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Understanding the Social Value of Geelong's Design and Manufacturing Heritage for Extended Reality

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Abstract: Post-industrial cities often find themselves at a crossroads as to whether to find a new identity or embrace their industrial past. In late 2017, after the closure of major manufacturing plants in the region, the Australian city of Geelong was designated a UNESCO City of Design and embraced a "Clever and Creative" strategy which acknowledged Geelong's industrial and design past in responding to contemporary technological, demographic, and economic challenges. However, questions remain as to which versions of the past are valued by the local community and how these stories can be shared. To better understand the social value of design and manufacturing heritage in Geelong as well as to get initial feedback on how to interpret this type of heritage through novel immersive extended reality (XR) experiences, the researchers took a community-led approach. This paper reports on the results of the initial online community surveys (N = 55–137) and in-person stakeholder interviews (N = 5) with carefully selected representatives of the local government, education, heritage, tourism, and engineering sectors. The study's outcome demonstrates the importance of design and manufacturing heritage for the local community's identity. Moreover, this type of heritage provides a source of inspiration, learning opportunities for future creative problem-solvers, and economic opportunities through tourism. By engaging with the social value of design and manufacturing heritage, this paper argues that more effective and targeted storytelling, game-like applications, and other digital immersive experiences such as extended reality (XR) can be used to better engage with audiences.

Keywords: heritage; engineering; design; manufacturing; identity; post-industrial; extended reality; virtual reality

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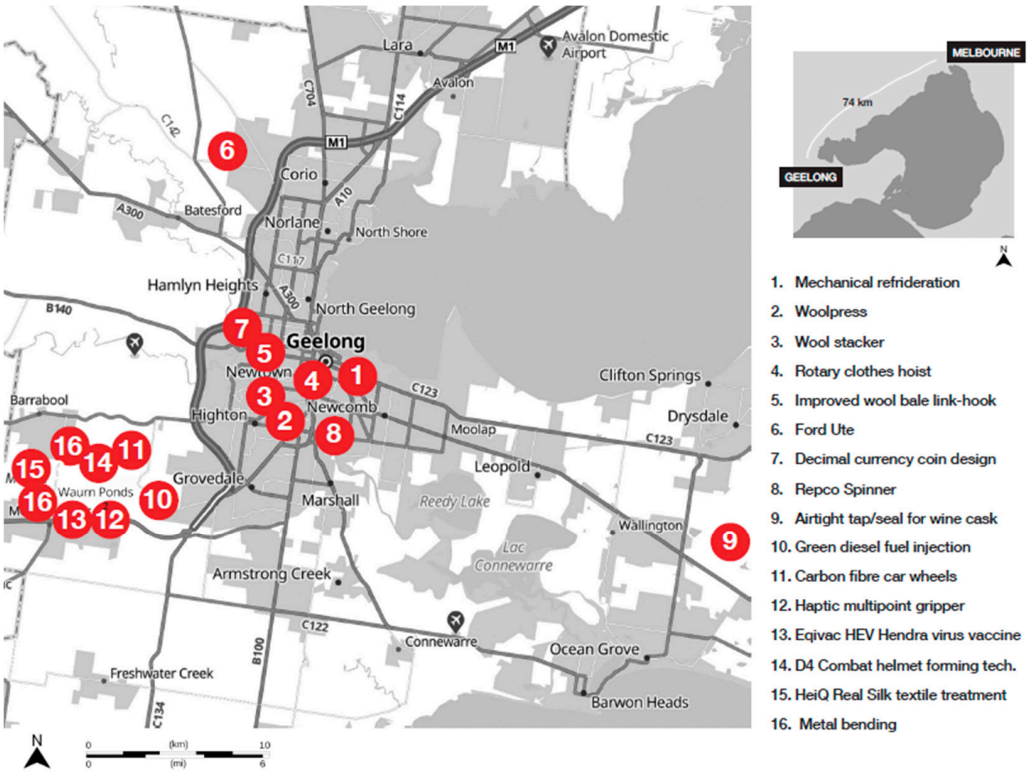
1. Introduction

Heritage has a role to play as a means for economic development (including tourism), social cohesion, and increased participation, along with consideration of the most effective way to bring local stories to the fore [1–3]. There are still many outstanding questions about how this can be achieved. How can design and manufacturing be captured, and in what form should they be presented? What impact does this have on individual and collective identities, particularly given the rise of digital technologies?

An interdisciplinary team of researchers from Deakin University's School of Engineering, School of Humanities and Social Sciences, and School of Communication and Creative Arts critically examined how the digital interpretation of design and manufacturing heritage can be used to inform the futures of post-industrial cities. As a case study, the local design and manufacturing heritage of Geelong has been explored.

As a regional port city near Melbourne, Geelong [see Scheme 1] has been known as one of Australia's largest manufacturing cities for a century and a half. Following the recent closure of various manufacturing industries, the City of Greater Geelong community

developed a 30-year "Clever and Creative" vision for the region [4]. In 2017, the City of Greater Geelong became a UNESCO City of Design, joining the Creative Cities Network [5].



Scheme 1. Indicative map of the Geelong area, illustrating urban sites linked to design and industrial innovations.

The area in which the city of Geelong is located has been home for tens of thousands of years to the Wadawurrung people, the Traditional Owners of the land with a continuing connection to the country. Their sovereignty of this land was never ceded, but the European colonization of the area from the 1800s caused disruption to traditional ways of life through dispossession and violence. From the 1830s, European settlement accelerated through the appropriation of land for sheep grazing, and, by the 1850s, Geelong's economy had developed a significant base in manufacturing. This was tied to its position as a gateway port to Western Victorian agriculture, protected from the Southern Ocean due to its location in Port Philip Bay. This economy shaped the geography and architecture of Geelong, making it a 'city of mills producing flour, textiles and paper' [6]. Geelong developed as an internationally renowned centre for the wool trade, with woollen mills a recognizable feature of the city's built environment.

Geelong's population declined due to the Victorian Gold Rushes of the 1850s, but the decline of the gold rush economic boom coincided with the expansions of Geelong's already well-established manufacturing base, and, during the early twentieth century, Geelong grew in population as well as in economic dominance within Victoria's economy [7]. This led to increased recognition of Geelong as an economic force and as a manufacturing base, especially after Ford Motor Company opened its Australian headquarters in Geelong in 1925 (Photograph 1). By the 1950s approximately 30% of Geelong's workers were employed in manufacturing, while in some suburbs this reached nearly 40% [8]. The Geelong economy retained this reliance on manufacturing throughout much of the twentieth century, but economic liberalization introduced by successive federal and state governments from the 1970s resulted in deindustrialization. The concentration of manufacturing in particular parts of Geelong, and the concentration of housing for working-class communities working in those sectors in geographic 'pockets' of the city's fabric, particularly in North Geelong,

meant that the cumulative impact of larger economic trends was also concentrated in targeted parts of the city's geography [9,10]. The unevenness of this impact was also distributed between different sectors, with the acute declines of some industries, such as textiles and clothing, occurring alongside slower and more incremental processes of economic downsizing, cuts, automation and 'productivity gains' in automotive production and metalwork.

Photograph 1. Former Ford Motors Factory, Geelong, which closed in 2016. Credit S. Cooke 24 February 2023.

As Louise Johnson has described it, Geelong has therefore 'register[ed] on its urban and social fabric some of the more dramatic changes in the recent economic geography of the nation' [11]. This is partly due to the way in which the decreasing level of dominance of Geelong's industrial sector has not been a simple passive process of decline, but has been accompanied by growth in tertiary industries, including the service, retail, creative and knowledge sectors [12,13].

Geelong's historical industrial economic base remains highly visible in the city through the adaptive reuse of its built heritage (Photograph 2), though the reinvigoration of industrial heritage through creative repurposing can also exacerbate the social impact of deindustrialisation [14]. The City of Greater Geelong has appealed to the city's ongoing history of design and innovation as part of its engagement with UNESCO City of Design status in a similar trajectory to other deindustrialising cities which have embraced creative economies, such as Detroit (another UNESCO City of Design) and Helsinki (European Capital of Culture 2000 and 2026) [15]. Emphasising ongoing creative identities in these cities has in some cases helped foster stronger senses of connection to place [16]. However, narratives of innovation can also fail to resonate, or actively exclude, where they are imposed from above without accounting for community experiences [17,18]. Further, as Delores Hayden has argued, "urban landscapes are storehouses of social memories" [19], and so urban renewal has the potential to disrupt sense of place and therefore identity for local residents. Representing industrial heritage in the context of highly visible social and

economic transformations therefore poses a challenge for heritage practice, especially as heritage and memorialisation can exacerbate the impact of deindustrialisation.

Photograph 2. Former CJ Dennys & Co Wool Store in Moorabool Street, Geelong, dating from 1872, adaptively reused as the National Wool Museum (1988). Credit S. Cooke 24 February 2023.

Social value assessment is an important tool for engaging with such complex and contested cultural heritage. Social value has long been a key concept in Australian heritage practice, though it remains a complex area to assess [20]. Social value in this sense focuses on collective processes of meaning-making and the development of shared connections with a place over time, encompassing forms of significance which are not intrinsic and "may not be visible to the disinterested observer" [21]. Through this focus on community interpretations of built environments, social value provides a potentially democratic counter to heritage frameworks which focus more narrowly on fabric.

Digital interpretation, both in museum contexts and through remote online connection, provide a range of opportunities for engaging with the social value of heritage. This is particularly the case given that the interactive and participatory dimensions of some aspects of digital practice encourage the documentation and sharing of subjective individual and socially generated meanings rather than expert analyses of intrinsic value. Yet it is important to note that this preconception of digital heritage as necessarily non-hierarchical and democratic may obscure the ways in which particular modes of design may pre-empt or limit the ways users can interact with heritage, or whether they have capacity to share their own responses within the digital framework [22]. Indeed, digital displays offer a means of providing larger amounts of information in unidirectional or hierarchical ways, such as extended label glosses or 'guidebook' type material. Screens are often utilised in passive modes for dissemination of information, similar to labels, catalogues, or 'glass boxes', which are an extension of traditional museological approaches [23]. Further complexities can arise from the way in which interactive digital technologies can impose a "single unifying ontology rather than supporting diversity" [16], particularly with complex and

difficult heritages [24]. 'Digital' does not therefore necessarily equate to participatory or collaborative user experience, which can pose particular challenges where there is a goal of engaging with social value at a community level [25,26].

Maintaining a strong grounding in social value when developing XR and other digital heritage outcomes is significant, given that digital representations of cultural heritage "have often been identified with either misguided storytelling, or non-compelling, non-engaging narratives" [27]. This lack of community resonance speaks to the ways in which "traditional, expert-driven modes of significance assessment," and by extension, expert-driven modes of digitally representing that significance, can fail to serve their communities specifically because of their hierarchical imposition [28]. One response to this problem has been to attempt to make the XR itself more intrinsically enticing through gamification, in order to "offset the public's lack of sustained captivation by way of interaction" [29]. This strategy, however, frames engagement as something to be produced or generated through technical means, rather than centring the significance of the heritage being represented, and can set a high access bar for users learning how to engage with the system [30]. Strictly relying on XR's intrinsic capacities for engagement therefore cannot fully address problems of social value's exclusion or misrepresentation in digital heritage contexts.

In deindustrialising cities, the heritage sector is faced with preserving design and industrial heritage while also interpreting and sharing that heritage in a complex post-industrial present, where the impacts of economic change are uneven and contested. Digital heritage presents a potential tool for exploring and articulating the meaning of industrial heritage in these cities, if the approach resists imposing a singular vision and is grounded in community perspectives and experiences [31]. Community engagement offers potential to counter essentialising narratives, or "museumification", while reducing the risk of erasure posed by hierarchical narrativising [32].

This paper presents a preliminary report on the community engagement processes used in Geelong to identify future areas for digital heritage, with a focus on XR engagement. Drawing on social value assessment methodologies, this paper explores the social value of heritage in order to illustrate the value of community engagement for identifying potential digital outcomes. In complex environments, high-cost infrastructural investments such as XR require close consideration if they are to be effectively implemented. By engaging closely with grassroots community perspectives, this paper argues that such digital heritage interventions can be grounded in a thorough evidence base and can serve their intended communities most effectively.

2. Methods

This research aimed to understand social values including perspectives and insight from Geelong's local community and key stakeholders around the design and manufacturing heritage of the Geelong region with the view to making informed design decisions around an XR experience.

Undertaking social research with a view to identifying the social value of heritage within a community provides a foundational evidence base which can be utilised in developing digital heritage that appeals to an already-existing sense of connection and significance. Social research methods, especially those "derived from sociology and anthropology," provide means for researchers to engage more fully with the "dynamic, iterative and embodied nature of social value" and to reduce the structural biases of strictly expert-led heritage assessments [33]. In addition to social research within target communities, social research which simultaneously captures the perspectives of heritage stakeholders provides a means of pre-empting potential areas of future conflict or disjuncture based around how cultural heritage is represented [29]. Such studies allow the preconceptions, motivations, and orientations of stakeholders around heritage to be made explicit, helping to clarify the broader context into which community views and experiences are being articulated. This in turn helps to inform effective decision-making about future investments in digital heritage

and XR which draws on structural possibilities for funding and technical support as well as social value considerations [34].

This paper presents a constructivist mixed-methods study of social value, refs. [35,36] utilising surveys and semi-structured interviews, in order to formulate an evidence base suitable for future XR interventions. In doing so, it highlights the potential for social value assessments to address persistent challenges in digital cultural heritage.

The research began in 2019 with data collection from two groups of participants. The team surveyed local communities (N = 55–137) and interviewed local stakeholders (N = 5) using the social values assessment methodology by Chris Johnston [21] that is widely accepted by heritage institutions. Johnson's study emphasises the importance of social value assessment to understanding whether there is a value in places or objects relative to the community that may not be initially recognised by experts.

The contents from the survey and interviews have been used to shape the strategic plans of the City of Greater Geelong, Geelong Gallery, Geelong Library and Heritage Centre—Geelong Regional Libraries, and the National Wool Museum. This study received Deakin University ethics approval (reference number: STEC-57-2019-ANTLEJ).

2.1. Community Surveys

The community surveys involved answering semi-structured open and closed questions about the value of the design and manufacturing to the local community and the potential of digital technologies to successfully recreate aspects of this heritage. A total of seventeen questions included three general demographic questions about age group, gender, and level of education to validate the diversity of the participants as the general Geelong population. These are shown in Table 1 below. As discussed in more detail below, only adult Greater Geelong residents were invited to participate.

The questionnaire was available via a Qualtrics online tool within four and half months between 16 October 2019 and 29 February 2020. Both quantitative and qualitative data were collected, which was later analysed using Qualtrics internal tools and a thematic approach. The interactive survey tool enabled various modes of data collection from rating text boxes (1–5); 3- 5-, and 7-Likert scale answers; rating sliders (1–10; 1–100); open-answer text boxes; and multiple-choice–multiple-answer and multiple-choice–single-answer questions.

The participants were recruited via social media (Facebook, Instagram, Twitter, and LinkedIn), e-news, and through a research assistant with a tablet who was positioned in public spaces on the streets of Geelong and in partner cultural institutions including the local library, gallery, and museum. This recruitment strategy allowed a diverse cross section of the community to participate. In total, 137 participants started the survey. However, only 55 answered all the questions. The reason for such a drop possibly lies in the complexity of the survey and its length. Nevertheless, the richness of the data provided a good preliminary understanding of the social value of the design and manufacturing heritage to the local community.

As a thank-you token, participants who completed the survey and provided their contact details were eligible for entry in a prize draw (a Coles supermarket voucher for $200 AUD). One participant was later drawn for the prize.

The survey was open to participants aged 18 and over within the Greater Geelong home postcodes. As per the City of Greater Geelong Annual Report 2019–2020, almost 259,000 people were living in this city region in 2019 [37]. Following the geographical density of the area, more than half (60.5%) of the participants (N = 137) came from the two main postcodes within the inner city: 42.3% from 3216 (Belmont, Highton, etc.) and 18.2% from 3220 (Geelong, Newtown). In addition, 8.0% of the participants resided in the 3214 (Bell Park, North Geelong, etc.) suburbs, in proximity to the recently closed Ford manufacturing plant and still-operating Shell refinery. The remining 31.5% of the residents were spread across the region surrounding Geelong, from Lara to Portarlington and Ocean Grove.

Table 1. Survey questions used in this research based on [21].

	Survey Questions
Q1	What are the first five things you think about or associate with Geelong's design and manufacturing?
Q2	Have you heard about the following Geelong's inventive/innovative design products, services, and technologies? This is a short list of just a few known achievements by a Geelong born and/or trained person and/or they were invented/innovated and/or first applied in Geelong.
Q3	Our list of Geelong's inventive/innovative design products, services and technologies is NOT COMPLETE. Let us know of any other achievements from this region you are aware of. You are more than welcome to add more details and who to contact for additional information. We are especially interested to learn about achievements by underrepresented groups (e.g., Indigenous and female inventors and designers) on this list.
Q4	How strongly do you agree or disagree with the following statements?
Q5	How strongly do you agree or disagree with the following statements?
Q6	Describe why the design and manufacturing heritage of Geelong is important, or not, to you
Q7	From this list, how much would the following experiences help you connect with our local design and manufacturing heritage? Slide the bar from 0 to 100.
Q8	How much experience do you have with the following extended reality technologies?
Q9	How interested are you in exploring extended reality to learn about Geelong's inventions and design and manufacturing heritage?
Q10	Tell us your fun ideas to experience an iconic Ford ute (original from 1934 or newer editions) using extended reality. It could be an immersive, touch-controlled and even a game-like experience . . .
Q11	Describe how the following institutions could contribute to an immersive and interactive exhibition about Geelong's design and manufacturing: Gallery Library Archive Museum
Q12	Anything else you would like to add?
Q13	What is your connection, if any, with design and manufacturing in Geelong?
Q14	How long have you known about Geelong's inventions and design and manufacturing heritage?
Q15	What is your age?
Q16	What is your gender?
Q17	What is your higher educational level completed?

Regarding the highest educational level completed, the participants (N = 83) were well diversified. The largest group (22.89%) had completed a bachelor's degree (including honours); followed by those with Year 12 or an equivalent, such as an HSC or leaving certificate (18.07%); postgraduate diploma, including graduate diploma (16.87%); and then master's degree (10.84%). The same percentage had received an associate diploma (10.84%), followed by those with vocational qualifications (9.64%), a doctorate (4.82%), an undergraduate diploma (3.61%), and those with less than Year 12 or equivalent (2.41%).

Marginally more females (51.81%) participated in the survey (N = 83) in comparison to males (45.78%); 1.20% identified as non-binary and 1.20% preferred not to indicate their gender.

Between one third and a half (38.55%) of the participants were older adults aged between 46–65 years, followed by seniors aged 66 and over (21.69%). Younger adults aged 18–25 years (13.25%) and 26–35 years (13.25%) were well represented. Slightly less identified as being in the 36–45 age group (9.64%). A small number (3.61%) of participants did not prefer to report their age.

2.2. Stakeholder Interviews

Enhanced awareness and understanding of local heritage around inventions has impacts on a range of key local stakeholders, including business leaders, government, and educational and cultural institutions. In order to understand perspectives and insights from these stakeholders, a group of five stakeholders were carefully selected. All selected stakeholders were influential in the community and responsible for relevant portfolios within large organisations within the City of Greater Geelong.

Interviewees were invited to take part in an in-person in-depth interview with open and closed questions. Interviews were conducted over a two-month period between late 2019 and early 2020, and each interview took about 40 min in total. Table 2 below shows the questions posed to the stakeholders.

Table 2. Interview questions.

	Interview Questions
Q1	How would you describe the past and present design, manufacturing, and engineering industry in Geelong?
Q2	How would you describe your past and present involvement with the design, manufacturing, and engineering industry in Geelong (the answers should not be identifiable or de-identifiable)?
Q3	Have there been any changes over time in Geelong?
Q4	How would you describe the community's perception of manufacturing and engineering in Geelong?
Q5	How do external visitors (e.g., regional, interstate, overseas) see Geelong today?
Q6	The Ford ute, the design of the first decimal currency coins, the rotary clothes hoist, and more recently, carbon wheels and RealSilk artificial fabric have all been developed in Geelong. Can you think of any opportunities to make objects like these more visible, for the benefit of the local community?
Q7	Should this aspect of Geelong's story be displayed in the local region? Where do you think is a suitable location?
Q8	Do you see any benefits in telling the story of Geelong's design and manufacturing heritage to the local community and visitors using extended reality experiences such as 3D printing, virtual reality, and augmented reality?
Q9	Do you believe there is a connection between learning about local design and manufacturing heritage and an increase in participation in engineering studies and professional pathways?
Q10	Do you believe learning about local design and manufacturing heritage could encourage girls, women and other underrepresented groups to participate in engineering studies and professions?
Q11	Would you like to share any other ideas or add anything else?

3. Results

3.1. Community Online Surveys

3.1.1. Design and Manufacturing of Geelong and Its Achievements

The opening question of the online community survey asked the participants "what are the first five things you think about or associate with Geelong's design and manufacturing?" The below figure illustrates the proportions of terms used in responses via a word cloud (Figure 1). The high proportion of answers mentioning Ford revealed the importance of automotive manufacturing to the identity of Geelong, closely followed by the wool industry and a range of terms associated with textile production. These associations identify potential themes for future digital heritage interpretation which may be of interest to the local community.

Figure 1. Word cloud visualisation of the responses to the survey question "What are the first five things you think about or associate with Geelong's design and manufacturing?".

The second question, "Have you heard about the following Geelong inventive/innovative design products, services and technologies?", (N = 92) investigated awareness of local design and manufacturing achievements. To assist the participants, the survey provided a short list of a few known achievements by a Geelong-born and/or -trained person and/or that were invented/innovated and/or first applied in Geelong. As highlighted in the chart below (Figure 2), it is evident that earlier industrial achievements from the late 19th and early 20th centuries were more recognised among the local community in comparison to more recent ones from 2000 onwards. This indicates more could be done to promote the current technological success of the region.

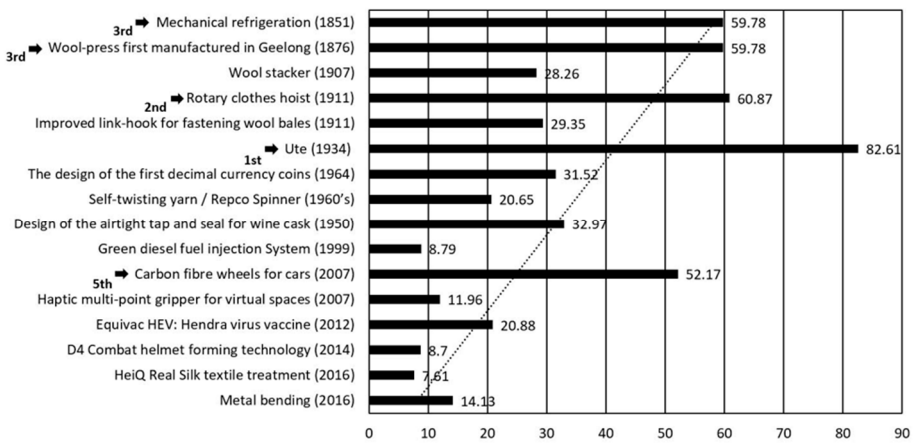


Figure 2. Participants' responses to a short list of known local achievements.

Correlated with the results from the first question, which revealed the significance of the Ford heritage, the first Ford Ute, designed in 1934 by Lew Bandt, was selected as the most recognised achievement. A Ford Ute is an iconic Australian vehicle invented in Geelong to fulfil the need for a working car with a cargo tray, which quickly become one of the most beloved vehicles among Australians due to its multiuse [38]. However, due to the growing popularity of pick-ups and other types of cars, together with the recent closures of

automotive manufacturing in Australia, both Ford and Holden stopped their production lines in the mid-2010s.

After the Ute, the rotary clothes hoist from 1911 was the second-most recognised invention, with 60.87% of participants being aware of this local achievement, followed by mechanical refrigeration from 1851 and the wool-press first manufactured in Geelong (1876), both with 59.78% each. This recognition provided further insights into potentially meaningful content to be communicated to local audiences and visitors to the region.

3.1.2. Quantitative Study on the Past and the Future of Geelong's (Post-)Industrial Identity

The survey asked more strategic questions about the past and the future of Geelong's identity. The survey revealed no consensus on the idea of Geelong as an industrial city. For example, half of the participants (N = 91) agreed with the statement that "Geelong has always been and will always be a manufacturing and industrial city" (50.55%; 46.15% agreed and 4.4% strongly agreed). On the other side, about a third did not respond positively (31.87%; 28.57% disagreed and 3.3% strongly disagreed). The remaining one sixth (17.58%) of participants stayed neutral (Figure 3).

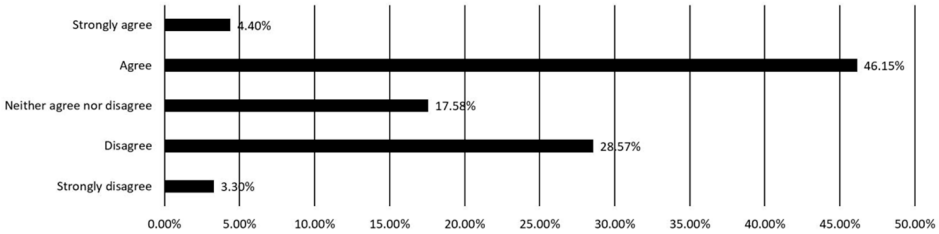


Figure 3. Answers revealing no consensus on whether "Geelong has always been and will always be a manufacturing and industrial city".

Similarly, almost half (46.15%; 39.56% disagreed and 6.59% strongly disagreed) of those surveyed (N = 91) did not agree with the statement that "Geelong should leave behind its manufacturing and industrial past and create a new and different identity". Almost one third (30.77%; 27.47% agreed and 3.30% strongly agreed) were positive about rebranding. Less than a quarter (23.08%) neither agreed nor disagreed with such idea (Figure 4). This polarisation of the Geelong community provides an opportunity for heritage interpretation to further explore the possible—and pluralistic—ways in which local identities are communicated.

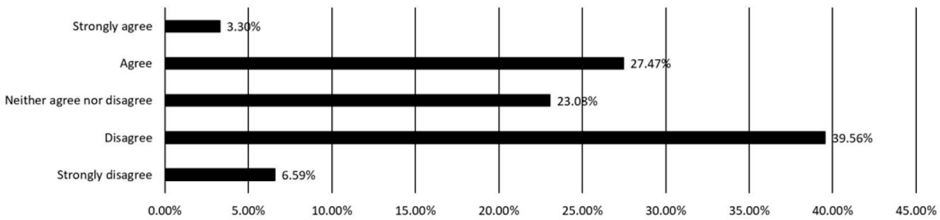


Figure 4. The results showing the polarisation of the participants on whether "Geelong should leave behind its manufacturing and industrial past and create a new and different identity".

In addition, the research sought to identify how local residents thought Geelong was viewed by people outside of the Geelong region. Again, there was no consensus, with participants relatively equally agreeing and disagreeing on what others think about Geelong. Almost a third (32.97%; 30.77% agreed and 2.20% strongly agreed) of participants (N = 91) agreed that "people from outside Geelong see Geelong in a negative light because of its industrial past," though a slightly larger percentage (41.76%; 31.87% disagreed and 9.89% strongly disagreed) thought the opposite. A further quarter of respondents (25.27%) stayed neutral (Figure 5).

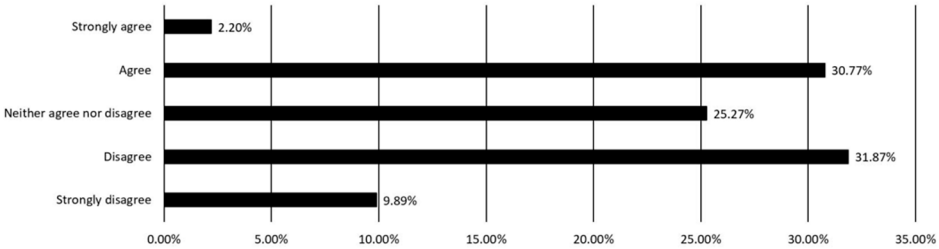


Figure 5. The answers showing no consensus among participants who relatively equally agreed and disagreed on what others think about Geelong.

However, despite this ambivalence, a large proportion (95.60%; 45.05% agreed and 50.55% strongly agreed) of participants (N = 91) argued that "Geelong should celebrate its design and manufacturing traditions/past". There were only a small number of participants who did not agree with this suggestion (no-one disagreed and 1.10% strongly disagreed) and a few (3.30%) who were undecided (Figure 6). Moreover, the vast majority (95.60%; 50.55% agreed and 45.05% strongly agreed; N = 91) also thought that "showing past and current manufacturing traditions of Geelong can motivate younger generations to become engineers or designers" while only a few disagreed (1.10%; no participants strongly disagreed) or stayed neutral (3.30%). Almost 1 in 10 respondents thought (89.77%; 19.32% strongly agreed, 50.00% agreed, and 20.45% somewhat agreed; N = 88) that the "local design and manufacturing heritage could be important to [their] local economy (it could bring more tourism to our region)". Only a small minority thought the opposite (4.55%; 2.27% somewhat disagreed, 1.14% disagreed, and 1.14% strongly disagreed). The rest (5.68%) stayed neutral. In response to the statement "local design and manufacturing heritage could place [their] region on the world stage", a large majority (84.09%; 20.45% strongly agreed, 37.50% agreed, and 26.14% somewhat agreed) of participants (N = 88) agreed; few participants disagreed with this (7.76%; 6.82% somewhat disagreed, 1.14% disagreed, and no participants strongly disagreed).

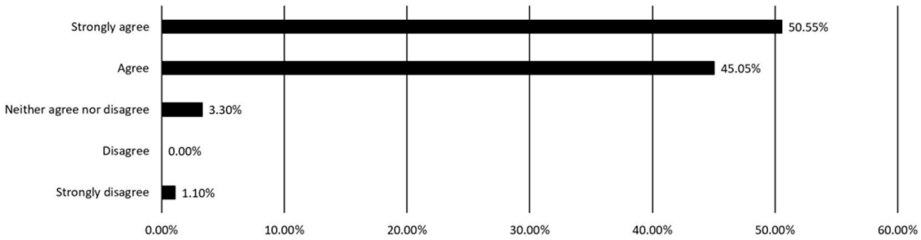


Figure 6. The participants agreed that Geelong should celebrate its design and manufacturing heritage.

The survey also investigated the personal relationship of the local community with the design and manufacturing heritage of Geelong. A large majority (84.09%; 25.00% strongly agreed, 35.23% agreed, and 23.86% somewhat agreed) of respondents (n = 88) thought that the "local design and manufacturing heritage was personally important to [them] and to [their] shared community identity"; 3.41% somewhat disagreed, 2.27% disagreed, and no participants strongly disagreed with this statement (Figure 7).

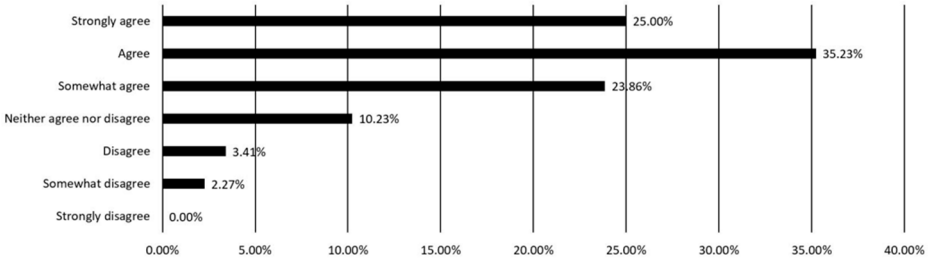


Figure 7. The chart shows the personal importance of local design and manufacturing heritage to the participants.

Therefore, although there was general ambivalence within the community about city rebranding initiatives more generally, most respondents wanted to celebrate Geelong's manufacturing and industrial past and perceived it as having a positive impact on future economic activity. Furthermore, the relationship between heritage and identity, particularly the opportunity to connect personal and collective identity, is a key component in this celebratory narrative. The next section will explore this relationship in more detail.

3.1.3. Qualitative Results on the Importance of Heritage

In addition to the quantitative data, qualitative data were collected. Participants were invited to "describe why the design and manufacturing heritage of Geelong is important, or not, [to them]". A large number of participants described their family working in the sector: "*Has given my husband a job for 30 years*"; "*Mother worked in the Valley Mill, we should keep the history of Geelong alive*"; "*Relatives in the Industry*". Others had worked in the industry themselves, for example: "*Worked at Ford's, provided me work for 20 years*". Some of them were very evocative about their personal experiences and the importance of the industry:

> *"I worked for 22 years in a local Textile company until its demise in the 2008/9 financial crash. Valley Mill commenced in the mid-20's as a vertical woollen mill producing fine worsted fabrics, especially those for Fletcher Jones and other well-known labels. Anticipating changing times, extensive research and development saw diversification into world class barrier fabrics using Kevlar, Nomex etc for armed services, firefighters; auto fabric for numerous car companies, industrial fabrics e.g. vertical blinds, microfibre, smart fabrics etc."*
>
> *"I have worked in three manufacturing companies and my father a fourth. All four no longer exist (a sad indictment I know). But I know stuff from working in each of those industries that helps me in my job today."*
>
> *"Worked as a textile designer/in textile business all my life. Geelong was a hub for Australia's biggest export in those days which is something to be proud of and relatively unknown."*

The qualitative survey question provided a rich insight into the importance of the design and manufacturing heritage to the local community. Some participants enjoyed reminiscing about the past: *"Having made real products that people use, and love is exciting and brings great memories"*. Others described Geelong's manufacturing heritage as a core identity of the city: "*It's because design and manufacturing are the biggest reasons of Geelong's existence. They are important to us just as History is important to mankind. It gives a sense of belonging and purpose to the people of Geelong".* Others saw it as an important foundation for future prosperity: "*It's the history of Geelong and is the building blocks of what Geelong as a city can achieve in the future. Without our history what are we?"*; "*It is very important as it's a part of who we are, what we have and can offer to the world and younger generations*".

Some participants thought that it is not enough to rely on past achievements, but that those achievements must be acknowledged as significant in order stay innovative on a global scale:

> *"Geelong has had a rich and unique history, which design and manufacturing is big part of. At the moment we don't celebrate our unique identity enough. The manufacturing industry boom in Geelong was about innovative people thinking big, about what could happen in Geelong. We need to tell the story about thinking big and creating new progressive and globally competitive things and not trying to restrict what those things are based on what they have been before. Continuing to create new things and industries."*

Furthermore, some participants emphasised the importance of continuation and inclusivity:

> *"Design and Manufacturing signifies re-invention and the desire to move forward for human endeavour. For me it engenders a solution focused mindset that I find exciting. The new practices or evolution of past practice creates a vibe that we can solve the issues that arise and will evolve to a society that is inclusive of all people, respectful and caring of our environment and other species."*

Others did not forget the diverse migrant community that has been essential to the progress of this industrial region:

> *"It's the fabric of our community and it where so many of our people were employed and derived a living from, particularly migrants from the 50′s through to the 80′s i.e., Yugoslavs, Italians, Slovenians, Croatians, Macedonians, Serbians, Bosnians, Russians, Ukrainians, Spanish, etc. It tells an important and rich story from our past."*

Recognising design and manufacturing heritage is also important in the times of the new wave of population growth, which can build a strong foundation of civic pride for future creative and collaborative endeavours:

> *"I think it's important to highlight achievements of Geelong in the past, especially with constant new growth in population to the city and surrounding areas. You get an insight of what Geelong was in the past and the history behind it. Geelong is also quite a creative hub, and supportive of local and small businesses. I think there is an opportunity to support the future of design and manufacturing today with recognition of the past."*

> *"It highlights achievement, ideas creation, local sourcing and supporting of talent, pride in city and competitiveness and collaboration."*

While some of the participants highlighted the impact of the Geelong's design and manufacturing heritage on inspiration, others were more practically oriented and argued this type of heritage can play a role by "*Providing jobs and identity to the region*". Some added that "*Tourism, jobs, [are] putting Geelong on a global scale, increase funding and initiatives to Geelong*".

In addition, the participants also agreed that such a narrative could also be a valuable case study for other similar cities:

> *"Geelong's recent history is of building an economically successful & pleasant new city after the end of our major manufacturing industries. We can provide guidance & inspiration to other regional areas in Australia as some of their industries decline or go through decarbonisation".*

The above quotes represent a selection of the themes revealed throughout the qualitative results of the survey. The importance of design and manufacturing heritage to the local Geelong community is clearly visible via their direct and indirect engagement with this part of their regional identity. Moreover, a sense of civic pride and obligation to (re)invigorate these stories for younger generations and outsiders is suggested by the participants who see local industrial achievements as a great source of inspiration.

3.1.4. Digital Interpretation of Geelong's Design and Manufacturing Heritage

After investigating the social value of Geelong's design and manufacturing heritage, the community survey further explored the interest of the audiences in engaging with this heritage through digital technologies.

To the question "How interested (from 0 to 100) are you to learn about Geelong's inventions and design and manufacturing heritage?", participants (N = 68) were equally interested in "visiting a traditional museum exhibition featuring images, text, audio and video content" (83.87%) as they were in "visiting an immersive digital museum experience using virtual reality, augmented reality, and/or 3D printing" (81.06%).

However, when questioned more closely about the *experiences* they considered would help them engage with the city's past, the differences were more pronounced. The top five answers to the question "How much (from 0 to 100) would the following experiences help you connect with our local design and manufacturing heritage?" (N = 82) were "seeing real (original) objects" which "would extremely help [them]" (87.69%), followed by "being able to touch objects to understand what they might have felt like" (81.79%), and "hearing behind the scene stories from those who have been involved" (81.23%), "being able to use/play with the objects" (79.75%) and "seeing a map of where the objects been developed and manufactured" (79.15%). All the responses are presented in the following Figure 8.

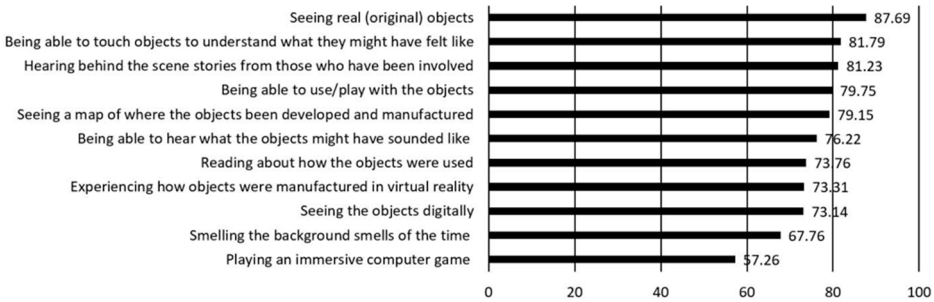


Figure 8. The responses to the question "How much (from 0 to 100) would the following experiences help you connect with our local design and manufacturing heritage?".

As can be demonstrated from the above results, despite the growing popularity of digital technologies, seeing authentic physical objects is still considered the highest level of engagement with heritage content. On the other hand, how is it possible to fulfil the needs of the audiences to touch the objects, hear behind-the-scenes stories, directly interact with design and manufacturing objects, or see a map to better contextualise them in the region? All these means of engagement have only scored less than ten percent lower than the need for authenticity enabled by the real material. These results provide a valuable list of prioritised ways of engagement that could potentially be implemented using XR technologies. For example, the sense of touch could be simulated through haptics (to avoid touching originals), stories could be captured with 360-degree video recordings of those involved in Geelong's industrial past, and game-like experiences could be used for more hands-on (virtual) activities. An interactive map for four-dimensional (4D) travel through times and locations where the objects of significance have been developed and manufactured could also be developed inside XR or using a touchscreen.

3.2. Stakeholder In-Person Interviews

As described in detail earlier in this article, eleven questions were distributed to five selected participants: an engineer, a local government representative, a tourism professional, a teacher, and a heritage professional, who were interviewed in person separately. The following section illustrates the key opinions provided by the individual stakeholders, each from their own viewpoint. However, similar to the community surveys, the interview results highlight a common narrative about the potential of design and manufacturing heritage for the benefit of the local community from the perspective of identity as well as that of economic opportunities. The themes to emerge can be defined as potential, perceptions, and possibilities.

3.2.1. Potential

The stakeholders were first asked to "describe the past and present design, manufacturing, and engineering industry in Geelong" and "have there been any changes over time in Geelong". The heritage professional looked back in the past arguing that "*design has been something that has been part of the psychology in the DNA, and the practice of this region for tens of thousands of years.*" They continued that "*Geelong as being a community of constant reinvention*" [. . .] "*Like all or most posts 19th century industrial manufacturing cities, Geelong as well on the route of reinventing itself*". The engineer discussed that the region is known for its "*research*" capabilities and growing "*start-up environment*" with "*the potential for international*" expansion. They also emphasised that "*[. . .] the demise of Ford and Alcoa in Geelong would probably be one of the best things that's happened for Geelong because [. . .] it's left a vacuum [. . .] all of our capacities and concentration would have been on those existing industries*". They also added that "*the next big this is a whole lot of networked boutique technologies that are all different but share resources in the broad sense. We'll see a lot more cooperation, a lot more co-development, a lot more interdependence between companies*".

The tourism professional added that such change "shows the resilience of Geelong as a city" and pointed out the importance of the city branding: "branding speaks about a place of reinvention, connection, and discovery" [. . .] "how you celebrate it from a tourism point of view". The teacher argued that there was change in the industry sector, such as

> *"the shift from a materials-based economy [. . .] to very specialised manufacturing or quick timeline manufacturing or highly technical manufacturing" demands a different "educational system that produces highly-qualified personnel, the shift in terms of our competitiveness in an international or global market is leaning into that high-level technical expertise as opposed to a bulk manufacturing base".*

On the other side, the local government representative pointed out the importance of small businesses that supported the major manufacturing plants in the region: "*there was also a lot of ancillary businesses that were participating in the automotive sector" (e.g., "glass for windscreens")* and continued that much is still happening in the research and development (R&D) domain despite different public perceptions: "*Ford still does have its engineering, it's around 900 workers still employed doing engineering and design for Ford, which is great legacy beyond the manufacturing component*".

The potential to build on Geelong's heritage was recognised in the comments provided, which noted the ability of Geelong to reinvent itself and demonstrate resilience and that there continues to be research and development in the region. The positive nature of the commentary reinforces the need to acknowledge the past and use this as a foundation to grow in the future.

3.2.2. Perceptions

"The perception of manufacturing and engineering in Geelong" was further examined from the local, visitor, industry sector, and international community points of view. The engineer argued that "*There's a perception out there if you're in engineering that it's dangerous, it's dirty, it's noisy, it's unhealthy, it's boring, it's metal-bashing, and the reality is that's completely not the case*" and added that the "*industry have done an incredibly poorly job of promoting all the wonderful stuff that's here, 'cause as soon as you start bringing people through here and other places, they go, 'This is fantastic'*". A similar argument was shared also by the tourism professional: "*With the communities there's still, in some respects, probably a lack of perception out there of how much is still happening in the manufacturing and engineering space*". Furthermore, regarding the perceptions of the local community, the stakeholders were also asked "How do external visitors (e.g., regional, interstate, overseas) see Geelong today?" The heritage professional stated that "*For those people who know Geelong, who know of it, there is a perception outside of it, that it is either a community in decay or of sub-standard lifestyle that has lost what it was. I don't think that there's a clear understanding of that*". However, the engineer provided a different perception, shared within the industry: "*The perception amongst manufacturers and engineers:*

'we're watching this space'". The third type of perception was revealed by the tourism professional, who focused on the international perspective: "*Our brand internationally is not strong, and we need to work on that. To talk about the perception at the moment, it's hard because there is no perception, and that's not a bad thing because we can create a positive perception. We don't have to work from the negative*".

The stakeholders recognised the challenge of changing perceptions from the connotations associated with an industrial city (dirty, noisy, unhealthy) to those associated with a creative city (problem-solving, progressive, innovative). There was an acknowledgement that the perception of those outside the city was poor or non-existent but that this also provided the city with an opportunity to establish a new perception of the city.

3.2.3. Possibilities

The stakeholders discussed potential locations to display the design and manufacturing aspect of Geelong's story. The heritage professional argued that:

> *"The whole city is our museum. [. . .] I don't necessarily believe that museums and galleries are the only places that you can go for that. I fundamentally believe if you want to share heritage, object, or a museum object, and it's around health and maybe maternal health, the hospital is the best place for it to be. Develop an opportunity for the thing to be on display and interpreted and accessible at a hospital."*

The tourism professional offered that "*we need to look at many of our spaces where there are a high volume of people or high volume of traffic*". They suggested that "*a trail approach to tell the story that connects with some of the buildings, the natural landscapes of the waterfront*" with an "*interactive way through digital storytelling or through re-enactment of oral storytelling for a tour operator*" could be a useful approach. The tourism professional also asked themselves "*How do we also connect First Peoples' stories through to their use of the land, through to colonialism, through to our manufacturing times, through to today?*"

As proposed by the stakeholders interviewed, there are various places where heritage content could be displayed, including in physical and virtual environments. In addition, it has been suggested that the authentic locations where these objects were in use or being manufactured or developed could be a suitable alternative to museum displays. To the narrower question about "using extended reality experiences such as 3D printing, virtual reality, and augmented reality" for "telling the story of Geelong's design and manufacturing heritage to the local community and visitors" the local government representative agreed that "*it would be really fantastic to think that we would be able to retell that story and allow people to wander into what might have been going on at the time through something other than a static display*". They further emphasised that "*it's one thing to see a picture of something but to actually be able to interact and get greater sense of feel and touch would really draw people into appreciating what was going on at the time*". On the other side, the heritage professional pointed out that "*the physical and the virtual go hand-in-hand as well*". They added that "*you can bridge that experience if you put somebody in a virtual reality, and you virtually put them in there—I mean because the vast majority of people in the world will not be able to travel to that place to see it. The vast majority of people will not be able to travel to Geelong or people from Geelong will not be able to travel to some place*".

Following on from the above quotes, XR has the potential to merge physical and virtual environments in an interactive way. By providing a higher level of interaction, such experiences could be a more engaging alternative to static displays. Moreover, immersive experiences have also the capability to be accessed digitally on demand by those who may not be able to visit the location in person. Such experiences can also create a sense of appreciation by younger generations who were not involved in the industrial achievements of past times. As seen above, opportunities for younger generations were mentioned several times throughout the surveys and interviews. Furthermore, there was an opportunity to create a stronger connection between "learning about local design and manufacturing heritage and an increase in participation in engineering studies and professional pathways". The teacher argued that "*context is probably your best bet for linking students to that design*

and manufacturing idea, building that narrative so that they can understand where it fits in and whether or not that would be something, they'd be interested in. Otherwise, you're then competing with things they can directly see people making money from and hilariously that's influencers and YouTube celebrities". In this regard, it is important to understand how a storytelling approach could be implemented to create meaningful experiences and improve contextualisation, in contrast to digital approaches with limited interpretation or those often found on social media and similar edutainment platforms.

Last but not least, design and manufacturing heritage "could encourage girls, women and other underrepresented groups to participate in engineering studies and professions" and that "*focused on real-world examples of females working in these areas would be quite helpful*", suggested the teacher, who further emphasised that "*needing to have that extra step to reaffirm to a female audience that this is something that a lot of women do have very successful careers in*". The local government representative added that "*It really needs to start from very early on in painting much more creative photo—creative images around what careers and professions look like*".

The impact that could stem from enhancing recognition of Geelong's design and manufacturing heritage opened up a range of opportunities identified by the participants, particularly for the young local community, who would be able to see the pathways available to them. The whole city could be used to communicate the message that Geelong is a progressive, interactive location full of possibilities.

4. Conclusions

In this study, the undoubted pride in Geelong's industrial past was tempered by community ambivalence about potential 're-branding' to include updated, more future-focused narratives. While there was no consensus on broader questions about the idea of Geelong as an industrial city per se, there was overwhelming positive support for recognising Geelong's design and manufacturing heritage and celebrating its historical achievements. As we have shown, this was primarily through the recognition of more traditional inventions, such as the Ford Ute and the rotary clothesline. More recent inventions were less well acknowledged. The Ford Ute and the rotary clothesline are also more ordinary or everyday heritage [39,40] compared to the other inventions on the list. The importance of everyday heritage is also illustrated through the ways in most respondents connected with the city's past on a personal level, articulating how they or their families had been involved in design or manufacturing.

Moreover, while the percentages of respondents who were interested in experiencing this heritage through museums or through immersive digital experiences were similar, most participants privileged more traditional interpretive approaches which centred on 'real' objects that could be touched and heard. The desire was for a multi-sensorial engagement with the past. The research also found that where these experiences should be encountered was not restricted to traditional GLAM sector locations. Community expectations are that these stories should be told both inside and outside formal heritage spaces, taking advantage of the city, where stories are immersed in locations throughout Geelong, suggesting, as Hayden argues, that urban landscapes can be "marked to restore shared public meaning" [19]. Given the material traces of the city's industrial pasts still extant, including former woollen mills that have been adaptively reused, the potential for creative re-inscription of Geelong's marginalised heritage is significant.

This survey, as well as the discussion of the results, will be used to develop and test an engaging interactive and immersive presentation about design and manufacturing in Geelong using extended-reality (XR) technology in a pop-up museum experience. Extended reality may use virtual reality, augmented reality, 3D printing, and/or similar technologies so that visitors to the exhibition can experience seeing, touching, and using the environments and inventions of Geelong's industrial past, with a focus on "everyday heritage". Based on these preliminary research results, a pop-up VR museum experience about the First Ford Ute is currently under development, partially as part of a PhD project with a focus on 3D interaction techniques for immersive museum experiences [41]. Such

a pop-up immersive experience, packed in a small box with a VR headset, enables the content to travel to museums, schools, and community centres within the participating city of Geelong and internationally.

This project provides people in the local community with access to their heritage (learning and enjoyment), and, by attracting the broader community beyond the City of Greater Geelong, it also provides potential future economic opportunities (such as tourism). The research will help to shape further development of engaging immersive experiences, and will provide guidelines for engineers, designers, and heritage interpreters on how best to create technologically supported experiences for museums, heritage sites, and other industries.

This study was publicly presented to the local community and stakeholders at the *Geelong Inventions: Past and Future, Symposium and VR Demo*, on 24 March 2021, at the National Wool Museum, as part of *Geelong Design Week 2021*, the second edition of the UNESCO City of Design annual celebration of local creativity. During the event, the representatives of the local GLAM sector, the city, and industry (Ford) discussed the results and the topic. The outcomes of this round table supported the positions presented in this paper.

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References

1. Gospodini, A. Portraying, classifying and understanding the emerging landscapes in the post-industrial city. *Cities* **2006**, *23*, 311–330. [CrossRef]
2. Caffyn, A.; Lutz, J. Developing the heritage tourism product in multi-ethnic cities. *Tour. Manag.* **1999**, *20*, 213–221. [CrossRef]
3. Pardo Abad, C.J. The post-industrial landscapes of Riotinto and Almadén, Spain: Scenic value, heritage and sustainable tourism. *J. Herit. Tour.* **2017**, *12*, 331–346. [CrossRef]
4. City of Greater Geelong. Greater Geelong: A Clever and Creative Future 2017. Available online: https://www.geelongaustralia.com.au/common/public/documents/8d4d2ad3b2b24c1-cleverandcreativedecember2017web.pdf (accessed on 30 December 2022).

5. UNESCO. Creative Cities Network: Geelong. Available online: https://en.unesco.org/creative-cities/geelong#:~:text=About%20the%20Creative%20City%3A,and%20automotive%20and%20machinery%20components (accessed on 30 December 2022).
6. Gray, F.; Garduño Freeman, C.; Novacevski, M. Milling It over: Geelong's New Life in Forgotten Places. *Hist. Environ.* **2017**, *29*, 58–69.
7. Linge, G.J.R. Australian manufacturing in recession: A review of the spatial implications. *Environ. Plan. A* **1979**, *11*, 1405–1430. [CrossRef]
8. Novacevski, M. The post-industrial landscape of Geelong. In *Geelong's Changing Landscape: Ecology, Development and Conservation*; Jones, D.S., Roös, P.B., Eds.; CSIRO Publishing: Clayton, Australia, 2020; pp. 249–260.
9. Dingle, T.; O'Hanlon, S. The inner city transformed: Industrial and post-industrial Melbourne in pictures c1970–2005. In Proceedings of the State of Australian Cities 05 Conference, Brisbane, Australia, 30 November–2 December 2005; pp. 1–8.
10. Lozanovska, M.; Nakai Kidd, A. 'Vacant Geelong' and Its Lingering Industrial Architecture. *ARQ Archit. Res.Q.* **2020**, *24*, 353–368. [CrossRef]
11. Johnson, L.C. *Building Pathways to a Brighter Future*; Deakin University: Melbourne, Australia, 2012; p. 8.
12. Fairbrother, P.; Svensen, S.; Teicher, J. The Withering Away of the Australian State: Privatisation and Its Implications for Labour. *Labour Ind. J. Soc. Econ. Relat. Work* **1997**, *8*, 1–29. [CrossRef]
13. Gray, F.; Novacevski, M. Zombie Urbanism and the City by the Bay: What's Really Eating Geelong? *J. Urban Cult. Stud.* **2017**, *4*, 309–332. [CrossRef]
14. High, S. Beyond aesthetics: Visibility and invisibility in the aftermath of deindustrialization. *Int. Labor Work.-Class Hist.* **2013**, *84*, 140–153. [CrossRef]
15. Kozina, J.; Bole, D.; Tiran, J. Forgotten values of industrial city still alive: What can the creative city learn from its industrial counterpart? *City Cult. Soc.* **2021**, *25*, 2–13. [CrossRef]
16. Crommelin, L. Making Place by Making Things Again?: How Artisanal Makers are Reshaping Place in Post-Industrial Detroit and Newcastle. In *The Routledge Handbook of People and Place in the 21st-Century City*; Bishop, K., Marshall, N., Eds.; Routledge: London, UK, 2019; pp. 273–281.
17. Della Lucia, M.; Pashkevich, A. A sustainable afterlife for post-industrial sites: Balancing conservation, regeneration and heritage tourism. *Eur. Plan. Stud.* **2023**, *31*, 641–661. [CrossRef]
18. Qian, Z. Heritage conservation as a territorialised urban strategy: Conservative reuse of socialist industrial heritage in China. *Int. J. Herit. Stud.* **2023**, *29*, 63–80. [CrossRef]
19. Hayden, D. *The Power of Place: Urban Landscapes as Public History*; MIT Press: Cambridge, MA, UK, 1995; p. 9.
20. Lesh, J. Social value and the conservation of urban heritage places in Australia. *Hist. Environ.* **2019**, *31*, 42–62.
21. Johnston, C. *What Is Social Value? A Discussion Paper*; Australian Heritage Commission: Canberra, Australia, 1992.
22. King, L.; Stark, J.F.; Cooke, P. Experiencing the Digital World: The Cultural Value of Digital Engagement with Heritage. *Herit. Soc.* **2016**, *9*, 76–101. [CrossRef]
23. Graham, H.C. The 'co' in co-production: Museums, community participation and Science and Technology Studies. *Sci. Mus. Group J.* **2016**, *5*. [CrossRef]
24. Stuedahl, D.; Mörtberg, C. Heritage knowledge, social media and the sustainability of the intangible. In *Heritage and Social Media. Understanding and Experiencing Heritage in a Participatory Culture*; Giaccardi, E., Ed.; Routledge: London, UK, 2012; pp. 107–126.
25. Crooke, E. The politics of community heritage: Motivations, authority and control. *Int. J. Herit. Stud.* **2010**, *16*, 16–29. [CrossRef]
26. Ciasullo, M.V.; Gaeta, M.; Monetta, G.; Rarità, L. E-cultural value co-creation. A proposed model for the heritage management. In Proceedings of the 18th Toulon-Verona International Conference, "Excellence in Services", Palermo, Italy, 31 August–1 September 2015; pp. 139–158.
27. Srinivasan, R.; Becvar, K.M.; Boast, R.; Enote, J. Diverse knowledges and contact zones within the digital museum. *Sci. Technol. Hum. Values* **2010**, *35*, 735–768. [CrossRef]
28. Vassiliadi, M.; Sylaiou, S.; Papagiannakis, G. Literary myths in mixed reality. *Front. Digit. Humanit.* **2018**, *5*, 21. [CrossRef]
29. Jones, S. Wrestling with the social value of heritage: Problems, dilemmas and opportunities. *J. Community Archaeol. Herit.* **2017**, *4*, 21–37. [CrossRef]
30. Bertrand, S.; Vassiliadi, M.; Zikas, P.; Geronikolakis, E.; Papagiannakis, G. From readership to usership: Communicating heritage digitally through presence, embodiment and aesthetic experience. *Front. Commun.* **2021**, *6*, 676446. [CrossRef]
31. Puig, A.; Rodríguez, I.; Ll Arcos, J.; Rodríguez-Aguilar, J.A.; Cebrián, S.; Bogdanovych, A.; Morera, N.; Palomo, A.; Piqué, R. Lessons learned from supplementing archaeological museum exhibitions with virtual reality. *Virtual Real.* **2020**, *24*, 343–358. [CrossRef]
32. Reeves, K.; Eklund, E.; Reeves, A.; Scates, B.; Peel, V. Broken Hill: Rethinking the significance of the material culture and intangible heritage of the Australian labour movement. *Int. J. Herit. Stud.* **2011**, *17*, 301–317. [CrossRef]
33. Gillette, M.B. Theorizing Heritage in the Post-Industrial City. In *Heritage, Gentrification and Resistance in the Neoliberal City*; Hammami, F., Jewesbury, D., Valli, C., Eds.; Berghan: Oxford, UK, 2022; pp. 27–41.
34. Copplestone, T.J. But that's not accurate: The differing perceptions of accuracy in cultural-heritage videogames between creators, consumers and critics. *Rethink. Hist.* **2017**, *21*, 415–438. [CrossRef]
35. Creswell, J.W. *Qualitative Inquiry and Research Design. Choosing among Five Approaches*; Sage: Thousand Oaks, CA, USA, 2013.

36. Snis, U.L.; Olsson, A.K.; Bernhard, I. Becoming a smart old town–How to manage stakeholder collaboration and cultural heritage. *J. Cult. Herit. Manag. Sustain. Dev.* **2021**, *11*, 627–641. [CrossRef]
37. City of Greater Geelong. The City of Greater Geelong Annual Report 2019–2020. Available online: https://www.geelongaustralia.com.au/common/Public/Documents/8d8661974ed16d2-thecityofgreatergeelongannualreport2019-20.PDF (accessed on 30 December 2022).
38. Jackson, S. The 'Stump-Jumpers': National Identity and the Mythology of Australian Industrial Design in the Period 1930–1975. *Des. Issues* **2002**, *18*, 14–23. [CrossRef]
39. Atkinson, D. The heritage of mundane places. In *The Ashgate Research Companion to Heritage and Identity*; Routledge: London, UK, 2016; pp. 381–395.
40. Cooke, S.; Buckley, K. Visual research methodologies and the heritage of 'everyday' places. In *People-Centred Methodologies for Heritage Conservation*; Madgin, R., Lesh, J., Eds.; Routledge: London, UK, 2021; pp. 143–155.
41. Ogrizek, M.; Mortimer, M.; Antlej, K.; Callari, T.C.; Stefan, H.; Horan, B. Evaluating the Impact of Passive Physical Everyday Tools on Interacting with Virtual Reality Museum Objects. *Virtual Real.* 2023, *submitted, under review*.