Life and Death on the Tuapeka Goldfields — stakeholder input for a community museum's bioarchaeology-based exhibit

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Abstract

This practice insight describes community consultation and creation of an exhibit that was installed in a local museum to share findings from research involving excavations of historic cemeteries. Two individuals who had been buried in unmarked sites in historic cemeteries in the town of Lawrence, in the Otago region of New Zealand were exhumed for bioarchaeological research that included biochemical methods.
Results were combined with cultural and environmental information from the Otago goldrush era to reconstruct lives of these settlers and tell their stories in the exhibit described here.
Community values about exhibit representations related to human remains were explored through 16 semi-structured stakeholder interviews. Interviewees overwhelmingly but not unanimously supported the creation of an exhibit about this research. Interviewees recommended things to exclude from the exhibit (human remains or images of them) as well as information and objects to include. Information was compiled from multiple sources, including: existing bioarchaeological research findings; interviews with descendant groups, community, and other stakeholders; and historical archives. Information from these multiple sources was combined to create osteobiographies of two individuals — a woman and a Chinese journeyman — who had lived in Lawrence during the goldrush period (1850–1910). These osteobiographies formed the basis of an exhibit that was created and installed in a community museum in the town where their graves were located.

Keywords Science centres and museums

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Introduction

In this project, research results from a local bioarchaeology project are being shared in a community museum. Because bioarchaeology research involves human remains, it was particularly important to get community and expert feedback about

whether such an exhibit would be appropriate and, if so, what should be included in the exhibit. Representatives of descendant groups, other members of the local community, bioarchaeology researchers, and other experts were asked their views about this public-facing exhibit. Results of these interviews informed development of an exhibit for the museum.

The small community of Lawrence, New Zealand (population 435) proudly celebrates its goldrush heritage. The Otago goldrush began in 1861 when Gabriel Read struck gold near Lawrence, "*shining like the stars in Orion on a frosty night*" [Pyke, 1887, p. 127]. A goldrush begins as a whisper and a dream, a dream to find payable gold. The Otago goldrush led to a rapid population explosion, with commercial implications for the region and ultimately all of New Zealand [Olssen, 1984]. Many residents of Lawrence are multigenerational descendants of the area. The Tuapeka Goldfields Museum collects and displays items pertaining to the area's history, telling stories of the goldrush and the region.

> *[The Tuapeka Goldfields Museum is] telling the story of very specific regions; that can create a lot of value for the community. And especially in our case, we are this small town of only 450 people today, but we tell a huge national story [of the goldrush].*
> Jess Weichler, Museum Manager and Education Officer

The Tuapeka Goldfields Museum is a landmark in the Lawrence community. It is a valuable asset for school children, residents looking to connect with their family history, and tourists. Despite extensive collections and displays, relatively little is known about some who played important roles in the goldrush, especially women and Chinese miners.

After consulting with the community about the appropriate display of research involving human remains, we used findings from current, locally relevant bioarchaeolological research as the basis of a museum exhibit about two people who lived and died on this frontier. Osteobiographies ask questions such as where individuals came from and what happened to them [Pfeiffer, 2022]. They can connect people with science and history in a personal and engaging way [Boutin, 2011; Hosek & Robb, 2019]. Osteobiographies of a sojourner (a male Chinese miner) and a woman of the goldfields were created. Storytelling was used to describe bioarchaeological research which had been performed on material collected in the Lawrence community, sharing research results back with the community that had supported that research.

Legislation and guidelines about human remains influence their display and discussion within a New Zealand context. While Māori were not discussed in this exhibit, Māori values were considered as Māori have specific tikanga/cultural values about human remains (kōiwi tangata). In acknowledging Māori views, it is inappropriate in a New Zealand setting to display the physical remains or images of kōiwi tangata [for wider discussion in the context of this exhibit, see Parker, 2022].

Koru Model of science communication

The Koru[1] Model of science communication [Longnecker, 2016] underpinned the development of the exhibit. It illustrates factors that impact how people engage with and respond to new information, acknowledging that an audience is composed of individuals with multiple factors which influence their unique engagement with information. Individuals' sense of their own identity impacts their reception and use of information; effective science communication should consider the values of the audience [Longnecker, 2016, 2023].

In the Koru Model, engagement with new information is influenced by internal factors including individuals' values, attitudes, interest and previous knowledge. In this project, interviews (described later) were used to explore these with various stakeholders. The Koru Model also describes the creation of information resources (an exhibit in this instance) and dissemination. As science communicators, we collated facts, curating and assembling them as a museum exhibit and telling stories to provide information, carefully considering potential visitors' values, beliefs and attitudes.

Bioarchaeology in Lawrence

The Southern Cemeteries Archaeology Project at the University of Otago, New Zealand, investigates unregistered 19th century burials in Otago historic colonial cemeteries [Petchey et al., 2018]. In 2018 and 2019, the project excavated historic cemeteries in Lawrence, Otago. These cemeteries belonged to a frontier population of pioneer farmers and prospecting gold miners who travelled to Lawrence [Petchey et al., 2018]. The excavation project investigated unregistered burials in cemeteries using a "biocultural approach", combining biological and cultural information with a focus on human remains and archaeological evidence of funerary traditions [Petchey et al., 2018]. Bioarchaeological analysis of human remains and archaeological analysis of the artefacts from the burial environment were conducted. Cultural information from historical archives and personal interviews provided rich contextualisation of the scientific information.

The Southern Cemetery Archaeology Project hosted community consultation events with the Lawrence community before, during, and after the cemetery excavations. Events were hosted in local community buildings. Archaeological excavations occurred on private and public land. Consultation events were important to involve the community and allow them space and time to ask questions, express concerns and engage with the methods used to analyse the remains.

After personal involvement in excavation and analysis of human remains for the Southern Cemeteries Project, the first author had strong motivations for sharing the research results with the Lawrence community. Her family heritage stretches back four generations in Central Otago, offering a special understanding of the historic and cultural influences in the area. She worked with the second author who has both academic expertise and professional experience curating museum exhibitions.

[1]The koru is a New Zealand Māori symbol for growth, harmony and new beginnings. The koru is used to signal respect for New Zealand indigenous knowledge, Mātauranga Māori.

This project integrates science communication theory with the practice of community involvement in research and dissemination of findings via a permanent installation at a community museum.

Creating this museum exhibit illustrates curated bioarchaeological, archival and interview research findings, helping visitors connect to historical stories of people from the area. The stories shared in the exhibit were created with input from the community. They allow museum visitors to better understand the value of bioarchaeology by learning secrets revealed from the graves of goldrush settlers in the area.

Methods

Bioarchaeological evidence, historical contextualization and results from personal interviews were combined to provide relevant information for the local community about its significant historical goldrush era. Existing bioarchaeological analysis of bones, teeth and hair provided the foundation of osteobiographies or stories of two individuals who had been exhumed in the Southern Cemeteries Archaeology Project — a Chinese Sojourner and a Woman of the Goldrush. The bioarchaeological information included gender, age at death, likely origin of the Chinese Sojourner and evidence of what happened during their lives. Information from interviews and archival research was then added in an iterative process. As interviews uncovered different facets of Lawrence's history, archival research scope was broadened. As new information was discovered in archival research, further insights were explored with interviewees. The two resulting osteobiographies formed the basis of a permanent exhibit that was installed in the Tuapeka Goldfields Museum in Lawrence, New Zealand.

Ethics

The interview protocol was approved by the University of Otago Human Ethics Committee (reference number D21/116). Research consultation with Māori was considered by the Ngāi Tahu Research Consultation Committee. As described below, interviews inquired whether participants thought an exhibit based on research with human remains was appropriate. Once that was established, the project progressed.

Dialogue with stakeholders

Values, attitudes, interest, and previous knowledge are fundamental factors in the Koru Model, impacting how individuals engage with information [Longnecker, 2016]. Interviews explored these attributes in relationship to an exhibit related to human remains and bioarchaeology in Lawrence.

Interviews used semi-structured, open-ended questioning techniques [Brinkmann & Kvale, 2015]. This allowed participants to share their views about bioarchaeological research in Lawrence in a fluid conversation.

Two individuals who had been exhumed in the Southern Cemeteries Archaeology Project were deliberately chosen to highlight in the exhibit. Both are from

important groups which have been under-represented in narratives about this New Zealand goldrush period. By the end of 1861, Lawrence had 13,000 residents; about 20% were women, yet little is known about them. While there are existing displays related to the Chinese community in Lawrence, our osteobiographical approach represents one individual from that community to humanise this ethnic community, which played a significant role in the goldrush, despite racist attitudes and policies at the time. Our interviewees considered focus on these individuals for the potential exhibit.

Interview recruitment. Purposive sampling started with contacts from the Tuapeka community, the University of Otago, and the Southern Cemeteries Archaeology Project, who were invited to participate in in-depth, semi-structured interviews. Snowball sampling [Brinkmann & Kvale, 2015] was then applied; each interviewee was asked to recommend other participants at the conclusion of their interview. This provided a diverse sample of people with various connections to the Lawrence cemeteries.

Interviewees represented four categories: Community members, Historians, Scientists, and a Māori advisor; anonymized quotes are identified as C1, H1, S1, M1, etc. 'Community member' is a generalised term used here to define interviewees who were either residents of the wider Lawrence community, descendants, or otherwise closely connected. All Historian interviewees were Chinese and were professional historians or had extensive knowledge of Otago history. Scientists in this case, have a background in bioarchaeology or archaeology, with many of them having been directly involved in the Southern Cemeteries Archaeology Project. The Māori advisor consulted is a well-respected advisor from a Māori consultancy service who also has a strong background in archaeology. In total, 17 people were interviewed.

Interviews. All interviewees were provided information about the research project and signed consent forms prior to interviews that were recorded for transcription. Interviews were conducted by the first author and carried out in a setting chosen by participants (home, office, coffee shop), allowing face-to-face interaction [Brinkmann & Kvale, 2015]. Semi-structured interview questions were tailored for subsets of participants with different backgrounds [for full interview protocols, see Parker, 2022]. Interview questions explored participants' perspectives using guidelines of Braun and Clarke [2013]. Interviews included discussion of bioarchaeological research involving human remains in Lawrence and participants' understanding and interpretation of related events. Participants were specifically asked about their feelings around an exhibit related to human remains in a museum setting.

Sixteen semi-structured interviews were conducted from May to August 2021. One interview was conducted with two participants. Fourteen interviews were conducted face to face, one online over Zoom™, and one by phone. At the beginning of each interview, participants were reminded that the interview was being recorded for transcription purposes. Transcripts were generated using the online software, Otter.ai. Manual review and editing within the software was vital to ensure the accuracy of data, especially as the software did not always accurately transcribe non-English words or English with the New Zealand accent. This was

particularly important with Māori and Chinese participants who discussed subjects related to their culture. Care was taken to correct wording in Te Reo Māori and Cantonese.

To review and consider the data, transcripts were read, re-read, contemplated, discussed with other science communicators, and reviewed to understand participants' points of view. The transcripts were reviewed and summarised for ad hoc meaning condensation [Brinkmann & Kvale, 2015]. Analysis of the interviews informed archival research, further conversations, and the development of the exhibit.

Exploring the archives

Archival research involved exploring collections for information and images related to the history of the town of Lawrence. Archival research was conducted for text and photographic material to support the exhibit. Materials were examined from the New Zealand National Library archives, including the Alexander Turnbull Library, Papers Past, and the Geo Data Hub. The Alexander Turnbull Library holds national documentary heritage collections including books and pictures. Papers Past digitises New Zealand newspapers from the 19th and 20th centuries. Newspapers explored for this project included local newspapers — Southland Times, Tuapeka Times and the Otago Daily Times in the 1850–1910 time period. The Hocken Library is a research library and historical archive based in the same region as Lawrence. Hocken librarians assisted with the exploration of their portrait collections, images, and documents of the Lawrence district. Other resources included blog posts from the Southern Cemeteries Archaeology Project [e.g. Wong & Wong, 2019]. Research topics and keywords used for searching included Otago history, gold mining technology, Chinese in New Zealand, historical medicine, portraits, and newspapers.

Stakeholder recommendations

Consulting with various stakeholders, including the community of Lawrence, helped focus on the community as recommended by Simon [2016] and their values and interests as recommended by Longnecker [2016]. A vital question was:

Should there be a display about bioarchaeology in a local museum, yes or no?
One scientist said:

> *… in my view, this sort of work, there's no point in doing [cemetery excavations] unless you're actually feeding information to the community that is affected. And… especially with skeletal research on skeletal remains… Yes, there's academic interest, and we are interested, because we are academics, and we get excited about different things than… the public get excited about… It's not much use, really, if it doesn't have a public engagement application…* [S1]

Nonetheless, developing an exhibit can involve clashes of professional opinions [McKenna-Cress & Kamien, 2013]. Indeed, during this exhibit development, one of the scientists interviewed had a completely different viewpoint to all of the other interviewees, saying:

> *Artefacts, I have no problem whatsoever. But with human remains, I wouldn't be talking about them in public at all…* [S6]

and:

> *The contribution that it [bioarchaeology] makes to science is very much [at] the level of science. And I think for the public… I don't think there's much that can be said to the public [about human remains], which is so important that we need to ignore the sensitivities of iwi [Māori tribe].* [S6]

In contrast, the Māori advisor said:

> *I've found that… talking with archaeologists, that they have a little bit of paralysis by over-analysis around talking about kōiwi [human remains] or other tapu [sacred] matter.* [M1]

When asked how the public has responded to the archaeological research carried out related to the town, one scientist said:

> *… overall, it's been really positive and I've been quite surprised by how positive it's been… I'm always surprised by how many people that are [at the consultation events], and how many questions they have and their level of interest.* [S3]

The research process incorporated community consultation and feedback.

> *Usually, the media will come to these public meetings, and then report on what we said and people's reaction… Then we will… give it about a month to six weeks, to give people time to talk about and answer and talk about it amongst themselves and get the feedback to the [Clutha District Council] Trust and say whether they're supportive or not…* [S1]

One community member had this to say:

> *The majority of them embraced it. It was unknown unmarked graves that were being excavated… they were trying to find out more about who was there… People embrace that part of it.* [C6]

Indeed, one interviewee commented on the importance of consultation in archaeology, noting the value of community advocates:

> *The more consultation and visibility that archaeology has within communities, the better. And the best way to do that… would be talking with those communities, who then act as advocates with… the wider community.* [M1]

As curators and creators, we considered all input in navigating the one conflicting recommendation. All community members who were interviewed were enthusiastic about the development of an exhibit, stating that it would be valued by the community.

> *Yes. Yes. Because the majority of them in that community know what's been going on. And it will be good too, for them to know the depth of it. Yes.* [H2]

Our intention was the dissemination of results of scientific research performed in the Lawrence community back to the community through their local museum.

What would you like to see in an exhibit discussing bioarchaeology?
In response to this question, scientists shared their experiences discussing human remains with public audiences.

> *When I am talking with community groups, whether it's European community groups or Māori, I'm always very honest and upfront about what it is that we do, how we do it and why we do it… I will be very careful that I am talking about their ancestors as people, rather than specimens. I think sensitivity for the people from the past, but also sensitivity for the people now, is important.* [S1]
>
> *[I] think it's really appropriate to be disseminating the results of research that is being done at an area… What we don't want to happen is for these [exhumed] people to be… sensationalized in any way. We want their real stories to be told in a way that is relatable to the community and helps to understand the history and helps them to respect and understand these people.* [S3]

Community participants expressed the desire to be as informed as possible, not wanting information from science institutions to be withheld from the community.

> *Just include everything you can… because you're learning from the opportunity from [analysing their] remains.* [C7]

The Māori advisor provided this recommendation:

> *lllustrators' displays, not photos as such but an artist's impression of that person is probably the most appropriate way to do it. Drawings of bones seem to be way less offensive within the Māori community rather than photos or x-rays of actual kōiwi [human remains] on display.* [M1]

As a result of that advice, the illustrations represented an individual Chinese Sojourner and a Woman who might have lived in that period to support the museum exhibit instead of incorporating any images of their remains. An artist was commissioned to produce the illustration of the woman, based on information on 1860's hairstyles and portraits from the era.

Muller [2020] recommends exploring complexities of individuals through integration of historical documents and archival data with information from particular skeletal and soft tissue analysis. For this exhibit, the interview and archival research data were integrated to contextualise the scientific information.

When asked about what should be included, a recommendation involved diversifying narratives to include people who might not have been remembered by history, to show a more inclusive historical interpretation. Interviews with Chinese

historians provided rich historic contextualisation to complement the scientific and archival research. Chinese historians provided stories about traditional Chinese burial culture, oral history of Chinese immigration and repatriation, and Chinese traditions and values. This information supported archival research of Chinese in New Zealand, allowing the creation of the narrative *of A Sojourner's Travels* with a deepened understanding of the burial artefacts.

Incorporating historic maps

Geographical orientation is a useful aspect of museum exhibitions [Serrell, 2015]. Three interviewees recommended the use of historic maps in the exhibit. The Tuapeka Goldfields Museum holds an array of historic maps and the museum manager advised that some Tuapeka Goldfields Museum Committee members were passionate about maps; this is an important group to have on board for changes in a small, community museum. For this exhibit, maps orient visitors to locations of the historic cemeteries in the township where the excavations took place. They also provide an interesting visual overview of the layout of the town.

Exhibit development

The resulting museum exhibit enables the Lawrence community and visitors to learn about local history and locally relevant scientific research. Local relevance was highlighted in the exhibit through a focus on the lives of goldrush settlers in the local area, bioarchaeological research within the area, and use of local artefacts, maps and photographs. Community consultation enabled us to develop objectives and messages that aligned with community values.

Key objectives for the exhibit:

- Provide insights into the value of bioarchaeological research,
- Engage with and give back to the Lawrence community,
- Share stories of individuals, not composite population images,
- Select individuals from groups that have been under-represented in other historical accounts, and
- Include relevant archival and museum materials within the display.

Key messages of the exhibit:

- The Southern Cemeteries Archaeology Project investigated unmarked burials in Lawrence's historic cemeteries.
- Bioarchaeological research of human remains can be used to infer an individual's origin, health, and diet.
- Life in the Lawrence goldfields was harsh.
- Diversity existed in the early Lawrence community.

The idea for this exhibit, with its potential to engage the Lawrence community in bioarchaeology research, was conceived during the first author's bioarchaeological research [Parker, 2019]. Researchers in the Southern Cemeteries Archaeology Project were interviewed during the development process, providing information about the cemetery excavations, their own community consultations, archaeological evidence, and human remains analysis. The Lawrence Heritage Weekend in November 2021 was identified as a key date to unveil the exhibit and discuss the research with the public.

In a museum setting, it is imperative to identify a key contact who can enable a project such as this to develop through to its ultimate public display. The Manager and Education Officer of the Tuapeka Goldfields Museum was contacted to discuss hosting an exhibit that incorporated stories based on bioarchaeological evidence. She revealed that museum visitors had expressed interest in Lawrence's recent historical cemetery excavations and would likely be interested to know more. We met on-site to look through the museum collection and explore potential exhibit placement and followed up with regular contact, including a further three site visits for in-person discussions about the exhibit.

When the exhibit was officially opened to the public, the first author was present for Q&A sessions to provide opportunities for museum visitors to discuss the exhibit (Figure 1b).

Figure 1. *Life and Death on the Tuapeka Goldfields* exhibit at the Tuapeka Goldfields Museum in Lawrence, New Zealand. a) Overview of exhibit; b) discussion of exhibit with visitors to the Lawrence Heritage Festival.

Exhibit design

A key consideration in developing the exhibit was to reference the Koru Model of science communication [Longnecker, 2016] by including information that aligns with values as determined by stakeholder engagement and can build on visitors' prior awareness, interest and understanding, with the exhibit stimulating individual meaning-making. Meaning-making refers to the process by which people actively interpret and make sense of information they encounter and how it relates to their own beliefs, values, and experiences [McKenna-Cress & Kamien, 2013].

The regional Hocken Library and national Alexander Turnbull Library collections were searched for a map of the Lawrence area which details the location of both

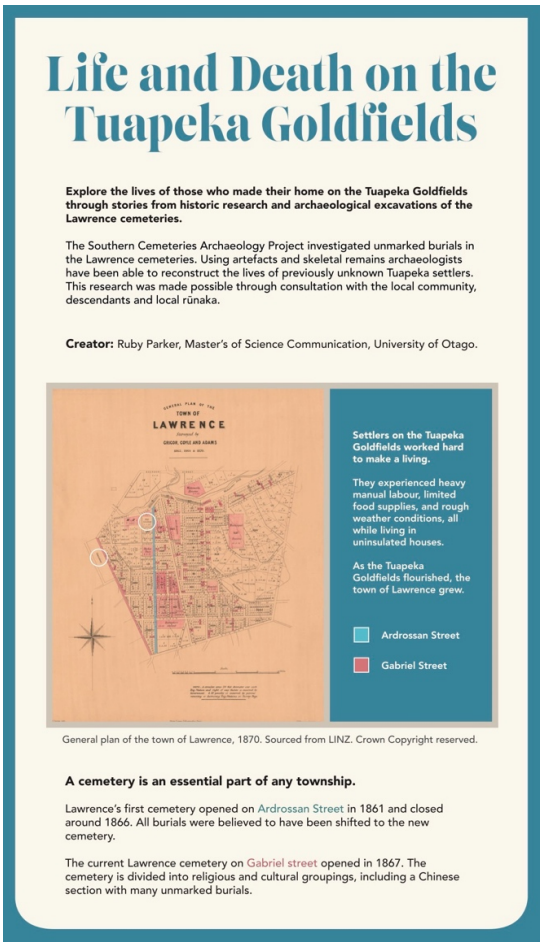

Figure 2. Central panel of the Museum exhibit.

cemeteries where exhumations took place — a historic Ardrossan Street cemetery and a newer cemetery on Gabriel Street. The map in the central panel of this exhibit (Figure 2) was an 1870 lithograph procured from the GeoDataHub from the University of Auckland Library. Visitors can see similarities to the current layout of the township and consider how it has changed over the last century. Viewers bring their own life experiences to the exhibit and view it from the lens of their identity [Longnecker, 2016; Falk, 2009]. For the local population, the exhibit allows them to connect with their pre-existing knowledge. In small community museums, archival materials such as maps can trigger a *collective memory* within the public [Taylor, 1995]. Archival material with personal relevance to visitors can be particularly appreciated in the given community [Taylor, 1995].

Storytelling

This exhibit uses storytelling as a method of sharing information [Avraamidou & Osborne, 2009; Longnecker, 2016; McKenna-Cress & Kamien, 2013]. The use of archaeological storytelling allows the information gathered to follow a common thread [Gibb, 2000] and to communicate the value of archaeology to wider audiences [Kristensen, Henry, Brownlee, Praetzellis & Sitchon, 2020]. Using an osteobiography approach [Boutin, 2011; Boutin & Callahan, 2019], we chose to tell stories about two selected individuals, as opposed to a traditional approach of

reporting bioarchaeology in interpreting population health. This allows the audience to develop a mental image of a single person and empathise with that person [Boutin & Callahan, 2019; McKenna-Cress & Kamien, 2013]. The stories are fixed in time and space [Avraamidou & Osborne, 2009]. Stories engage our emotions [Bilandzic, Kinnebrock & Klingler, 2020; Boutin & Callahan, 2019]; people are better able to remember information shared via stories [Avraamidou & Osborne, 2009; Negrete & Lartigue, 2010], which lead to personal reflection and public discussion [McKenna-Cress & Kamien, 2013].

The research described above was conducted for rich contextualization of the specific time period when these two people lived and died. While panel text is brief, to align with attention of most museum visitors [Serrell, 2015], the two osteobiography panels (Figure 3) were written to include facts that are likely to be relevant and meaningful to visitors [Longnecker, 2016; Zittoun & Brinkmann, 2012]. Encapsulating a person's life in less than 400 words is a challenge and requires the integration of resources from multiple disciplines to develop the content. By leaving out detail, the audience must fill in the blanks with their knowledge and collective memory of the goldrush [McKenna-Cress & Kamien, 2013; Taylor, 1995].

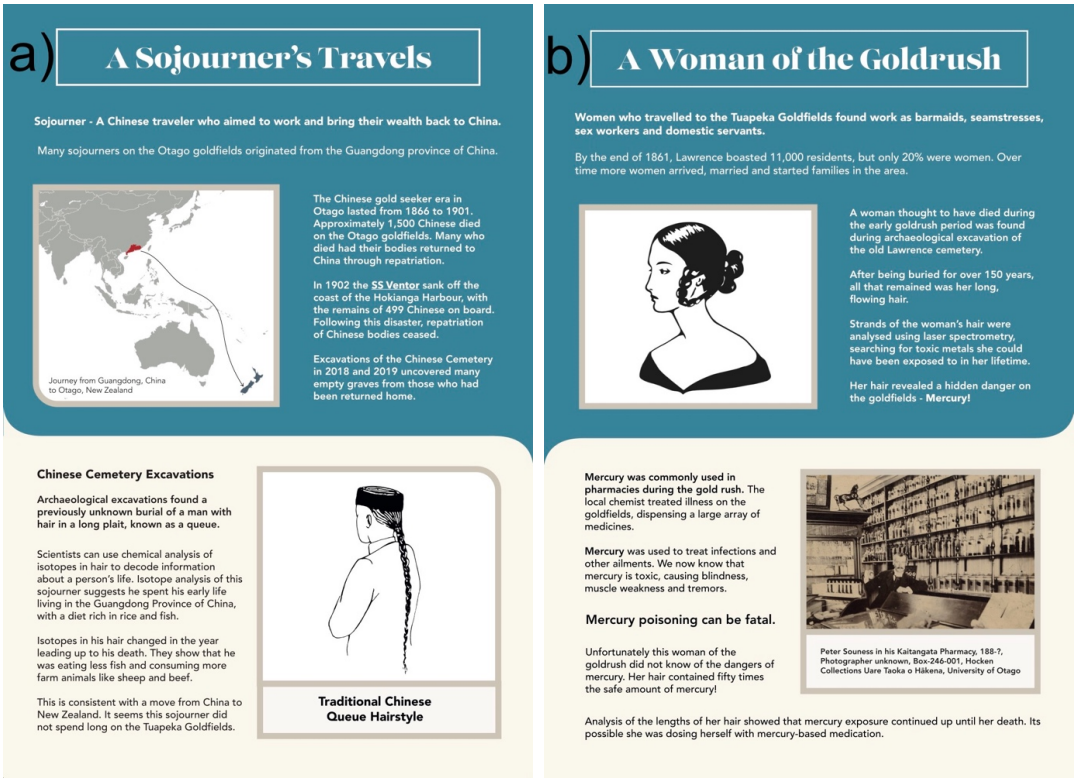

Figure 3. Osteobiography-informed panels of the exhibit and related objects: a) A Chinese Sojourner and b) A Woman of the Goldrush.

Panels

Visitors bring their prior experiences, feelings, and questions to any interaction with materials in an exhibit [Falk, 2009; Gondwe & Longnecker, 2015; McKenna-Cress & Kamien, 2013]. The panels included facts that are relevant to the

Lawrence community, written with a content-focused design to keep information relevant to the person's life being discussed [McKenna-Cress & Kamien, 2013]. Text segments were broken up throughout the panels as a strategy known to increase readability [McKenna-Cress & Kamien, 2013; Serrell, 2015]. The unique worldviews of visitors allow individual meaning-making [Falk, 2009; Longnecker, 2016; Zittoun & Brinkmann, 2012].

Labels

Labels were written to connect the storytelling within the panels to the artefacts on display (Figure 4). Labels were placed in line of sight of visitors with clean text on a white background and were placed close to the associated artefacts [McKenna-Cress & Kamien, 2013; Serrell, 2015]. Labels were written concisely to reduce cognitive effort [Bitgood, 2016] and displayed with a large font size [Serrell, 2015].

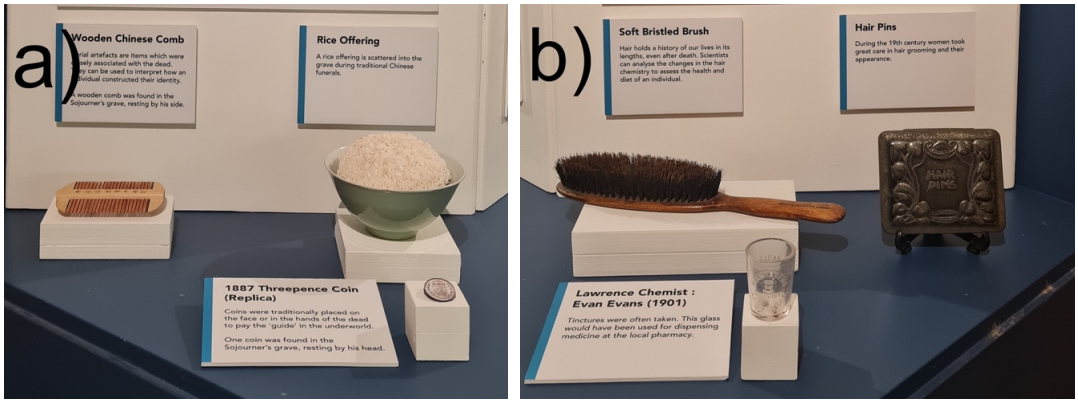

Figure 4. Objects and labels of the exhibit: a) A Chinese Sojourner and b) A Woman of the Goldrush.

Artefacts

Including artefacts attached to personal stories allows visitors to construct their own perspectives, forming historic empathy for people from a time gone by [Savenije & de Bruijn, 2017]. Exhibit artefacts invite the audience to engage by looking at the artefacts as evidence of a person's life [Savenije & de Bruijn, 2017; Scott-Ireton & Gaimster, 2012]. They invite visitors to use their imagination. This allows a connection of new information with existing knowledge and scaffolding of understanding.

Everyday artefacts can allow visitors to connect their personal narratives with the exhibit. Objects were used to elaborate the identities of the two individuals whose stories are being shared. Collection items already in the Tuapeka Goldfields Museum were used where possible, to maximise connection with the Museum. Reproductions of other objects recommended from interviews and discovered through archival research were obtained and included to support the story presented in the exhibit. Artefacts and reproductions with labels illustrate aspects of the panels' content (Figure 4). The presentation of objects encourages visitors to elaborate on personal interpretation of the meaning and value of the items [Alberti, 2005; Gondwe & Longnecker, 2015].

A Sojourner's Travels. The Chinese Sojourner burial site had an array of artefacts documented by archaeologists during exhumation, including a wooden comb, a threepence coin, and rice scattered in the grave. Interviews with Chinese historians elaborated Chinese burial traditions, including scattering rice in the grave as an offering for the dead. Items chosen for display recreated aspects of this individual's funeral. Expanding information beyond that provided in the brief text of the panel could increase visitor empathy for and potentially reduce prejudice [Boutin & Callahan, 2019] about Chinese in this mining community. The coin discovered in the burial was a British 1887 Threepence Coin, found below the head. A replica of the coin was sourced and included. The comb which was excavated from the burial had been damaged in the burial environment, losing its wooden teeth. Traditional Chinese combs were researched, and a replica obtained. The issue of display rice was a real headscratcher, as loose rice in a museum is a hazard for rodents or other pest infestation. The rice was covered with PVA glue as a sealant and formed into a mound. To present the rice for display, a ceramic bowl from the museum's Chinese collection was used.

A Woman of the Goldrush. The burial site of the Woman of the Goldrush contained no artefacts. However, her hair remained intact and was sampled for analysis [Parker, 2019]. For this reason, hair-related artefacts were used to illustrate items that could have belonged to a woman during the 1860s early goldrush period [Savenije & de Bruijn, 2017]. Utilising the Tuapeka Goldfields museum's collection, three artefacts were selected: a wooden soft-bristled brush, hairpins, and a pharmacist's medicine glass.

The brush and hair pins were selected as this individual had long hair which appeared to be well-groomed when excavated from the burial environment. The medicine glass was selected as it belonged to a historic Lawrence pharmacist that operated in 1901. This object connects visitors with information about historical chemists and ingredients of historical medicine and relates to the bioarchaeological research which found high levels of mercury in the woman's hair. This complemented information about the medicinal use of mercury at the time and relevant archival material on the panel — an image of a period-specific chemist — to bring to mind community knowledge of this period.

Feedback about exhibit

The exhibit was launched and visited by community members, interview participants and visitors during and since the Lawrence Heritage Weekend. Preliminary feedback has been provided by a variety of visitors and we recommend further work to examine impact of the exhibit.

When asked about the *Life and Death on the Tuapeka Goldfields*, Chinese historians stated:

> *[The] information has been well researched… illustrated and detailed to suit the period it belonged to.*

Chinese historians recommended changing the wording of a label description from 'underworld' to 'afterlife'. They also recommended the addition of chopsticks to

the bowl of rice. Both recommendations have been shared with the museum, to adjust the display.

When asked about the experience of creating *Life and Death on the Tuapeka Goldfield's*, the museum manager and education officer stated:

> *You already had a very clear idea of what you wanted to do [with the exhibit] and you'd also done a lot of work ahead of time to make sure that what you did fit, not just with the museum, but also with our community… This perfectly aligned with what we do, what we need, and how we want to serve our community.*

This feedback illustrates the importance of planning and prior research for successful integration of a new exhibit into an existing museum. Thorough research and having a developed science communication concept before approaching the museum facilitated acceptance and value by a small community. Interviews enabled the exhibit to be created in line with the values of the museum and the community.

Meaning-making continues at the Tuapeka Goldfield Museum, providing communication about scientific research in the community. An education program has been implemented where school-aged children investigate a box of artefacts as evidence of an early settler.

> *I did a really awesome workshop with some kids… from as young as five and the oldest 12… We looked at Ruby's exhibition Life and Death on the Tuapeka Goldfield's and discussed her findings… We [did] an activity where the kids got a box [which] represented a person who had been buried, and fictional [stories] that largely draw upon real people that did exist [in Lawrence].*

Reconstructing people's lives with the historical context they lived in has been shown to enhance public understanding of the past, and elicit empathy in child museum visitors [Savenije & de Bruijn, 2017; Scott-Ireton & Gaimster, 2012]. Future research could examine children's responses to this education programme.

Conclusions and recommendations

A community-based project design was used to communicate relevant scientific research. Considering factors that impact how individuals engage with new information as described in the Koru Model of science communication, we identified and incorporated the community's interests and considered community values when creating the museum exhibit. In doing so, we aimed to create an exhibit that adds value to a local museum's exhibits by being relevant and of interest to the local community as well as visitors to the township.

We strongly recommend community consultation, especially in development of an exhibit that may involve some controversial or sensitive aspect, such as reference to human remains exhumed from unmarked graves. Important aspects for this project included immersion of the first author in the Lawrence community, involvement of community representatives who shared their knowledge and seeking out a community event to be involved with for the unveiling of the museum exhibit.

Archaeology is a clear choice for telling stories of the past [McKee & Galle, 2000; Scott-Ireton & Gaimster, 2012]. *Life and Death on the Tuapeka Goldfields* illustrates bioarchaeological research using an osteobiographical approach which focuses on individuals. The bioarchaeological research was performed with input from the Lawrence community and so this exhibit gives back to that community and others interested in it. Science communication should consider thorny issues in relationship to the study and display of human remains, interviewing communities of concern rather than assuming their attitudes [e.g. see Buikstra et al., 2022]. Future work related to this bioarchaeological project will consider extraction, exploitation and exclusion in relation to a colonised nation's history. We will continue to use stories to explore sensitive topics from this period of New Zealand history and future research will examine whether use of individual osteobiographies fosters empathy and inclusive history in this context.

In creating the exhibit described in this paper, community attitudes, interests and values were identified through interviewing stakeholders of historic Lawrence cemeteries. Time was taken to develop the exhibit while respecting the attitudes and values of the community. Exclusions and inclusions for the exhibit were decided upon after listening and carefully considering recommendations. Exclusion of human remains or images of them is particularly important in a New Zealand context.

The inclusion of information from many sources that connect with community attitudes, interest and values provided the rich context for an osteobiographical approach to this museum exhibit. Storytelling was used to allow visitors to make sense of the scientific and historic information [Avraamidou & Osborne, 2009]. Further research should examine what meaning-making does occur in response to this exhibit. We recommend a storytelling approach as it allows diverse visitors to make meaning of the information presented [Hosek & Robb, 2019; Longnecker, 2016; Scott-Ireton & Gaimster, 2012; Simon, 2016; Zittoun & Brinkmann, 2012].

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