was developed for policy makers with regards to heritage conservation. Then we looked at a more holistic approach that used a model of significance assessment that asked three straightforward questions. These were, “What is the heritage in question?”, “Why is it valuable?” and “How valuable is it?”. Following this we discussed the one notable exception among the institutional



charters which was the Ename charter that laid out the goals for ‘interpretation and presentation of a heritage site’. These goals were not meant for digital environments but were still applicable to the communication of heritage. These goals were noted as guidelines for our exploration.

In the third chapter we picked up the previously introduced concept of digital technologies and their impact on communication. We saw how the perpetual and widespread access to the Internet has changed the communication landscape for everyone including the communicators of cultural heritage. With the constant access and two-way nature of the internet and the availability of off-the-shelf technology, research into high-tech digital CHComm is progressing rapidly. This also means that every interested participant, whether an expert or not, is able to generate and share content that communicates CH information and values. Here a question was presented as fundamental to the digital CHComm ecosystem, this being -

*“Can digital environments for CHComm effectively communicate cultural heritage information and value associations from one generation to the next as well as the oral traditions, folktales, books and built structures of our past?”*

We then delved into the deeper issue of contestation in digital spaces and saw that the two actors, namely people and authorities, are constantly contesting each other. Further we looked at what an effective communication of CH values could look like in this digital age. We discussed the criteria for the effective communication of CH and then reviewed some existing literature surveys. It was abundantly clear that a lot of research was being done for the technology adoption in CHComm environments. Everything from user interface studies to user experience enhancements and technology suitability to methodologies of digital environment design had been analysed by researchers. Quite a few digital CHComm projects have also benefited from the application of such findings. This exciting field has essentially raced ahead of any research into the effective communication of CH values in digital CHComm environments. That said, we then presented a selection of projects that had studied the user engagement from an emotional and values based perspective. There were a few indications that the authors of these studies had attempted to include CH values in the design of their experiences and they had a few lessons for us. While there was no explicit attempt at enhancing the user engagement through the effective communication of CH values, these authors had achieved the same through various means. The techniques that were used to achieve this goal according to our observations were, delivering emotional impacts, encouraging critical thinking or cognition, contextualising heritage in its place and time and presenting multiple but contrasting perspectives. Here we proceeded to state the need for a process that can help design effective Digital

CHComm environments. We noted that an intentional inclusion of CH values would require a dedicated collection of multiple value associations right from the start of development of a CHComm environment. An important point we highlighted here was that the institutional approach to heritage values are discipline specific, reductionist and likely made for a universal understanding. The limitations of the discipline specific approach was already visible when it was applied to the management of heritage assets. Therefore the effective communication of CH values required an integrated or holistic approach that would use the best features of the institutional system, such as the broad based classification of CH values and the best features of a more holistic approach which was the straightforward querying of significance that encourages descriptive and nuanced value associations.

In the fourth chapter we proceeded to detail out an Eight-Stage Operational Workflow for CH Values motivated communication of Cultural Heritage. This workflow began with the collection of CH values from various sources of values that included institutional sources, community sources and multiple other primary and secondary sources that communicated about the CH asset. This stage was called the ‘Stage 0’ as this was assumed to be a stage that all heritage professionals would likely be familiar with. The actual entry point into the eight stage workflow or ‘Stage 1’ is to create an initial vocabulary of values. Here we describe all the possible value associations with a suitable broad based classification. The next stage is the assessment of significance of values by relative importance which utilises the three questions that we have listed previously. Stage 3 then deals with the dialogic inquiry where both experts and non-experts are invited to comment on the CH value associations that have been identified and filtered thus far. This provides us with multiple perspectives which are tackled in the fourth stage and then these are contextualised in the fifth stage. The sixth stage deals with the creation of the first prototype and then the seventh stage is for the targeted evaluation. The eighth and final stage deals with the re-iteration of the first prototype based on the results from the evaluation done in the previous stage. To determine the effectiveness of the eight-stage workflow in bringing out CH value associations, we compare the process against two existing instances of CHComm for the Arch of Constantine in Rome. We show that by using the workflow, we were able to determine at least three more significant value associations and perspectives that could enhance the CHComm experience of interested participants. This led us to conditionally answer the question that we had posed earlier. Our findings showed us that -

*“Digital CHComm environments can effectively communicate CH values over the long-term provided that the necessary attention is given to include the CH values into*

*the design of content for communication in the first place. This is also contingent on the fact that the support infrastructure and necessary technology updation and supervision is available for CHComm that relies on digital technologies.”*

It is stressed here that digital technologies and communication of cultural heritage through digital mediums cannot be declared to definitely last as long other traditional means of communication of CH (inscriptions, structures, artefacts, books and so on). Such a statement cannot be made within the scope of a thesis and the quick evolution of digital technologies needs to be observed over centuries before such a statement can be made. The above statement is only a recognition of the potential of digital technologies that use CH values motivated CHComm, when provided for the contingent liabilities of support infrastructure and technology upgrades.

In the fifth chapter we put the eight stage operational workflow through its paces by testing it within a museum setting. The Menorah collection in the Hecht Museum at the University of Haifa in Israel is selected as the set of heritage assets which are to be communicated. The eight-stage operational workflow is rigorously applied and rich insights are delivered by the visitors to the museum. This testing used the concept of control group and experimental group. The control group was shown an application that contained a series of videos which had the content that was readily available within the museum setting with some additional contextual information. The experimental group was shown content that was designed using the eight-stage operational workflow and thereby has intentionally included CH value associations. The complete run through of the eight stages required a Prototype 1 which was tested with a targeted evaluation questionnaire that was then redesigned to match the changes for Prototype 2. This exercise showed that all interested participants were able to appreciate the intentionally included CH value associations. Not only that, a few users in the control group had questions about the artefacts which were a part of the Menorah collection which were directly answered by the values version (experimental group) content. In all respects, we were able to say that the eight-stage operational workflow was working as intended but there were some shortcomings that had to be addressed.

In the sixth chapter we presented two more applications of the eight-stage operational workflow. The second (overall) application of the eight-stage operational workflow was as a standalone digital application that communicated about the Virupaksha temple at Pattadakal in Karnataka, India. This temple is a living heritage site where daily prayers are offered by Hindu believers and is a part of the UNESCO World heritage listed Pattadakal group of monuments. The application of the workflow produced a long and detailed list of CH value associations for the temple. Translating

these associations into a structured digital application in itself was a challenging task. The scale had increased from what was previously a collection of disparate artefacts under one theme to an almost 1400 year old living heritage site. The final results of the evaluation of the Prototype 1 showed that every interested participant appreciated the CH values associations that were deliberately curated for the digital CHComm experience. This was also the first time where we used a digital outreach system as this application was not within a GLAM institution. The heritage site setting required a digital outreach process to get the word out to potential users on the Internet.

This chapter also describes the first half of the development of the third (overall) application developed using the operational workflow for CH values motivated communication. This third attempt is to become a companion application for the Be-A-ViR system which is a part of the BeArchaeo project. The BeArchaeo project is a multi-university and multi-disciplinary project with other private collaborators from across Europe and Japan. The main goal of this project was the excavation of the Tobiotsuka Kofun in Soja city, Okayama prefecture, Japan. The project also studied related artefacts from other excavations dated to the Yayoi and Kofun periods of prehistoric Japan. The eight-stage operational framework demonstrated its purpose by bringing out many salient CH value associations that can be integrated into the Be-A-ViR system. The Be-A-ViR system is a virtual exhibition system that displays the 3D reconstructions of the excavated Tobiotsuka Kofun and other artefacts studied by the projects. As and when the application of the eight-stage operational workflow completes, the CHComm environment within the Be-A-ViR system can be enhanced by the intentional inclusion of the CH information and values delivered by the process. This exercise is also expected to provide further insights that can improve the eight-stage operational workflow itself.

At this point, the workflow itself would greatly benefit from being disseminated through channels other than academic publications; both for the easier adoption of the workflow and for comments from the wider expert communities. The experts who were involved in the discussion at the Hecht Museum where the eight-stage operational workflow for the creation of CH values motivated content was first presented, were shown a multimedia slide presentation by the author who elaborated the steps and the intended outcomes. The workflow is currently being revised as it is being applied to newer situations, such as Case 3. Hence, the workflow itself has not been prepared for wider dissemination to academic circles and beyond. As such the creation of a design document that can be disseminated via multimedia presentation for wider use is being considered.

## 7.2 Final Discussion and Takeaways from the Thesis

When setting out to design a digital cultural heritage communication experience, as ‘experts’ and digital communicators of CH today, we must look to **strike a balance between technology adoption, heritage documentation and effective CH value communication.**

Interpretation of cultural heritage and the communication of CH information and values has always been the responsibility of the CH expert. Even so, every heritage expert should remember that the heritage and the people were here first. Over generations, heritage sites and their stories either told by people or written in books and shared through other media have survived in some form. The heritage that we know today was sometimes intentionally preserved because of the decision taken by a community or group of individuals that were powerful enough to do so. In many other cases, we search and interpret clues within the remains, ruins, myths and tales to find what survives in the collective memory of humanity. Ultimately, the only way any heritage expert can learn about any heritage is by looking through the tangible and intangible records from the past.

A digital CHComm application in this age takes on the role of an elder member of a community who shares tales and stories. No doubt, virtual reconstructions can paint pictures that are much more vivid and as close to the truth as possible. Much of what would have been part of the oral tradition or the grandeur of a ruined archaeological site and the wonder it created is what a digital CHComm application would have to emulate. It is a tall order for a digital CHComm project to be the carrier of collective memory while also taking advantage of what the latest technology and digital platforms have on offer.

Just like how tales would have been told to interested groups of listeners, digital CHComm projects now need to reach out and engage digital communities. When a participant on the internet shares something about a CH asset, they may be taking on the role of an independent heritage communicator. These interested participants now reach out and engage digital communities as a sort of tour guide for the heritage they share. In our connected and democratised world, there are millions of virtual tour guides sharing small pieces of information and associated CH values much faster than ever before. The shared information will tend to stay online until a platform or technology falls out of favour or is made obsolete. GLAM institutions and CH experts cannot possibly mediate every online interaction and they need not make an attempt to do so.

What the heritage experts can do is to become a willing and interested participant

in this perpetual digital conversation. They can make consistent efforts to locate interested participants and deliver verified CH information and values. The effort required to do so is reducing as the pace of technological change accelerates.

Developing a digital CHComm experience that uses appropriate digital technology to combine accurate heritage documentation and effective communication of CH values would have both the style and substance that humanity could never wish to have had at any time before now. The eight-stage operational workflow for CH values motivated communication is a tool that can take us one step closer to achieving the full potential of Digital CHComm environments.

To better summarise the takeaways from applying the eight stage operational workflow across three different settings, we list a few concluding points.

### **7.2.1 Points to consider when working on a Digital CH Communication project or environment**

- 1. Pay attention to the communication of cultural heritage values -** A lot of effort goes into sharing technically accurate information and also into the technological implementation. However, the CH values associated with heritage assets are the carriers of meaning and memory. User feedback has shown us that willing and interested participants emotionally connect with content that is designed to include CH values. Conservation is what happens when heritage is preserved, interpreted and communicated over time.
- 2. What may appear to be mundane pieces of information or common knowledge about a heritage asset might not actually be common knowledge and may have significant CH value associations -** An expert in a field, by definition, can understand and access more knowledge than someone who is not familiar with that field. This naturally extends to cultural heritage and its communication. What an expert may assume to be easily available and easily understood information may not be as easily available or that well understood. For example, a considerable number of Non-Jewish visitors to the Hecht museum were aware that Menorah was a Jewish symbol but did not understand its significance to Jews or the history of the people, even after viewing most of the exhibits related to the symbol in that museum setting. It had to be explained through a separate application for at least some of them to grasp its significance. Many Hindus who viewed the videos on Iconography of the Virupaksha temple at Pattadakal, learnt new things about the meanings behind the sculptures (for example, Ravananugraha). Using a dialogic inquiry process to

ascertain the value associations and the level of knowledge surrounding a heritage asset is a good way to avoid errors of assumption from an expert perspective.

**3. Plan for longer term access for the wider community whenever feasible**

- A project that is made to share CH knowledge about any heritage asset should be developed with long term access in mind. It may not be economically viable to provide access to all the aspects of a project for a very long time but the core CH knowledge (information and values) could be made available in some form. The easiest solution here can be a multimedia website but much more is possible without a lot of additional effort. There are at least two aspects to this point:

- a. **Longer term access to the wider community of experts** - Every CHComm project faces its challenges and addresses certain opportunities in its own way. From an expert perspective, it is hard to know if a certain type of CHComm project actually exists or not. CHComm projects whether digital, phygital or physical could have dealt with a specific challenge and this is valuable information for other CH experts and communicators. Many digital projects end up becoming ephemeral in nature and while the final product itself might be available in some form, the expert community can learn a lot more from a record of what type of issues were seen and how they were tackled or what benefited the creation of a certain project. Planning for the longer term access of such information apart from the published research outcomes, would greatly enhance the ability of future projects to achieve their goals.
- b. **Longer term access to a wider community of interested and willing participants in digital CHComm (experts and others)** - Digital communities today share information constantly and a lot of that information is based on their interests. Members of communities on various platforms go to surprising lengths to share information about topics that interest them. For example, a Japanese language website created by an interested individual shares information with photographs and maps about their visit to the Tobiotsuka Kofun well before it was excavated (possibly visited in March 2009 - see, <http://kofuntokaare.tonosama.jp/page933.html>). A simple text webpage can go a long way but adding explanatory images and videos would be a lot more preferable. Providing shareable content about the CH knowledge disseminated within a project apart from the brochures and events can encourage digital communities to propagate the digital CHComm via communities of interested participants. Enabling the



interested and independent CH communicators via free to share content (like Creative Commons media) would be ideal.

4. **It is not necessary to “appeal” to the “public” when intentionally including CH values** - This is something that is in continuation to the above point 3.b. The role of an expert who uses the eight-stage operational framework is one of a collaborator and a facilitator that does not make choices which can undermine the detail, nuances and complexity inherent in the communication of cultural heritage. There are situations where it is beneficial to separate the popular discourse from expert communication but the merits and demerits of CH value attachments seen in popular discourse must always be assessed. This is also necessary to get ahead of any factual inaccuracies in CH value associations professed by users. The wider propagation of cultural heritage knowledge that is shared via a digital CHComm project does not have to be ‘oversimplified’ for public discourse and instead needs to be based on the more descriptive CH value associations. The reason for the individual and community attachment with heritage assets tends to be based in the appreciation of certain CH values. The CH value associations such as historic, cultural / symbolic, social, spiritual / religious, aesthetic or a myriad of other emotional, personal and non-discipline specific associations can motivate a plethora of public interest. It is much more rewarding to all involved if CHComm, digital or otherwise, is directed towards the interested and willing participants by identifying the relatively important value associations and addressing the various perspectives. Contextualising the heritage information with relevant values across the intervening time periods and across cultures can be far more engaging and effective. The loss of CH value associations is not a trade-off that can be made to under-report or reduce the content and present a more “appealing” product.
  
5. **CH value motivated content for wider dissemination can work well even without the use novel technology** - Throughout the study presented here, there was not much effort put into creating an exemplary UI / UX and the technology used is not novel or cutting-edge. Admittedly the effort of this study was to propose a workflow for designing CH values motivated content for CHComm. The testing shows that there were a lot of users who were either willing to look past any perceived shortcomings of the UX or did not find anything lacking. The applications discussed here did not require a novelty factor in the technology presented for users to spend time and provide feedback. Much of the feedback received was positive and constructive in nature and every

interaction was voluntary. Users were happy to have an opportunity to provide feedback. They were also willing to share their CH value associations and cultural knowledge to contribute to the digital CHComm content. Using cutting edge digital technology can definitely awe the users of an application but it might not always serve the purpose of communicating cultural heritage values especially in the wider propagation via digital platforms. That said, using good UI / UX design principles and novel technologies can only enhance the benefits of creating CHComm content which takes the relevant CH value associations into account. We have seen examples that display positive feedback from users (Eg-II, Section 3.3.2) while using advanced technology. There needs to be more such efforts and they must be both designed and tested for their ability to communicate heritage values and generate positive appreciation of heritage. This testing has to be done through the Stage 7 of targeted evaluation that asks questions such as “What did you think about the heritage asset?” or “How did you feel about the heritage asset?”. The descriptive responses that can be expected from such questions may point to the fact that perspectives have changed or that there is some reflection on the new heritage knowledge gained even when applying novel technology. Given the limitations of off-the-shelf consumer technology and the data transfer systems across the Internet, it is preferable to utilize a lower-tech but widely usable digital means of communication such as audio-visual presentations or video games with lower computing requirements when developing CHComm for wider dissemination.

### 7.3 Future direction of research

The enhanced communication of cultural heritage achieved by the digital applications using the eight-stage operational workflow shows us many possibilities for future exploration. A few possible directions are listed here:

1. **Design and development of a CHComm for a large-scale project** - A large-scale project such as an entire museum, heritage tour of a historic city, or an in-depth online presence for a monument/site can be designed using the eight-stage operational workflow. This would include the CH value associations of stakeholders at every level. Including all relevant perspectives and involving citizen stakeholders could encourage widespread participation in the conservation and communication for the heritage in question. The design has to be in conjunction with UI/UX experts, computer scientists, historians, media and

communication experts among other researchers who bring the best of their expertise to the table.

2. **Development of an evaluation methodology to assess the effectiveness of communication of CH values** - Review of literature on CHComm projects showed us that cultural heritage researchers often use evaluation methodologies from allied fields of UI/UX and techniques common in social sciences. These methods do work and deliver reliable results as has been demonstrated. A system to collect and analyse such descriptive responses such as the ones using word count or keyword in context (KWIC) has been described in this thesis (Chapter 5). This has helped translate the results of descriptive responses used for emotional response measurement in to a conventional system of reporting. While they are likely sufficient for the initial evaluation, an improved system of evaluating user response for the impact of communicating heritage values needs to be developed. Even so, the assessment for the effectiveness of communication of values in CH is a unique issue on its own. It relies on the user's understanding of unique value associations which are sometimes exclusive to the heritage and the stakeholder in question. We surveyed many research projects to see if the evaluation would suit our requirement but nothing directly spoke about values. Researchers often use likert scale to assess the suitability of a CHComm project or technology, likability of content and various other goals. Appreciation of value associations only comes to the forefront when open ended questions are asked in an evocative manner. Further study and testing is needed to establish the best methods to analyse the effectiveness of CH Value communication in CHComm projects.
3. **Creation of a database management system to record and document nuanced CH value associations** - Developing a database management system that can handle the descriptive and nuanced nature of non-discipline specific CH value associations is a necessity that cannot be understated. A rudimentary approach for the creation of such a database has been attempted in Section 6.6 of Chapter 6. A full-scale database system that describes relevant CH value associations that pertain to specific heritage would be a significant effort. Such an endeavour can directly benefit the sustainability of cultural heritage and its communication projects. Researchers have noted time and again that even well-funded digital CHComm projects fade away after the course of the funding is complete. This is a problem that has to be tackled through a sustainable and efficient solution where researchers are able to access the projects' research,

material and all the resources that the project can offer. Multiple organisations like Europeana have been making the right moves in this direction but the recording of nuanced and descriptive CH value associations must be included within the scope of such repositories. As CH value associations change over time, the database management system should also be capable of recording the reasons for the emergence and decline of the relevance of such various CH value associations. The collection, organisation and storage of this data is a mammoth task with priceless rewards for the understanding of humanity as social beings.

# Appendix 1

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## Questionnaires

### I. Interview Questionnaire for CHComm Application Menorah Collection, Hecht Museum, Haifa, Israel

Age:

Religion:

- On a scale of 1- 5 how religious are you?

Nationality:

Education:

General Questions:

1. What do you think about the Menorah symbol since ancient times?
  - Have your thoughts changed after watching the content?
    - a. (For Jews only) What does the Menorah mean to you?
      - Have we included it here?
    - b. (For non- Jews) Do you have a symbol that you can consider equal to the menorah?
2. Has your understanding of Dr. Hecht's vision for this museum improved?
  - Did have previous knowledge?
  - Did you learn anything new?
3. Why did you choose this artefact? What about it interested you the most?
4. What part of the content did you already know?
  - (All of it) Do you think it is useful for people who don't know?
  - What part of the content was new to you?

#### **Content-based questions:**

*Basalt Slab*

Have you seen a 5-branch menorah elsewhere?

- What do you think about the 5- branch in comparison to the 7- branch representation?

### *Oil Lamps*

What do you think about lights/lamps made in symbols like the menorah or cross or star of David?

### *Stamps and Seals*

What do think about the use of stamps or seals as proof of authority or origin?

- What does it say about history of a culture/place?

### *Glass Jar*

What do you think about the same craftsperson making pilgrim vessels for different religions?

### *Glass Pendant*

What do you think about luxurious artefacts being used for religious purposes?

- Do you think it helps with preserving the history of a culture?

## **Contemporary use based questions:**

### *Basalt Slab*

Where all have you seen the menorah symbol?

- What do feel when you see it?

### *Oil Lamps*

Which would you choose an intricately designed lamp / light source or standard 'factory manufactured' product for daily use?

- How about for religious / special use? Why?

### *Stamps and Seals*

What kind of stamps do you look for on food products?

### *Glass Jar*

Are you familiar with the practice of bringing back souvenirs from holy sites?

- What do you think about it?

### *Glass Pendant*

Do you wear jewellery/accessories that is important to you?

## II. Online Questionnaire for CHComm Application on The Virupaksha Temple, Pattadakal, Karnataka India.

### *Description*

Namaste! Thank you for going through the application. We would like to improve this application by asking you a few questions. Please be assured that we do not collect any personal data like your name or email. This survey is completely anonymous. These questions are to assess the quality and clarity of the communication application and does not reflect on your level of knowledge. Please answer in as much detail as you like as it will help us make a better application. Dhanyawad! (Thank you).

### **Demographics:**

Age:

Nationality:

Country you are living in:

Education:

Profession:

### **Mandatory Questions:**

1. How religious are you? 1 (Not religious) – 5 (Very religious)
2. How much did you know about the Virupaksha temple before seeing this application? 1 (Not aware of the Temple) – 5 (Well aware of the Temple)
3. How much do you know about Virupaksha now after you have seen that application? 1 (No improvement) – 5 (Learnt a lot)
4. Would you like to visit the Virupaksha temple? Yes/No/Already visited/Other.
5. Did you like what you saw? Yes/No/Other.
6. Please mention something that you liked/disliked.
7. Did you find any difficulty in understanding the language or content? If yes, can you specify the difficulty?
8. Did you learn something new after going through this application? If yes, please mention what was the new knowledge.
9. Are there aspects that you would like to know more about?
10. Would you like to see such an application for another cultural heritage asset? If yes, name of the cultural heritage? (Note that this can be any cultural heritage asset from any part of the world)



11. Do you spend time trying to learn more about heritage? If so, how do you learn more?

**Optional questions**

12. According to you, what should be the priority of conservation.

- Religious monuments be available for public access as far as possible.
- Preserved as much as possible by limiting or banning public access.
- Other.

13. What do you think about the historic practise of the construction of religious monuments by royalty?

14. Was there any specific video or a part of the video that related to you personally?

15. What do you think can be improved in the application to make it better?

## Appendix 2

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### **Links to the various documentation:**

Audio files of Interviews Prototype 1 and Prototype 2, Hecht Museum, Haifa, Israel

Transcribed Responses P1- Menorah Collection, Hecht Museum, Haifa, Israel

Transcribed Responses P2- Menorah Collection, Hecht Museum, Haifa, Israel

Digital Outreach - Facebook Survey

Study of Internet Sources for Communication on the Group of Monuments, Pattadakal

Online Responses for Virupaksha Temple, Pattadakal, Karnataka, India.

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