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Rethinking trash – a qualitative study on the heritage futures of human-waste relationships

Master`s thesis

Futures studies

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Planet Earth is currently facing several ecological challenges, one of which is the problem of waste. The term “Wasteocene” has even been suggested to characterize this era, further emphasizing the significance of waste as a pivotal factor in the development of the Anthropocene. Due to this, waste has emerged as a critically important area of academic research. However, while there exists a range of research on waste from economic or environmental points of view, there continues to be a lack of social and cultural perspectives on waste. This study approached the topic from the point of view of futures studies and cultural sustainability transformation. A key concept used was heritage futures as new intangible skills, practices, and values related to human-waste relationships in the present, aiming for ecologically sustainable futures.

The purpose of this study was to understand waste as a relational phenomenon by focusing on the futures of human-waste relationships. The objectives were to construct images of futures for human-waste relationships in 2075 as well as facilitate the co-creation of heritage futures in the present. The research methods were qualitative and exploratory. Two participatory heritage futures workshops were conducted, followed by nine semi-structured interviews. The critical futures method of Causal Layered Analysis was used in the analysis of the research data to deepen the understanding of the phenomena discussed.

As a result, this study produced four images of preferred futures for 2075. First, in *Smart waste*, technological solutions lead the way to more ecologically sustainable relationships with waste. In *Co-living with nature*, a multi-species approach guides planetary citizenship and reciprocal relationships with nature. In *A step back*, the emphasis is on thriving local communities and new social norms regarding waste and consumption. Finally, in *Rebuild*, heavy environmental problems have been tackled with strict policing and regulatory measures. Through their distinctive elements, these images of futures emphasize both societal and personal change in relation to waste.

This study also produced heritage futures co-created by the participants. The heritage futures created included new practices and regenerative actions, social responsibility, and changes in values and attitudes related to waste and consumption. Analysis of the data using the vertical layers of CLA resulted in the conceptualisation of Action, Agency, and Affect as the three spheres of transformative heritage futures for human-waste relationships.

The methodological contribution of this study is the incorporation of an archaeological perspective into the heritage futures workshop. It presented a new, distinctively material element to the workshop, drawing parallels between archaeological heritage and contemporary waste. As a theoretical contribution, this study introduced the idea of ‘future-power’ as the capacity of physical objects, such as waste or heritage, to support and enhance transformative futures thinking.

Key words: waste, human-waste relationships, images of futures, heritage futures, cultural sustainability transformation

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Jäte on yksi nykypäivän viheliäisistä ekologisista ongelmista. Useat tutkimukset painottavatkin jätteen roolia yhtenä keskeisenä vaikutustekijänä antroposeenin takana. Tästä johtuen jäte on noussut myös kriittisen tärkeäksi akateemisen tutkimuksen kohteeksi. Jätteeseen kohdistuvassa tutkimuksessa korostuvat kuitenkin usein taloudelliset ja ympäristönäkökulmat, ja tutkimusta jätteen sosiaalisesta ja kulttuurisesta merkityksestä on vähemmän. Tämä tutkimus tarkasteli jätettä tulevaisuudentutkimuksen ja kulttuurisen kestävyysmurroksen näkökulmista. Keskeinen käsite työssä on tulevaisuusperintö, joka tarkoittaa uusia aineettomia taitoja, tapoja ja arvoja, jotka tähtäävät ekologisesti kestävämpiin tulevaisuuksiin.

Tämän tutkimuksen tarkoituksena oli ymmärtää jätettä suhteessa ihmiseen keskittymällä tulevaisuuden jättesuhteisiin. Tavoitteina oli rakentaa tulevaisuuskuvia ihmisen jättesuhteelle vuonna 2075 sekä fasilitoida tulevaisuusperintöjen yhteistä luomista. Tutkimus oli otteeltaan laadullinen ja eksploratiivinen. Tutkimusaineisto kerättiin kahdessa osallistavassa tulevaisuusperintöverstaassa sekä niitä seuranneissa yhdeksässä teemahaastattelussa. Verstaissa osallistujat pohtivat ihmisen jättesuhteen toivottuja tulevaisuuksia sekä loivat yhdessä niihin liittyviä tulevaisuusperintöjä. Tutkimusaineiston analyysissä hyödynnettiin kriittisen kerrosanalyysin (CLA) menetelmää.

Tutkimuksen tuloksena syntyi neljä keskenään erilaista toivottua tulevaisuuskuvaa ihmisen jättesuhteelle vuodelle 2075. Ne tarjoavat vaihtoehtoisia näkymiä tulevaisuuksiin, joissa ihmisen jättesuhde on ekologisesti kestäväällä pohjalla. Ensimmäisessä, nimeltään *Smart waste*, korostuu uusien teknologisten ratkaisujen merkitys tulevaisuuden kestävämmän jättesuhteen rakentumisessa. Toinen tulevaisuuskuva nimeltään *Co-living with nature* painottaa monilajista lähestymistapaa osana planetaarista kansalaisuutta ja vastavuoroista luontosuhdetta. Kolmannessa tulevaisuuskuvasa *A step back*, painotus on kukoistavissa paikallisyhteisöissä ja jätettä ja kulutusta koskevissa uusissa sosiaalisissa normeissa. Neljännessä tulevaisuuskuvasa *Rebuild*, vaikeat ympäristöongelmat on ratkaistu sanktioiden ja rajoitusten kautta. Tulevaisuuskuvat painottavat sekä yhteiskunnallisia että yksilökohtaisia muutoksia jättesuhteissa.

Tutkimuksen tuloksena syntyi myös osallistujien yhdessä luomia tulevaisuusperintöjä, jotka vaihtelivat arjen konkreettisista teoista tietoiseen vaikuttamiseen sekä syvemmälle arvoihin ja asenteisiin liittyviin ajattelutapojen muutoksiin. Kriittisen kerrosanalyysin avulla tutkimus tuotti kolme kestävyysmurrosta edistävien tulevaisuusperintöjen kehää, jotka rakentuvat toiminnan, toimijuuden ja affektien ympärille.

Tämän tutkimuksen metodologinen arvo oli tulevaisuusperintöverstaan rakenteeseen tuodulla arkeologisella näkökulmalla. Verstaskontekstissa jätteen materiaalisuus toimi tulevaisuusajattelun tukena ja menneisyyden, nykyhetken ja tulevaisuuksien välisenä punaisena lankana. Tutkimus tuotti myös ajatuksen fyysisten esineiden, kuten jätteen tai kulttuuriperinnön, kyvystä tukea ja voimistaa uudistavaa tulevaisuusajattelua.

Avainsanat: jäte, jättesuhde, tulevaisuusperintö, tulevaisuuskuvat, kulttuurinen kestävyysmurros

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1 Introduction

1.1 Motivation for the topic

Planet Earth is currently facing several ecological crises, one of which is the issue of waste. Humanity is producing, consuming, and disposing of material things at an unsustainable rate. “Anthropocene” is already a widely used concept for our era, highlighting the impact of human activities on Earth’s systems, significant enough to endure through geological time (Oppermann 2018, 1–2). Within the field of discard studies, the term “Wasteocene” has even been suggested to characterize this era, further emphasizing the significance of waste as a pivotal factor in the development of the Anthropocene (Armiero 2021; Pyyhtinen et al. 2022; Massaro 2020).

The latest Global Waste Management Outlook published by the United Nations Environmental Program indicates that over 2 billion tonnes of municipal solid waste are generated annually, consisting solely of residential and commercial waste. Additionally, industrial, agricultural, construction, and healthcare waste are perpetually generated by human activities. From an ecological perspective, the negative effects of waste are threefold: contributing to climate change, biodiversity loss, and pollution. The disposal and processing of waste contaminate waters and air, accumulate in land and aquatic ecosystems, and produce carbon dioxide and other greenhouse gases. (UNEP 2024, 9, 12.)

However, to frame waste solely as an ecological threat would be to overlook its multifaceted qualities. Waste represents more than just a problem; it is also evidence, a trace, acting as a physical testament to cultural activities. The topic of this thesis is inspired by my personal background in the heritage sector. My studies in futures have prompted me to reconsider heritage as inheritance – as the legacy left by our actions and choices, encompassing both the tangible impacts on the planet’s ecosystems and the knowledge, affects, and values we gather and pass on as shared meanings and culture. I have been reflecting on how the archaeological heritage of the future is continually shaped by our everyday material practices, particularly in how humans accumulate, utilize, and dispose of materials. Traditionally, archaeology is understood as the study of the human past through material remains, with archaeological heritage often referring to the physical, tangible remains preserved from the past (Renfrew & Bahn 2020, 12). However, viewed

more broadly, archaeology is essentially the study of materiality and the interaction between humans and the material world, including the relationship we humans share with waste.

1.2 Waste as a research object

Waste is an inherently ambiguous linguistic signifier: anything and everything can become waste, and things can simultaneously be and not be waste, depending on the perceiver. (Hird 2012, 454)

But what do we actually mean by waste, trash, or rubbish? All are terms used to describe discarded objects and materials after their use. The definitions depend on human perspective; any material can become or cease to be waste. This shift can occur unintentionally or through deliberate acts of degrading or forgetting – out of sight, out of mind. Waste is where natural and cultural elements, tangibility and intangibility, different materials and meanings become intertwined, playing with the borders of the human and more-than-human worlds (Valkonen et al. 2019). After being actively made invisible for a long time, in recent decades waste has emerged as an increasingly important phenomenon in society, discussed in both negative and positive contexts, ranging from plastic in our oceans to the circular economy as an innovative economic driver. This shift highlights waste and discard as complex contemporary issues, but also as critically important areas of academic research. (Valkonen et al. 2019; Pyyhtinen et al. 2022.)

As a multidisciplinary and interconnected topic, waste can be examined from various approaches. Justin Chun-Him Lau (2023) has reviewed scientific research on waste and identified three main categories for the traditionally used approaches: waste as a resource and property, waste as a risk, and waste as a source of prosperity. The first encompasses studies focusing on the extraction of value from waste, especially from the point of view of the circular economy. Studies in the second category emphasize the role of waste as an ecological threat and in warranting inequality. Into the third category fall studies focusing on waste as an enactor of social change. However, an affective turn has also emerged in discard studies that emphasizes the agency and vitality of waste. (Lau 2023, 1583, 1597.) Inspired partially by the theoretical frameworks of new materialism, these novel approaches highlight the ethics of care and living with waste, while also emphasizing feminist, ecocritical, and more-than-human perspectives (see Hird 2012; Rogowska-Stangret & Cielemecka 2020; Tsing 2015).

A recent review article on circular economy has similarly noted that while there exists a range of scientific research from economic or environmental points of view, there continues to be a lack of social and cultural perspectives on waste, including those of micro-level everyday practices and more-than-human relations (Zavos et al. 2024). In the field of social sciences, the paradigm of circular economy as a solution to the problem of waste is increasingly challenged. The “zero-waste” perspective as the possibility to eliminate waste altogether is criticised, arguing that even when recycled, buried, or incinerated, waste persists and refuses to simply “go away”. (Pyyhtinen et al. 2023, 2, 6; Zavos & Pyyhtinen 2024.)

The continuous existence of waste is a constant reminder of the problems of the Anthropocene. The material quality of waste makes it visible and tactile in people’s daily lives, suggesting that perhaps the only way forward is to find new ways of knowing, being, and living with waste. (Hawkins 2006; Hird 2012, 456; Kinnunen & Duque 2022.) Marco Armiero, originator of the term Wasteocene, underlines that the concept does not so much refer to waste as a material entity but rather to our relationships with it (Armiero 2021, 11). Here, in these human-waste relationships, also lies the interest of this study.

1.3 The relationships between waste, heritage, and futures

The deep time of the discarded material is folded into the material and our relations with it from the very beginning, and it is important to take this temporality into consideration. Waste is what will be left of us; it is the material residue of our existence and civilisation. It is in and through waste that our present persists past its term. (Zavos & Pyyhtinen 2024, 692.)

I continue to be enthralled by the entangled connection between waste and heritage. Both are something left behind – either by previous generations or the current one – and both share a temporal timeframe spanning beyond the present. Both are assigned value and thus at least partially created in relation to us humans. Both are phenomena that need to be managed or cared for. (Harrison 2020, 42, 44.) As already discussed, waste is essentially created in relation to humans, and it is fluid in this regard. Heritage, as well, is culturally and socially constructed, interpreted, and communicated. It is not the same as history or the past; it is a contemporary product. (Auclair & Fairclough 2015, 3.)

The role of heritage in future-making is continually under discussion as museums and other heritage organisations attempt to find ways to work with futures. The preservation of the past “for future generations” is a repeated rhetoric in the museums and heritage

work, but the futures referred to are rarely questioned or problematized. There is potential in museums, for example, advocating for fair and equitable futures or acting as platforms for discussions about futures, but that potential is not yet fully addressed in the field. (Högberg & Holtorf 2024.) Cultural heritage collected and cherished by museums is not solely about the past – it can help us orient ourselves towards futures. However, it cannot, as such, help achieve cultural sustainability transformation. (Siivonen 2022, 452.)

This study approaches the topic of human-waste relationships through the concept of heritage futures. It refers to a new form of intangible cultural heritage, existing in the present, and in people's thoughts, practices, and relations with the material world. Essentially, heritage futures is about individual people co-creating new, shared meanings and skills to achieve cultural sustainability transformation. (Siivonen 2022, 452–453, 455.) The futures of human-waste relationships and how the concept of heritage futures relates to them are key points of interest in this study.

1.4 The research problem and research questions

This thesis strives to understand waste as a relational phenomenon. Though waste can be approached from a multitude of perspectives, this study is more interested in the intangible, cultural perceptions of it: human relationships with waste. Through understanding how waste is culturally defined and produced, new horizons of knowing open up for studying how these relationships could shift and evolve in the future. By taking a temporal perspective on the problem of waste, this research aims to create new knowledge on the futures of human-waste relationships.

Two research questions have been formulated to approach this topic:

RQ1: What are the images of future for human-waste relationships in 2075?

RQ2: What are the heritage futures of human-waste relationships?

This research is qualitative and exploratory. The objective of the study is to find answers to these questions collaboratively, through heritage futures workshops and following semi-structured interviews. Heritage futures workshops are a particular form of futures workshops that combine futures studies, sustainability studies, and critical heritage studies. They enable a participatory, co-creative process where intangible and living heritage – heritage futures – is the core around which new ways of understanding and

doing can be discovered. (Siivonen et al. 2022, 252–253.) Semi-structured interviews to the workshops participants are used to deepen the themes that emerge from the workshop material. The data analysis of this study utilizes a method called Causal Layered Analysis. CLA is perceived as a critical futures studies method. It aims to problematize pre-existing assumptions to find new insights and discover underlying themes and worldviews. (Inayatullah 1998, 816–817.)

As a result of this study, images of futures for the year 2075 are constructed, highlighting the preferred futures for human-waste relationships. The heritage futures created by the participants give insights into how the futures discussed can be achieved with meaningful actions, skills, and values in the present. By combining an archaeological perspective into the study of futures, this study hopes to bring forward a fresh approach to the field of futures studies. As a participatory process, this study also gives individual people the opportunity to actively participate in the creation of the futures they wish to see.

1.5 Structure of the study

After this introductory chapter, the study proceeds as follows. In chapter 2, the theoretical framework for the study is presented by introducing key concepts and approaches. Chapter 3 explains the methodology chosen for the study and proceeds to go in detail through the process of collecting and analysing the data. In chapter 4, the findings of the data analysis are presented, and answers to the research questions are shared. Chapter 5 discusses the themes that emerged and presents ideas for further study. Chapter 6 concludes this study with a summary of key observations.

2 Theoretical framework

2.1 Cultural sustainability transformation

The beginnings of sustainable development are usually traced back to the report “Our Common Future” from the Brundtland Commission in 1987. In this report, the term sustainable development was defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED 1987, 43). Since the report, sustainable development has been widely adopted into use internationally, but almost 40 years since its launch, the balancing act of sufficiency both in the present and future has not been achieved. Despite the growing amount of sustainability research, the targets of the UN's Sustainable Development Goals are not met, and the set goals for 2030 are far off track. (Independent Group of Scientists 2023, XVIII-XIX; see also Sachs et al. 2024; Abson et al. 2017.) There seems to be a disconnect between current sustainability science and the root causes of unsustainability. One reason could be that sustainability science is done in silos of distinct disciplines, though the problems are systemic. (Abson et al. 2017, 30.)

The traditional categorisation has been to divide the realm of sustainability into three: ecological, social, and economic sustainability. This categorisation has since been proven insufficient. One thing that has been seen to be missing is the sphere of culture, and there has been much discussion on where and how culture fits into the processes of sustainability. Three roles have been proposed for culture regarding sustainable development. Culture in sustainable development means that culture is seen as the fourth pillar, supporting itself mostly, and promoting ecological, economic, and social sustainability. Culture for sustainable development gives culture a more substantial, mediating, and balancing role in sustainable development. The third role, culture as sustainable development, sees culture as the foundation for all the other aspects of sustainability. (Dessein et al. 2015; Siivonen 2022.)

Theories of transformation discuss different leverage points through which transformation could most strongly be enhanced. Donella Meadows identified 12 such leverage points, with varying levels of intervention. The idea of these leverage points is that even a minor intervention through them will most probably lead to significant change. (Meadows 1999.) Current sustainability measures are mainly focusing on the shallower

points of leverage where the outcome often proves to be insufficient. The most profound and influential leverage points are on the deepest level of mindsets and paradigms: in people's behaviour, values, worldviews, and beliefs. (Meadows 1999; Abson et al. 2017, 32.) These profound points of leverage are all embedded within culture, and that is where the potential for transformation also lies (Siivonen 2022).

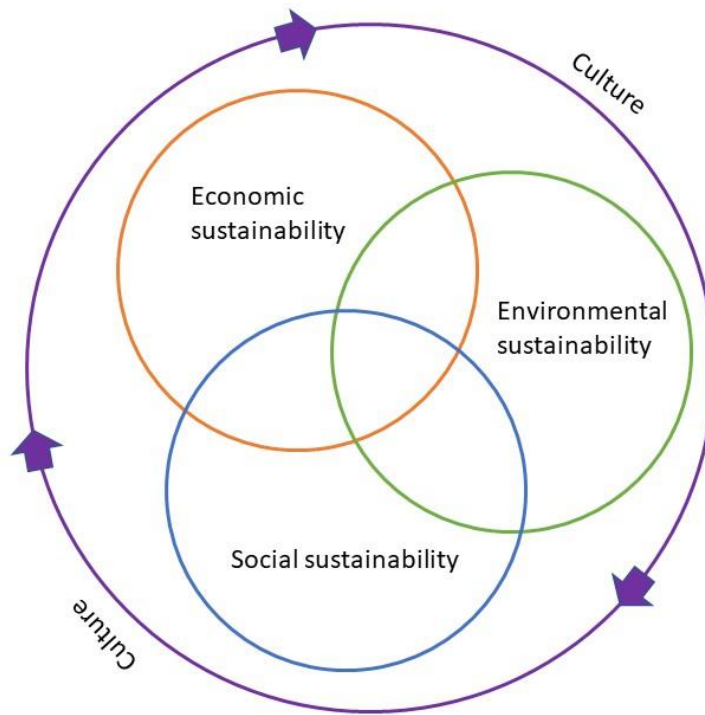


Figure 1. Culture as sustainability (adapted from Dessein et al. 2015, 29)

The paradigm of cultural sustainability transformation draws from the third definition introduced above of culture *as* sustainable development. It acknowledges that for transformation to happen, profound points of leverage such as values and worldviews need to change. In cultural sustainability transformation, culture is not approached as a structure to be preserved, but as a process under constant change. The process of culture is often metaphorically referred to as a current, ever-flowing, and changing with every interaction it makes along the way. This current of culture has no clear direction, but because transformation is in its very essence, it can act as a driver for change and sustainable development. (Siivonen 2022, 444–445; see also Hannertz 1992.)

2.2 The process of culture as anthroposemiosis

In the previous chapter, I established that this thesis embraces the perspective of cultural sustainability transformation, where culture is a process under constant change. Katriina Siivonen has used the concept of *anthroposemiosis* to further conceptualize the current of culture as a framework of meanings through which humans relate to and interact with each other and the environment. Anthroposemiosis exists within the process of semiosis, comprising of signs that represent everything there is. These signs have three components: 1) the object of the sign; 2) the representant as the entity referred to; and 3) the sign itself, the interpretant as the understanding of the relation between the first two. In interactions, new interpretations always happen; the interpretant becomes the new representant in a chain of interactions that form the process of semiosis. The term anthroposemiosis is used when humans are involved in those interactions. It is through this web of meanings that the material world becomes a part of human understanding, and also through which human understanding shapes the material world. (Siivonen 2022, 448–449; see also Siivonen 2008.)

Though signs always consist of all three components, the interpretant can be considered the most important one when it comes to the concept of culture because it is through the interpretant that the changing process of culture, or anthroposemiosis, takes place. The interpretant is never the same twice, as in every interaction the interpretant becomes the representant, again being interpreted through a new interpretant; on and on the process goes. The material and immaterial worlds; nature and human meaning-making of it, meet through anthroposemiosis. Humans affect and are affected by each other and the rest of nature as we interact with our material and immaterial surroundings. (Siivonen 2022, 448–449.) Whenever interaction happens, change also happens, and there within the anthroposemiosis lies its inherent quality: the possibility for transformation.

The change inherent in culture has no intentional direction, but can rather be unpredictable, and happen in ways humans are not conscious of. However, when perceived as a current under constant change, culture holds within it the inherent *possibility* of intentional transformation through the deepest leverage points of values and worldviews. (Siivonen et al. 2024; Siivonen 2022; see also Siivonen 2008 & Hannertz 1992.) The current of culture does not guarantee sustainability transformation in itself. To achieve an intentional transformation requires the shared changing of human ways of

thinking and doing. The shared practice means that everyone needs to have the equal opportunity to actively participate in making the change happen, through discussions and reformations of values, worldviews, and ways of doing. (Siivonen et al. 2024.)

The topic of this study, human-waste relations, is an abstract concept perhaps best understood using the framework of anthroposemiosis. A key factor in sustainability sciences is the relationship between humans and nature, and in the present, humans have become detached from nature, viewing it only as a provider of resources (Siivonen et al. 2024). Humans and waste exist in dynamic, open-ended social relations (Hawkins 2006, 3). In our current consumerist culture, both the origin and final destination of the objects and materials that pass through our hands have become blurred (Hawkins 2006, 29). However, our relationship with waste is continuously redefined in the anthroposemiosis, and through it, our interaction with the material world can be intentionally transformed.

2.3 Waste in human interactions

There has been, for several decades now, a range of scientific literature that can be referred to as waste theory. Mary Douglas' "Purity and Danger" (1966) is often mentioned as a foundational text for the study of waste. Douglas connects the concepts of waste, purity, and dirt with cultural structures. "Where there is dirt, there is system" she (1966, 35) points out, giving the cultural management of waste an almost ritualistic quality. In Michael Thompson's "Rubbish theory" (1979), the emphasis is on the valuation of certain materials as waste, and in the many ways humans attempt to distance themselves from waste and deny its existence (Thompson 1979, 20).

In these earlier examples, waste has been framed as something no longer useful; something dirty, unclean, unwanted, and uneasy. The values and emotions attached to waste are often negative. However, the affective turn that has happened also in social sciences has challenged this perspective. It can be argued that our relations to waste are more complex than the previous discourse implies, and waste cannot be simply valued dualistically to good or bad. (Hawkins & Muecke 2002.)

Waste makes us feel bad, it's presence disgusts and horrifies us, it wrecks everything – in these familiar sentiments, badness is located in the object that disrupts purity rather than in the relation between the person having the affect and that object. (Hawkins 2006, 9–10.)

This quote from Hawkins also emphasizes how waste is defined and produced through human interactions. In fact, only approaching waste as a problem can inhibit other ways of being with it. Recent approaches have studied the affective aspects of human-waste relationships, and brought forward the agency and vitality of waste, and the complex, affective engagements between humans and waste as central themes in discard studies. Thill (2015, 29) has pointed out that it “is our affective relationship to an object that makes it 'waste' in the first place”.

In “The ethics of waste” (2006), Gay Hawkins is more interested in what kind of effects waste has on us humans, our behaviour, and our relations to nature. She explores “the minefield of emotions and moral anxieties that waste can provoke” and the ways in which waste features in people’s everyday practices (Hawkins 2006, vii, ix). In her examination of waste in landfills, Hird (2012) uses a feminist lens to discuss what happens after waste has been managed and it enters the inhuman domain. Referring to Karen Barad’s (2003) inhumanist philosophy Hird conceptualises waste as a problem of inhuman knowing, beyond human determinacy and control (Hird 2012, 465).

Karen Barad’s (2003) conceptualisation of agential realism of matter relates to the wider theoretical turn referred to as new materialism, bringing forth the materiality of objects and the role of that materiality in human engagements and entanglements with material entities. Following Barad, Jane Bennett (2010) has introduced the conceptualisation of vibrant matter. She further introduces the concept of *thing-power* as the innate force within all matter, both human and more-than-human.

Bennett makes a distinction between environmentalism and vital materialism. The first still establishes a separation of culture and nature, subjecting the environment, or nature, as something to be cared for and protected by humans. The latter extinguishes the culture/nature barrier and emphasizes the heterogenous assemblage-like quality of human-nature entanglements.

Humanity and nonhumanity have always performed an intricate dance with each other. There was never a time when human agency was anything other than an interfolding network of humanity and nonhumanity; today this mingling has become harder to ignore. (Bennett 2010, 31.)

The introduction of vibrant matter makes these human-material relationships relevant in a time of ecological turmoil, and understanding the vitality of materials, such as waste, is central to any kind of sustainability transformation.

Why advocate the vitality of matter? Because my hunch is that the image of dead or thoroughly instrumentalized matter feeds human hubris and our earth-destroying fantasies of conquest and consumption. (Bennett 2010, ix.)

Building on Bennett's concept of 'thing-power', Lepistö & Pyyhtinen (2025) introduce the term 'trash-power' to understand people's affective encounters with waste. By this, they refer to the capacity waste possesses to trigger affective reactions in humans; to engage people with waste, and provoke action or an emotional response. They observe this trash-power manifesting in the lives of trash activists, for whom encounters with waste trigger both negative and positive emotions through bodily engagement with waste. They emphasize that this trash-power is not inherent in the materiality of the waste itself, but again in the interaction that happens when waste is encountered, both by humans and other materials. This resonates with the concept of 'intra-action' by Karen Barad (2003), who used it to describe how matter comes to be in relation with other subjects.

The interactions between humans and the material world are not one-sided, nor are they linear processes. Humans and the rest of nature exist in entangled relationships where humans affect and are affected by their physical environments. These entanglements rely on dependencies that can, and also have, become problematic when they form entrapments. These entrapments are lock-ins that are not easy to break free from. (Hodder 2014, 20.) For example, the circular economy could be framed as such as entrapment, as the system relies on the continuing production of waste.

It is important to be aware that many of the cultural theories of waste address the topic from the point of view of Western societies or the Global North (Bell 2019, 101). People across the Global South, and within the North as well, living beneath the poverty line do not partake in the consumerist party of overconsumption, producing the waste problem (Bell 2019, 102). The point of view of this study, as well, is from the Global North, which is where the study takes place, and where I, as the researcher, examine the world from.

2.4 Images of futures

It can be said that thinking about the future and having hopes and desires towards certain kinds of futures is a foundational part of being human (Rubin 2013, 540). This innate understanding and visioning towards futures can be conceptualized as anticipation, and it is in no way limited to humans. Rather, it is present in all realities, both living and non-living, biological and non-biological entities alike. Anticipation can be further divided into explicit and implicit. On the implicit level, anticipation works beyond our consciousness and awareness, but explicit anticipation lets us humans look into the future and let it have an impact on our current behaviour. (Poli 2010, 8, 12.)

Being aware that there is a future, wanting to know what that future entails, and projecting ideals onto that future, are strong drivers behind images of the future, which Polak describes as crystallized expectations (Polak 1973, 9–10.). In other words, images of futures depict an ideal. Anita Rubin (2013, 540) says images of futures are “formed from knowledge and flavoured with imagination”. Images of futures can be very personal and private in nature or collectively and socially shared. They can also operate on both a conscious and unconscious level. (Rubin 2013, 540.) They can also be contradictory; there can often be an especially strong conflict between images socially accepted and those held by individuals (Rubin 2013, 541).

In his theory on images of the future, Polak uses the distinctions of essence and influence as well as optimism and pessimism to further conceptualize different kinds of images of the future. Using these elements, he formulates four categories: essence-optimism, essence-pessimism, influence-optimism, and influence-pessimism. In the first two, it is perceived that humans have no agency in the unfolding of events, being merely a tool for higher powers. In the latter two, it is assumed that humans do have influence on the course of events and can therefore choose to modulate their behaviour towards the future they want to achieve. (Polak 1973, 17.)

The study of images of futures is foundational to futures studies, especially regarding their causes and consequences. It is a shared proposition among futurists that images of future do shape the actions people take and that is where the true interest lies. (Bell 2003, 81–82.) Though images of futures are essentially only imaginings done in the present, and the futures that finally emerge can be quite different from what was imagined, it has been proven that images of futures can have true impact. They can affect attitudes and

can, on a conscious or unconscious level, motivate people to strive for certain pathways. (Rubin 2013, 540.) In this way, images of futures hold great power. As I have discussed earlier, the current of culture also entails implicit change. Transformation means consciously steering that change in an intentional, preferred direction. In the framework of this study, images of futures act as a desirable direction for the current of culture.

In this study, images of futures are approached as preferable futures imaginaries. They are visionary and descriptive combinations of shared imaginings for human-waste relationships in the future. The images of futures presented in this study are based on the data collected and analysed by the researcher, and constructed into written form as narratives that are explanatory but also affective, reflecting the meaning-making and emotional input the participants shared in the workshops and interviews.

2.5 Heritage futures

Heritage futures is a central concept in this study, and needs to be discussed in detail before moving on with the study itself. As brought forward earlier, heritage futures was chosen as a perspective in this study because the researcher feels it combines perfectly the dimensions of heritage and futures, both of which are central fields of interest regarding human-waste relations.

It needs to be underlined that in the current scientific discussion, two distinct but differing definitions of heritage futures exist. The first one, used mainly in the field of heritage studies and brought forward by the UNESCO chair on heritage futures, focuses on the use of heritage in the present in relation to future-making. In this approach, heritage futures is about introducing the aspect of futures thinking into the practices of heritage professionals working in the present. This can mean the critical evaluation of preservation practices, preparing for future changes, or the use of heritage to build resilience towards uncertain futures. The focus in this approach, however, remains on the preservation of existing heritage. (Harrison 2020: Siivonen 2022, 453.)

The second definition of the concept of heritage futures is formulated by Katriina Siivonen, co-chairholder of UNESCO Chair in Learning for Transformation and Planetary Futures. Building on the notion of heritage futures by Ullrich Kockel (2002, 10), this conceptualisation combines heritage studies, futures studies, and cultural sustainability transformation. Built on the notion of culture as an ever-shifting current,

this approach defines heritage futures as a new form of intangible cultural heritage, existing only in our thoughts and actions, as well as in our relations with the material world. It is created in the present and aims towards ecologically sustainable futures. In this form, heritage futures can be new skills, practices and values an individual or a community creates and adopts. It can also mean actively letting go and abandoning practices and heritage that is perceived as harmful regarding desirable or preferred futures. (Siivonen 2022, 453–455.)

The fundamental difference between these two conceptualisations of heritage futures is in their purpose. While the first definition aims at the preservation of cultural heritage in a turbulent world, the latter definition of heritage futures gives the concept active and transformative agency in the present. Its fundamental purpose is to change, not preserve, and to build sustainable futures by providing new understanding of the planet and our place in nature. In this form, heritage futures invites people to develop aspects of their culture towards a more ecologically sustainable future. It is by nature also destructive, as it may mean abandoning old ways. Essentially heritage futures is about individual people co-creating new, shared meanings to achieve cultural sustainability transformation (Siivonen 2022, 452–453, 455.)

Heritage futures also constitutes the ethical orientation of this study. Sustainability transformations refer to fundamental, even radical upheavals of current practices and understandings. Therefore, questions of power need to be addressed (Moriggi et al. 2020, 285.) The preferred change cannot be commanded or forcefully induced from the outside; it needs to come from within, brought forward by the very people it concerns (Siivonen 2022, 447). “Future belongs to everybody” say Jungk & Müllert (1987, 9), and continue:

But where are the opportunities for those wishing to articulate their feelings and aspirations to express them so loudly and clearly that, although they started out feeling alienated and off guard, they come to see themselves as effective fellow-architects of a world in which they and their children would wish to live?

The initial aim of futures workshops in general was to strengthen the possibilities of individual people to participate in the creation of futures. In this particular study, heritage futures is created in participatory heritage futures workshops. Participatory methods such as futures workshops can empower and engage participants through discussions about futures, as well as give the researcher insight about their ambitions, fears and hopes

regarding them (Armanto et al. 2022, 222, 227.). Role of the researcher, in this context, is to help the participants visualise and articulate alternative futures and consequences of their actions. This is the ethical foundation of any futurist. (Poli 2011, 409.)

2.6 A few thoughts on care

I have already touched upon the role of care in human-waste relationships. The language of care traditionally found in spiritual or philosophical literature has increasingly found its way into a wide range of disciplines, including sustainability research. Care for the Earth and the entire biosphere are at the heart of sustainability research. Yet there is a lack of understanding of how sustainability transformations and the ethics of care actually relate to each other. Care relates to both individual and collective values and practices, which makes it relevant regarding any sustainability transformation. (Moriggi et al. 2020, 281–282, 284.)

This caring relationship with Earth has been further conceptualised as planetary citizenship. It refers to a meaningful life that transcends any barrier between humans and nature. A planetary citizen understands the physical limitations of dwelling on a planet with others. The concept entails a sense of responsibility for one's own actions, but also for everything else within this planet, human and more-than-human, including also future generations. (Salonen et al. 2024, 4.)

In the context of human-waste relationships, the ethics of care and the concept of planetary citizenship align. Waste, however negatively framed, exists on this one planet of ours. It is not going anywhere; ignoring it will lead nowhere. The only way to care for waste, and for the rest of the planet, is to actively notice it. This calls for a new kind of relation to waste that shifts away from managing and terminating it to caring for it, in all its embeddedness in our daily lives. (Kinnunen & Duque 2022, 150.) Understanding and reflecting on our affective engagement with waste, the ethics of care, and the interdependency of more-than-human relations opens up new, intriguing, and visceral perspectives to waste (Lau 2023).

3 Methodology and data

This research aimed to understand waste as a relational phenomenon. The objectives were to construct images of futures for human-waste relationships in 2075 as well as create heritage futures in the present. Because the interest of this study lies specifically in people's personal relationships with waste, the methods chosen were qualitative in nature. Qualitative research aims to understand rather than explain the phenomena it studies. This research is also empirical in the sense that it builds on data collected using specific methods. (Tuomi & Sarajärvi 2012, 21, 66.)

The methods in this study were chosen with the research questions clearly in mind. As one of the main fields of inquiry in this thesis was to study the heritage futures of waste, heritage futures workshops were chosen as the main method of data collection. In an effort to further build on the results of the workshops, semi-structured interviews were included in the methodology. For the thematic analysis of the data, Causal Layered Analysis was chosen, with the aim of deepening the analysis and the construction of the images of futures. In the following sections of this study, the methods and their design are introduced in detail, and some ethical considerations are presented.

3.1 An archaeological approach to studying futures

While this study focuses on futures and employs futures methodology, the research design also thematically links together archaeological collections and contemporary waste. Archaeological material is what people have left behind in the past; waste is the physical trace humans leave behind in the contemporary world. This juxtaposition is, of course, not a new idea nor did I conceive it myself. Archaeological study of contemporary material culture has been conducted for example on sites such as landfills (Harrison & Schofield 2010; Rathje & Cullen 1995).

The field of archaeology studying the very recent and contemporary past has grown significantly in the 21st century (Harrison & Schofield 2010, 4). Using the same methods used to study the distant past, an archaeological approach or perspective to the present-day material culture can provide new insights, even though the subject matter might seem already well-known. Compared to other scientific disciplines, archaeology has three strengths as a field: a focus on materiality, time depth, and knowledge of fast and slow processes of change. (Harrison & Schofield 2010, 5–6.)

Though here named archaeological, the approach employed by this study could just as well be named a *material* approach to studying futures. The tactile materials used in the workshops act as tangible points of reference for the mental time travel through past, present, and future. The archaeological perspective still felt important to be articulated here, as it does strongly pertain to my own professional background and therefore substantially informed also the design of this study and the methods chosen. In the methodology, this archaeological approach is incorporated into the heritage futures workshops, where archaeological survey methods are applied, and parallels are drawn between archaeological finds material and contemporary waste.

This perspective also forms the methodological contribution of this study. While the existing heritage futures workshop method was used in this study, I adapted it to suit my own vision for the workshop. The pre-workshop exercise that will be introduced later was my own addition to the workshop method, as well as the use of contemporary trash in envisioning futures. The latter physically incorporated the present timeframe into the workshop process, which was not in the workshop's original design.

3.2 Heritage futures workshops

Heritage futures workshops are a particular form of futures workshops that combine futures studies, sustainability studies, and critical heritage studies. They are a rather new form of futures methods, developed in 2020–2022 as part of a collaborative *DYNAMO – Dynamic Museum and Heritage Futures Workshop as instruments for ecological reconstruction* project¹. They enable a participatory, co-creative process where intangible and living heritage are the core around which new ways of understanding and doing can be discovered. (Siivonen et al. 2022, 252–253.) Though they were designed especially with museums in mind, heritage futures workshops can be used in any context. What is essential is the interplay between the past, present, and future to understand change and create heritage futures (Paaskoski et al. 2022, 26). The heritage futures workshop method is novel and still being developed further, with a limited amount of scientific literature yet published on it. However, it is closely related to other types of futures workshops, which are a traditional and well-researched method of futures research (see Jungk & Müllert 1987; Armanto et al. 2022).

¹ <https://sites.utu.fi/dynamo/en/>

This particular type of futures workshop was chosen for this study as the concept of heritage futures is at the core of this research. The method also intrinsically allowed the incorporation of an archaeological perspective into the workshop, something that I personally was keen to explore. In favour of this method was also the fact that my professional background is in the museum sector, and this particular method had been developed especially in collaboration with museums. Therefore, there was a familiarity to it, even though this was the first time I designed and facilitated a heritage futures workshop.

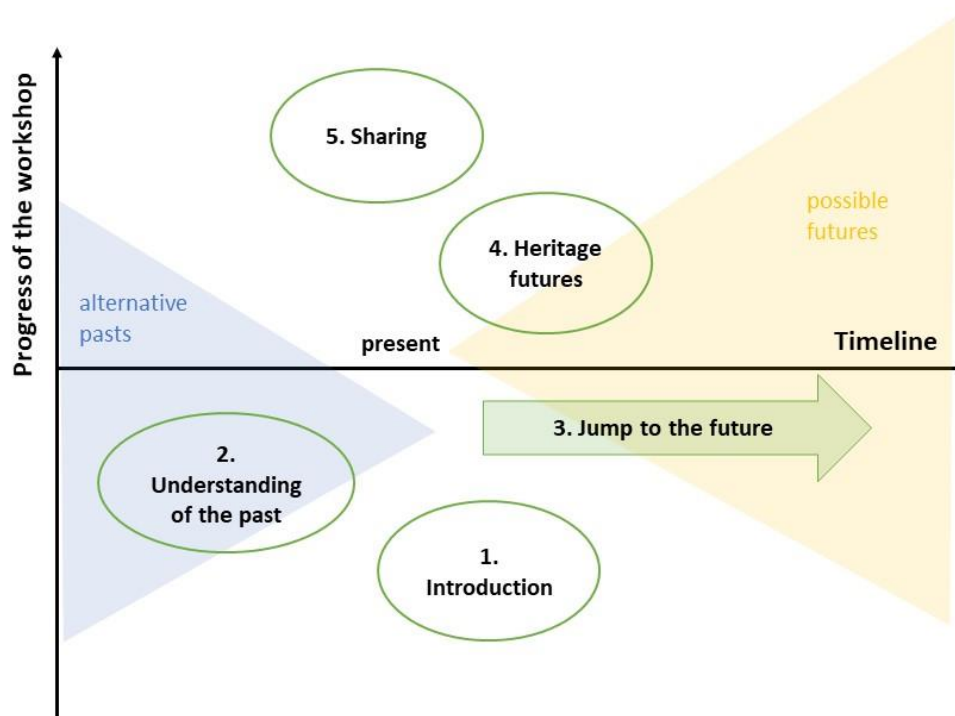


Figure 2. The progression and phases of a heritage futures workshop (adapted from Paaskoski et al. 2022, 26)

The general process of a heritage futures workshop is described in the picture above. It has five distinct phases, which guide the participants from the present into the past and then into the future, finally coming back to the present at the end (Siivonen et al. 2022, 255; Paaskoski et al. 2022, 25–26). The workshop begins with an introduction (1), that is meant to be thought-provoking. The second phase focuses on the past (2), emphasizing how in the past choices were made that have led to the present. From the past, the

workshop makes a time jump into the future (3). This phase introduces the planetary boundaries into the workshop process, emphasizing the need for imagining futures within the limits they set. The jump can be made easier with creative exercises. The fourth phase of the workshop brings the timeframe back to the present (4). Here the focus is on heritage futures, which can be the shared creation of new meanings or new ways of doing regarding the phenomenon at hand. In the last phase (5), experiences are shared and reflected upon. Emphasis is put on changes in the participants' own thinking and behaviour, as well as any new insights produced during the workshop. (Siivonen et al. 2022, 256.)

Since the DYNAMO project, heritage futures workshops have been used by different institutions, and they have even been adapted for use with children (Tiainen 2023). Currently, they are used and further refined in the SISU – *Sufficiency solutions for a resilient, green, and just Finland*² project to co-create heritage futures related to sufficiency.

3.2.1 Workshop setting and design

The two workshops in this study were organised in the autumn of 2024 at the Aboa Vetus Ars Nova museum in Turku. This location was chosen because it is the only archaeological museum in Finland, combined with a contemporary art museum. The archaeological section of the museum is an *in situ* museum, comprising the remains of several medieval stone houses dating from the 13th to the 15th centuries, discovered in archaeological excavations. Alongside the ruins, tens of thousands of objects have been recovered in the museum's excavations. Many of them can be considered waste, disposed of by the people of that time. (Jokela & Lehto-Vahtera 2012, 26, 48.) Therefore, the museum and its collections were thematically related to the topic of waste, and allowed the drawing of parallels between contemporary waste, which was central to this study. The location also had practical advantages: it provided the possibility to use both exhibition spaces and a workshop space needed for the workshop. The museum is situated in the city centre, which also makes it easily accessible for the participants.

The design of the workshops in this study followed very closely the exemplary script published in the DYNAMO projects handbook (Paaskoski et al. 2022). The provided

² <https://sisu-stn.fi/en/>

script was modified to suit this study's topic and aims, with special regard to the archaeological approach implemented into the design. As I anticipated that the participants might find the topic of human-waste relationships abstract and difficult to approach, special attention was placed on physical elements in the workshop. I designed a pre-workshop exercise in the form of a trash walk to act as an additional introductory phase leading into the actual workshop phases. I also wanted to use contemporary, physical trash in the workshop, instead of using, for example, only visual elements such as pictures. The trash collected during the pre-workshop exercise enabled the gathering of workshop material as a part of the process.

In the design of the workshop, special attention was paid to a few points. Firstly, it was acknowledged that there was a need for space in the timetable for the participants to have time to think and reflect on what was being discussed. A relaxed atmosphere contributes to the participants' imaginations running freely (Jungk & Müllert 1987). Secondly, thought was put into how the jump to the future was facilitated, because it can be a difficult phase for the participants if they are not used to imagining and discussing futures. Thirdly, the importance of bringing the discussion back to the present after the future jump was stressed, as that phase is when the heritage futures is created, which is the key essence of this form of futures workshop.

3.2.2 Inviting the participants

The participants for this study were invited through my personal connections both within the field of archaeology and futures studies. Though a more varied composition of participants could have been achieved by reaching out to a wider audience, given the scope of this study, a more limited invitation was considered sufficient. The participants were approached with an open invitation several weeks before the workshops took place (see the invitation letter in Appendix 1). Invites were sent to people's personal emails but also to general email lists such as the "Indy" email list maintained by the department of archaeology at the University of Turku and the futures studies students lists maintained by the Finland Futures Research Center. Initially, 12 people signed up for the workshops, but in the end, only 11 of them participated. The final participants represented a wide range of ages from young adults to middle-aged. Out of the participants, three were men and eight were women. Six participants were from Finland, and the rest represented multiple nationalities.

As the invitees had an international background, it was decided already in the invitation phase that one of the planned workshops would be carried out in Finnish and the other one in English. The initial idea was that there would have been more mixing of the participants coming from the fields of archaeology and futures studies. In the end, this did not quite come through and could have perhaps been better approached with more personal and detailed invitations.

3.2.3 The progression of the workshop

While there exists some published material on heritage futures workshops, it is at the moment only in Finnish. Therefore, in the following sub-chapters, the distinct phases of the workshop are introduced in detail, with some explanation of how the phases were approached in this study. As mentioned before, the workshop was designed around the exemplary script provided in the DYNAMO projects handbook (Paaskoski et al. 2022). However, the pre-workshop exercise is not a part of the original design of the workshop. This is my personal contribution to implementing the archaeological and material approach to this study. The workshop script used in this study can be found in the appendices (Appendix 2).

3.2.3.1 Pre-workshop exercise

The pre-workshop exercise in the form of a “trash walk” was designed to take place right before the actual workshop. The exercise was a derivation of the archaeological research method of site surface survey. It is used to examine a site without excavation by walking along the surface of a site and studying visible features, documenting, and collecting artifacts. This method can give archaeologists insight into the layout and possible dating of a site and even help identify different areas of activity. (Renfrew & Bahn 2020, 97, 99.)

The exercise was carried out in the vicinity of the museum where the workshops took place. The participants were given gloves and trash bags and instructed to walk an assigned route and pick up everything they considered to be trash. They also had the right to leave on the ground anything they did not wish to touch or pick up. The participants all followed the same route but quite organically spread out to cover a wider area. At the end of the exercise, all the trash collected was carried to the workshop.

This exercise had several planned aims. The first was to guide the participants into the theme of the workshop through physical activity, allowing them to distance themselves from whatever they were doing previously to the workshop. The second aim was to make the participants observe the city space from a specific point of view and make decisions about what in that landscape they considered to be trash. The third aim was to collect trash, which was used at a later phase in the workshop. The fourth purpose was simply to jointly do a small act of good for the environment, as a concrete example of the heritage futures theme discussed later on.

Apart from my own observations, the trash walk was not documented with other methods. An audio recording in a crowded outdoor environment would not have been possible, and the participants were spread out during the exercise. The trash walk ended at the museum entrance, where the groups were joined by the few workshop participants who had opted not to attend the trash walk. The participants were then guided into the workshop location, which was a meeting room inside the museum.

3.2.3.2 Workshop introduction

The actual workshop began with an introduction that consisted of both a short word exercise and an introductory lecture given by the researcher who also facilitated the workshop. The aim of this phase is to give the participants a general view of the topic in question, but also to be thought-provoking (Paaskoski et al. 2022, 26). To not start the workshop off with passive listening, I instead opened the workshop with an active exercise, supporting the agency of the participants. This also allowed them to reflect on the trash walk experience that most of them had just participated in.

First, in the introductory exercise, participants were asked to write down any words that came to their minds when they thought about waste. This was a short task with only three minutes to write down as many words as they could come up with. After writing, participants were asked to read out loud the words they wanted to share with the rest of the group. However, this was not mandatory. The main purpose of this word exercise was to help the participants connect with the theme of the workshop. At the end of the exercise, it was pointed out that the words written down by the participants were all descriptive of their personal relationships with waste.

After the sharing and discussion, the facilitator gave a short introduction to the topic of waste through a PowerPoint presentation. The aim was mainly to give the participants background on why waste is a sustainability problem from an ecological perspective. In the PowerPoint, images and information from the UNEP Global Waste Management Outlook were used (UNEP 2024). At the end of the introduction, the facilitator gave an overview of the workshop program and timetable and asked whether the participants had any questions relating to the workshop process. At this stage, the participants also gave their informed consent to participate in the research by reading a privacy notice and signing a consent form.

The introduction phase produced data in the form of large sheets of paper with post-it notes that the participants wrote during the introductory exercise.

3.2.3.3 Understanding the past

The purpose of this phase of the heritage futures workshop is to look at the topic in question from the point of view of the past and discuss how, in the past, similar to the present, choices were made that resulted in the present (Paaskoski et al. 2022, 27). This phase of the workshop took place in the museum's archaeological section, Aboa Vetus, which is situated underground. This required the participants to physically move downstairs, descending from the workshop space (or the present) under the ground (to the past). Walking down the stairs into the museum space is also a corporeal experience. The air in the basement is significantly cooler than normal room temperature, the space is dimly lit, and there is a certain earthy smell in the air, as one is quite literally in a basement. This kind of corporeal experientiality is one of museums' superpowers and can help participants adjust to the situation, feed their imagination, and thus make mental time travel easier (Paaskoski et al. 2022, 15). It has been studied that corporeal and multisensory elements can also support futures thinking by making it easier to imagine change and alternative possibilities, and by directing participants' thoughts towards futures (Tuittila 2017, 54–55).

Once inside the museum, I gave a brief introduction to what the place was: a museum built around an archaeological excavation, with the ruins and artefacts of the old city presented close to where they had been found (Jokela & Lehto-Vahtera 2012). I then went on to explain that archaeological heritage can also be perceived as the waste of past generations. After the participants settled down on chairs that had been reserved for them,

they were asked to close their eyes and relax. The closing of eyes heightens other senses and can make the participants more aware of smells, sounds, or the feeling of air on their skin (Tuittila 2017, 54). I then read out loud a short text, which described the city space some 500 years ago (see Appendix 2). The aim of the text was to help the participants mentally travel back in time and imagine how the city would have looked back then, what the soundscape would have been like, and what kinds of activities could have taken place on this plot.

After the reading, the participants were introduced to a specific material that would be used in the workshop: the contents of a waste pit dating to the turn of the 15th and 16th centuries. The pit contained significant amounts of window glass, as well as fragments of both glass and stoneware vessels, animal bones, and iron nails. (Aalto et al. 2025.) The participants were first given time to look at the material and even take some objects in their hands. Then they were asked to discuss and analyse the material from the point of view of human-waste relationships. Why were these materials disposed of? What kind of events might have occurred that led to their disposal? What could the past person's relationship with waste have been like?

The participants discussed these questions in pairs or small groups, making notes on A4 sheets of paper and Post-it notes. As the facilitator, I followed the discussions and sometimes answered questions if the groups felt uncertain of what they were supposed to do. However, after the discussions started to roll, there was not much need for me to intervene, and my role was merely to observe and make written notes. At the end of this phase, the participants were asked to share what they had discussed in pairs or in the smaller groups, as I thought it was nice to share their insights already at this point. Once the sharing was over, I thanked the participants for the discussions.

This phase produced data in the form of A4 sheets of paper with Post-It notes where the participants wrote down their thoughts. The discussions in the first workshop were also audio recorded. In the latter workshop, the discussions of this phase were only partially recorded due to my mistake. I also wrote down my own observations as facilitator.

3.2.3.4 Jump to the future

This phase of the heritage futures workshop aims to provide the participants with inspiration and creative support to make it possible for them to imagine alternative

futures. The longer the time jump is required from the participants, the more supportive elements there should be to make it possible for them to imagine alternative futures. (Paaskoski et al. 2022, 27; Siivonen et al. 2022, 255–256.) In the design of this particular workshop, both a short narrative and tactile elements in the form of trash were used to support the time jump into the future. Using the trash collected during the pre-workshop exercise as the basis for discussions about the future was something not originally in the design of the heritage futures workshop. This was part of my own design, with the aim of juxtaposing the present with the future through the use of the material.

Physically moving from the underground museum to the workshop space on the 4th floor of the museum functioned again as a good transition between the past and future. Once back in the workshop space, I explained that they would once again time travel, this time 50 years into the future, to the year 2075. I asked the participants to take a comfortable position, sitting or standing, and close their eyes if that felt like something they would like to do. Then I read out loud a short text I had prepared. It envisioned a world 50 years from now, where many of the ecological problems of the present had been solved and people had found a way to live with nature, as nature. The text was not very descriptive, but operated more with abstract visions and emotional elements, leaving enough room for a variety of possible imaginaries (see the workshop script as Appendix 2).

Once the participants opened their eyes, I explained that they had been transported to 2075. They were now in a museum of the future, looking at objects that people in 2024 had thrown away. By this stage, I had quickly arranged the trash collected by participants on the trash walk before the workshop into a small exhibition, arranged by material or with similar artifacts next to each other. Participants had a moment to just look at the collected material from the perspective of the people of 2075, before I guided them into a joint discussion.

The purpose here was to draw clear parallels between the archaeological finds material that was used in the previous phase to elicit discussions about the past, and this contemporary trash that was now being looked at and discussed from the perspective of the future. Similar to what was done in the time jump to the past, the participants were asked to reflect on the trash, but this time from the point of view of people in the future. What was familiar or unfamiliar to them? What kind of changes could they perceive had taken place in their imagined future in comparison to the trash of 2024? What kind of

human-waste relationships existed in this imaginary world of 2075, and how did they manifest in that world?



Figure 3. Collage of some of the trash collected during the workshops

The participants were not specifically asked to produce images of futures but rather to discuss possible futures. The discussions and insights the participants had in this phase produced the data that I would later use to construct the images of futures in this study. Of course, when discussing preferred or desirable futures, a key ethical question is whose futures are being discussed (Poli 2011, 405). The short narrative I read out loud at the beginning of this phase naturally guided the participants' visioning of futures, even though I aimed to make it as open as possible.

This phase produced data in the form of audio recordings and hand-written notes by the participants on Post-It notes and large sheets of paper, as well as notes that I wrote down as an observer.

3.2.3.5 Heritage futures

In this phase, the participants took their last mental time travel back into the present. The aim of this phase is to take all the revelations and ideas that have formed during the workshop and the time jumps, and to turn them into meaningful heritage futures in the present (Paaskoski et al. 2022, 27). I briefly explained again the concept of heritage futures, to remind participants what it referred to: intangible heritage that is deliberately aimed at more ecologically sustainable futures. The participants were asked what that could mean for the topic of human-waste relationships. They were asked to think about the futures just visited, now from the point of view of the present. What kind of choices, actions, or new habits could they create as heritage futures for human-waste relationships?

To create concrete and actionable heritage futures, the group was guided to think about the concept from a very practical perspective. What could they do differently in the present? What kind of new skills or practices could they adopt? The participants were first given some time to think about the topic by themselves and, if they wanted, to write down some notes. After that, the participants were guided into a group discussion. There was no specific structure to this discussion, but the trash collected previously remained before the workshop remained visible on the table during this phase as well, and some participants clearly used it as inspiration and a tool for thinking.

This phase produced data in the form of Post-It notes written by the participants on large sheets of paper, as well as audio recordings of the discussions held during this phase.

3.2.3.6 Conclusion of the workshop

In the concluding phase of the heritage futures workshop, the purpose is to reflect on the process and share insights gained (Paaskoski et al. 2022, 35). In the workshops of this study, sharing was in a smaller role as the participants had, for the most part, had all the discussions in the different phases as one group. Emphasis was put on reflection; what had been done during the workshop, and what were the key insights to be taken home. The participants were also asked to anonymously fill out a short feedback form. They were asked both about their experience of the workshop and their current mood, but also

asked to name heritage futures they would be taking with them from the workshop (see Appendix 3 for the blank feedback form).

The main purpose of this feedback was to give the facilitator a general view of how the workshop functioned from the viewpoint of the participants. As this was my first time facilitating a heritage futures workshop, feedback on the practical aspects of the workshop, such as pacing, was also considered useful. Most important was whether the participants had felt they understood the purpose and aims of the workshop and whether the instructions received were clear and understandable. The feedback received also partially informed the questions for the follow-up interviews, which will be presented in the next section.

This phase produced data in the form of the feedback forms filled by the participants, as well as audio recordings of the discussions held.

3.3 Follow-up interviews

Interviews are a common method of inquiry in qualitative research. Simply put, they allow the researcher to ask the interviewees what they know or think about the research topic. Asking questions can be perceived as a rather fundamental approach to problem-solving in everyday social occasions. (Tuomi & Sarajärvi 2012, 71; Tiittula & Ruusuvuori 2005, 9.) Research interviews are traditionally divided into two types, structured and unstructured. The first one follows a tightly prepared script of questions, while an unstructured interview resembles more a conversation. (Tiittula & Ruusuvuori 2005, 11–12.) This study used semi-structured interviews that fall somewhere in the middle of the two ends. They follow a pre-set script, but also allow flexibility as opposed to a strictly structured query. An example of semi-structured interviews are thematic interviews, where key points of interest in a thematic interview are the interpretations and meanings given by the interviewee to the topic in question. (Tiittula & Ruusuvuori 2005, 11; Tuomi & Sarajärvi 2012, 73.)

Though the main idea behind an interview is relatively simple – asking people what they think or know of the topic – there are several elements that need to be taken into account when preparing and conducting an interview. First of all, an interview needs to be understood as a conversation, a dialogue. The interaction between interviewer and interviewee is central. (Tiittula & Ruusuvuori 2005, 13.) In a dialog, the researcher is not

merely an interviewer posing questions, but an active participant in a discussion, and the researcher's own perceptions and understandings become a part of the process. (Tuomi & Sarajärvi 2012, 78-79.) In an interactive situation, observation is an important element in an interview. The interviewer gains knowledge not only by what is being said, but also by how it is said, and through what is not mentioned. (Tuomi & Sarajärvi 2012, 73.)

3.3.1 The role of the interviews

When designing this study, I reflected on a phrase describing the outcome of a heritage futures workshop. It stated that the most important result of a heritage futures workshop is the heritage futures leaving the workshop in the thoughts of the participants (Paaskoski et al. 2022, 26; see also Jungk & Müllert 1987, 72–73). In an attempt to understand what it is that actually leaves the workshop in the participants' thoughts, this research was designed to also include semi-structured interviews that follow up on the workshop activity. The main purpose of the interviews was to find out what the results of a heritage futures workshop are from the point of view of a participant; what do the participants deem as important, and what can the participants recall overall of a workshop afterwards?

Riikka Armanto (2024) has studied how futures workshops affect the participants thinking and acting on futures. Her results show that taking part in a participatory process such as a futures workshop can affect futures consciousness and empower futures thinking, but this effect is not evident, nor should it be taken for granted. She also observed that the time elapsed between the workshop activity and follow-up surveys or interviews is relevant; enough time gives participants the opportunity to process the experience and integrate it into their daily lives. (Armanto 2024, 11.)

In this study, the workshop participants were interviewed approximately 1-1,5 months after the workshop. This was shorter than the presented time gap in Armanto's example above, but was considered still long enough by this researcher to give the participants time to reflect on the experience. As it later turned out, this was a long enough time for the participants to have already forgotten some of the contents of the workshop. Therefore, in afterthought, this can be considered a reasonable choice for a time gap.

It is also important to point out that the participants were informed of the follow-up interviews already when they signed up for the workshop. At the beginning of the workshop, they were reminded of the matter, and the same consent form was used for

both the workshop and interview materials. However, on every occasion, it was made clear that participation in the interviews was voluntary, and taking part in the follow-up interviews was not a prerequisite for taking part in the workshop. Eventually, 9 out of 11 workshop participants also participated in the interview.

3.3.2 Interview design and implementation

The interview script was designed as a thematic interview structured around the research questions of this study: “What are the images of future for human-waste relationships in 2075?” and “What kind of heritage futures can be created in relation to these images?” The interview script used can be found in the appendices (Appendix 4).

First, some background questions were included in the interview script with inquiries about the participants' experience with futures processes and the role of futures thinking in their everyday lives. They were also asked about their personal relationship with waste; whether that was something they had actively thought about prior to the workshops, and how their relationship to waste manifested in their everyday lives.

The actual content questions of the interview guide focused on the workshop. The participants were first asked what they recalled from the workshop after the 1-1,5 months hiatus, in the form of central ideas or key insights of the discussions. After this, the researcher read a short summary of the themes collected from the workshop material, and asked the interviewees for any details or observations they would like to add to the them. The first segment of the interview focused on the alternative futures for 2075 imagined during the workshop. The interviewees were asked to estimate which themes they personally assessed as the most important developments regarding preferred futures of human-waste relationships and were then asked to assess how they perceived their own ability to influence these developments. The next segment focused on heritage futures. The interviewees were asked about the shared heritage futures created in the workshop and whether any new insights had emerged regarding this after the workshop. They were also asked to assess if participating in the workshop had led to any changes in their actions, behaviour, or thinking as a part of their everyday lives. Finally, they were asked to assess whether participating in the workshop had in any way changed how they thought about futures.

All together nine interviews were carried out in this study, four of which were carried out in Finnish and five in English. Seven of the interviews were conducted in person, and two online. In person, the interviews were arranged either at the university or at the Aboa Vetus Ars Nova museum where also the workshops took place. One took place at a downtown café on the request of the interviewee. The online interviews were conducted via the Zoom platform.

3.4 Description of the research data

The data gathered during the study consisted of audio and video recordings, hand-written notes by both the participants and the researcher, feedback forms filled by the participants, and some photographs, as well as consent forms signed by the participants to give their informed consent to participate in the study. All the data remains in the custody of the researcher, as the university, for the time being, has not been able to provide an option for archiving. As stated in the privacy notice to the participants, the data will be stored for a maximum of five years after the completion of the study, after which it will be destroyed.

Altogether, the workshops produced 15 large sheets of paper with hand-written notes both on the paper itself and on Post-It notes, as well as 8 sheets of similar notes on A4 papers. Most of the discussions in the workshops were recorded on audio. An exception were the trash walks that preceded the workshops, as was already mentioned. In one of the workshops, the phase taking place in the past was only recorded partially due to my own mistake. Altogether, the audio recordings for the two workshops are 2 hours 50 minutes, which amounts to 76 pages of transcriptions. The workshops also produced hand-written notes made by the participants on large sheets of paper as well as on post-it notes. In addition to my written notes of the workshops, I also took photographs to document the trash collected during the trash walk exercise and used in the workshop.

The interviews were either done in person or via an online video service (Zoom). For the in-person interviews, audio was recorded. For the interviews done via Zoom, both audio and video were recorded. The duration of the interviews varied between 29–71 minutes. Altogether, the interview recordings amount to 5 hours and 44 minutes, which came out as 103 pages of transcriptions.

3.5 Data analysis

3.5.1 Qualitative data analysis

After data is collected, it remains silent until the researcher analyses it. Through analysis, the data gathered from the participants turns into research output. Theory provides the basis for a researcher's thinking, and theory-based abstraction is the means to take the phrases and information gathered from the participants, and turn into scientific knowledge. (Åström 2005, 31.)

There exists a variety of methods for qualitative data analysis. Content analysis is a basic method in qualitative research that also functions as a basis for many more complex and detailed analysis methods. The basic structure of data analysis proceeds as follows: 1) deciding what is interesting in the material (what in the data relates to the research questions), 2) distinguishing and collecting relevant information in the material (everything else should be left outside of the study), 3) categorizing or thematizing the material (commonly known as coding) and 4) writing an overview of the findings. (Tuomi & Sarajärvi 2012, 91–92.)

Ruusuvuori, Nikander and Hyvärinen (2011, 11) divide the analysis of interview material into three phases: categorisation (coding), analysis and interpretation. They emphasize that in practice these phases often overlap but they are still distinct and all needed to have a full-rounded analysis. They also add a fourth important phase: discussion with the material. In this phase, the results of the study are connected to a wider theoretical frame, and in a way, the discussion also invites the reader to ponder the themes. (Ruusuvuori, Nikander & Hyvärinen 2011, 29.)

It is important to be firm about what to look for in the interview material, as there often is much interesting information available that is, however, not relevant to the research. The researcher needs to keep the research questions in mind when going through the material and focus only on what is considered relevant information regarding the research questions they are attempting to answer. (Tuomi & Sarajärvi 2012, 92.)

In the data analysis, this study employs a specific framework for called Causal Layered Analysis, which will be introduced next. Therefore, the approach of this study can be labelled deductive, as it uses existing theory as a framework for data analysis (Tuomi & Sarajärvi 2012, 95).

3.5.2 Causal layered analysis

Causal layered analysis, often referred to as CLA, is a critical futures research method developed by Sohail Inayatullah (Inayatullah 1998; Inayatullah 2009). It is a layered analytical tool that, according to Inayatullah, aims at disturbing present power relations, problematizing pre-existing categories and assumptions, and deconstructing the future (Inayatullah 1998, 816). Inayatullah himself considers CLA a transformative approach, as the purpose is to also reconstruct the futures after the deconstruction has taken place, by discovering alternatives. (Inayatullah 1998, 817–818.)

In the CLA process, the aim is to move vertically between four layers of inquiry, which are litany, social causes, worldview, and myth/metaphor. The first layer of litany includes popularized and exaggerated trends and problems, media headlines and issue that are often quantifiable. The second layer of social causes interprets the litany and includes the economic, cultural, political, and historical factors as well as actors involved. The third layer of worldview is meant to reveal the deeper social and cultural structures and worldviews that affect the discourse and pre-existing assumptions behind the previous layers. The fourth layer in the analysis are the deepest, often even unconscious myths and metaphors, such as archetypes featured in stories or even movies. (Inayatullah 1998, 820; Inayatullah 2009, 8.)

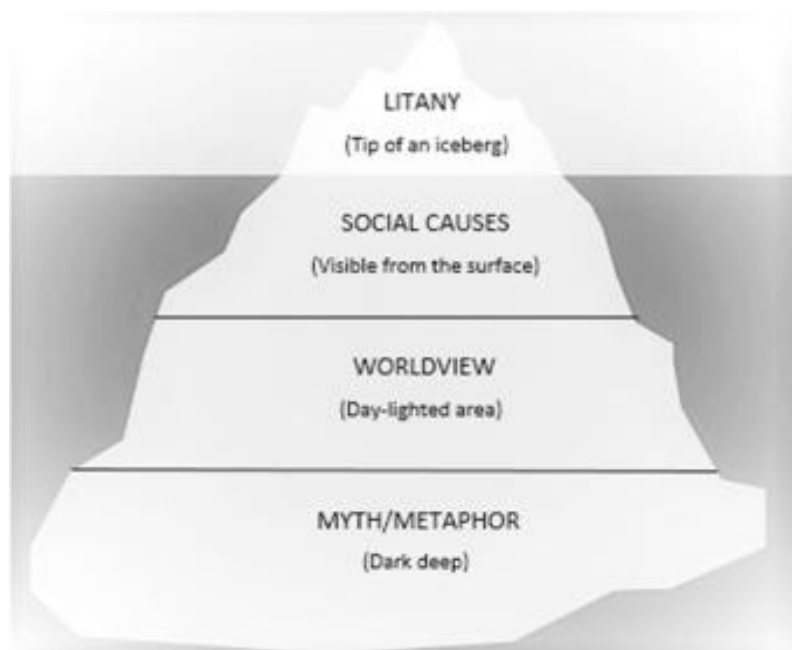


Figure 4. A visualisation of the CLA layers as an iceberg (from Kaboli & Tapio 2018)

The principal aim of the method is to move forth and back between the layers during the analysis process. This can lead to the discovery of varying perceptions and points of view that can eventually lead to alternative visions of the future (Inayatullah 1998, 817, 821). Essentially, the CLA approach is meant to create vertical distance to the problem in the present and in this way to open up the present and past for new and alternative ideas and futures to emerge (Inayatullah 1998, 817). This study takes a slightly different approach to the method. My aim is *not* to analyse the problem of waste *in the present*, but rather to use the layered approach in the analysis of the research data in order to construct more robust images of futures from the material.

The structural perception of the world that the CLA method embodies clashes with the idea of culture as a process of anthroposemiosis. While temporary structures can be detected even in the current of culture, they are not permanent and eventually dissolve. Inayatullah himself states that the third and fourth layers of worldviews and myths also bring forth a cultural, or as he calls it, *civilizational* point of view, because no two cultures use or understand metaphors in a similar way (Inayatullah 1998, 819; Inayatullah 2009, 8–9). Through the lens of anthroposemiosis, I would further say that *no two people* have the same worldviews or understand the same metaphors. Anthroposemiosis is a global process of interaction that all humans share and that cannot be divided into separate or distinct communities (Siivonen 2008, 53–54). However, each human is linked to the global process of anthroposemiosis through their own experience. These experiential similarities can occasionally create structure-like densities within the anthroposemiosis. However, their borders are never clear, nor are they uniform. These densities can occur, and then dissolve as the process of anthroposemiosis progresses through time. (Siivonen 2008, 60, 62.)

In this study, the CLA method offered a structured approach to data analysis, and the layered themes provide clear elements to use in the construction of the images of futures. This study utilized the ‘cookbook’ approach to CLA formulated by Serafino De Simone (2004). As the name suggests, De Simone provides a very practical step-by-step guide to a CLA analysis, which felt helpful as I had very limited experience with applying the method myself. De Simone (2004, 486–487) structures the approach around five phases that start with the vertical gaze of detecting underlying causalities and then move through discovering alternatives and re-envisioning the myth to reassessing the original problem and defining possible solutions.

This research did not follow De Simone's approach strictly but rather used it as a base and modified it the same way one would modify a recipe to suit one's taste. The aim of my analysis was not to problematize the issue in the present, but rather to employ a layered gaze into the elements of futures created by the participants. Therefore, I especially focused on the final step in De Simone's approach, which was the selection and documentation of solutions at each CLA level (De Simone 2004, 491).

3.5.3 First phase of analysis

The data analysis phase started straight after the workshops took place, before the interviews in this study were conducted. This first stage included organizing the data from the workshops. This meant uploading the audio recordings into proper folders and both photographing and copying into a text file all the handwritten material produced by the participants in the workshops. Audio recordings from the workshops were listened through a few times but not yet fully transcribed at this phase.

At this stage, I did not yet start to meticulously analyse the data from the workshops, but rather tried to form an overall picture of the material, because this would then inform the interview questions which were being prepared at the same time. Some categorization of the findings from the workshop was thus already made. When going through the material, I picked up recurring themes and gathered them into thematic clusters. Through this thematic categorization, I was able to write a short summary of what was discussed in each workshop, which served as a reminder for the participants when they were being interviewed. No further analysis of the workshop data was done at this first stage.

3.5.4 Second phase of analysis

The second phase of data analysis took place after the interview material had been gathered. At this phase, all the material was carefully organized, and audio recordings from both the workshops and interviews were transcribed using the transcription tool on Microsoft Word. It was observed that in a group discussion, the automatic transcription tool was not very efficient in separating different speakers, and the transcriptions needed a lot of revision by the researcher. On a few occasions, I made the decision not to transcribe some sections of the workshop audio material where the discussions revolved around something other than the actual subject matter of the workshop. This included, for example, sections where participants would discuss their personal affairs that did not have

anything to do with the topic at hand. These kinds of discussions occasionally occurred because most of the participants knew each other beforehand.

The interview material was also transcribed using the automatic transcription tool on Microsoft Word. For one-on-one discussions, the tool worked much better than for the workshop material with multiple speakers, but the transcriptions were naturally still revised and checked by the researcher.

After the material was organised and transcribed, the actual analysis began with me reading the material and listening to the recordings repeatedly to familiarize myself intimately with the content. The themes formulated during the first phase of analysis were reassessed and modified into thematic codes. At the same time, codes referencing the analytical layers of CLA were created and used on the data. In essence, there were two dimensions of codes continually present in the data analysis: the vertical, layered codes of CLA and the horizontal, thematic codes that emerged from the material. From the data, both individual words and sentences, as well as longer chapters, were coded when suitable.

In the analysis, the program NVivo was used for the initial coding of the data. Eventually, the codes and related data were moved from NVivo to a Microsoft Excel file, where it was further defined to formulate several tables referring to the CLA layers. Eventually, a table including the elements for the constructed images of the future was also created.

3.6 Ethical considerations

In scientific research with human participants, ethical questions need to be considered, and the focus is usually on the interaction between the researcher and participants. Informed consent to participate is a fundamental scientific principle. This includes the right to refuse participation or withdraw from participating at any time. A key prerequisite for giving consent is that the participant receives enough information on the study, its aims, and the processing of their personal data. (TENK 2019, 8–10.)

In this study, the participants signed the consent form at the beginning of the workshop. In the consent form, they received information about the aims and context of the study, the responsible researcher, and the handling of the data. In addition, they were given a privacy notice in line with the EU General Data Protection Regulation articles 13 and 14. Both the form and the accompanying privacy statement were formulated according to the

University of Turku templates. All the data collected in this study currently remains in the custody of the researcher, but as it was stated in the consent form, it will be stored for a maximum of five years after the completion of the study, after which the data will be destroyed.

The data has been anonymised, and the participants are only referred to with the letter P for participant and a running number (P1–P11). Because I knew all the participants, I was able to recognise their voices from both the workshop and interview recordings, and the same participant reference codes apply to both the workshop data and interview data.

In the name of transparency, it is important to point out that the Aboa Vetus Ars Nova museum where the workshops of this study took place, was also my workplace at the time. When the workshops were designed, the idea was to eventually further develop them into a permanent practice for the museum to implement in its activities. It is also important to point out that I knew all the participants beforehand. This naturally affected the situation in both the workshops and the interviews. On one hand, it probably made the interaction and atmosphere more casual and relaxed, which perhaps aided the participants to feel more comfortable. On the other hand, the friendliness can make it difficult for the researcher to stay objective. Not that full objectivity can ever be considered possible. An interview is essentially a dialogue, a conversation, the same as any happening between people (Ruusuvuori & Tiittula 2015, 22). However, where research interviews differ from casual conversations is that they have a clearer purpose and structure, and there is always some kind, however discrete, power imbalance between the interviewer and the interviewee. The fact that the interviewer is often making notes and the conversation is being recorded makes it more formal and “institutionalised” compared to a casual situation. (Ruusuvuori & Tiittula 2015, 23.)

3.6.1 The use of artificial intelligence

This study adheres to the University of Turku guideline on the use of artificial intelligence in research. It states the university encourages the use of AI in research but stresses the importance of consideration when it comes to ethical or legal issues related to the matter. The use of AI in research has to be reported and described openly. (University of Turku 19.12.2023.)

In this study, AI was used in three different ways. Especially in the beginning of the process, AI was used to find relevant literature on the research topic. The programs ChatGPT and Keenious were both used for this purpose. Secondly, AI was utilized in the transcription of audio recordings from both the workshops and interviews. The built-in transcription tool in Microsoft Word was used for this. Thirdly, the AI tool Grammarly has been used in the writing of this thesis to improve the quality of the English language and overall flow of the text. Throughout the process, any improvements or suggestions from the AI sources have been checked and verified by the researcher.

4 Findings of the analysis

This chapter presents the results of the data analysis of this study. The purpose of the analysis was to answer the research questions: *What are the images of future for human-waste relationships in 2075?* and *What are the heritage futures of human-waste relationships?* How human-waste relationships manifest in the futures imagined and in the heritage futures created by the participants, and how those elements present when they are analysed through the different layers of CLA, were key themes of inquiry.

In the following presentation of the findings of the analysis, the data from both the workshops and the following semi-structured interviews have been combined. The results of the analysis are presented according to the CLA layers. Inside each layer, central themes that emerged from the material are introduced and discussed.

This chapter proceeds as follows. First, results from the CLA analysis concerning the imagined futures of 2075 are presented, followed by the images of futures constructed by the researcher, which are presented as short narratives. Next, the results of the CLA analysis concerning the heritage futures for human-waste relationships are presented, followed by an overview structured around three identified thematic spheres of heritage futures labelled: Action, Agency, and Affect.

4.1 CLA analysis of the research material: elements of images of futures

The aim of this analysis was to construct robust images of futures from the elements of preferred futures created by the participants. In my analysis, I especially focused on the fifth and last step of De Simone's cookbook approach to CLA analysis, which is the selection of solutions for the problem on the different layers (De Simone 2004, 491). During the analysis, I began with the Litany layer and then proceeded on to the underlying layers of Social causes, Worldviews, and Myths/metaphors. A traditional manner of presenting the results of a CLA analysis would be in the same order. However, because the aim of this study is to construct images of futures, I decided to present these findings in reverse order. With the visual image of the layers of CLA as a pyramid (see page 43) in mind, I perceive the layer of myth/metaphor to act as a foundation for the construction of those images of futures. So, in this presentation of the findings, I begin with that layer, and then work my way up the ladder through the layers of worldview and social causes to litany.

Coinciding with themes in this study, this approach reminds me of an archaeological excavation where excavation first proceeds through the layers from the top down. However, when presenting the results, archaeologists narrate their findings in a chronological order, starting from the bottom. This is the approach I adopt here as well.

4.1.1 Myth/metaphor layer for the images of futures for 2075

Already in a preliminary phase of my data analysis, distinct myths or metaphors began to emerge from the material. I soon realised that the myths that began to emerge belonged in the present, not in the futures discussed. In their guide to CLA, De Simone (2004, 448) suggests that in the myth layer, one should look for myths that may constrain thinking or acting in relation to this issue. De Simone calls these “constraining myths”. I understand them in the same way, but decided to call them *obstructing myths*. In my view, they are perceived, structural elements that stand in the way of transformation. According to De Simone (2004, 490), re-envisioning the myth or metaphor is the first step towards recasting the issue at hand. So, what I needed to do to eventually construct the preferred images of the future for this study was to examine these obstructing myths derived from the data, take their essence, and transform them into externally derived myths that I call *regenerative myths*.

The obstructing myths are here named as *The Flood*, *Good Old Times*, *Toxic Waste*, and *Trash to Treasure*. I turned all four into corresponding regenerative myths called *The Phoenix*, *A Village*, *Gaia*, and *Sampo*. While these myths came from my own imagination, they were informed by the findings of the data analysis on the other CLA layers. I intend these regenerative myths to highlight changes in values, ways of living, and human-nature relations, and act as the transformative element in the created images of futures. In the following, both the obstructing and regenerative myths are presented and discussed.

Table 1. Obstructing myths in the present derived from the data (OM) and externally derived regenerative myths for the future (RM)

Obstructing myths (in the present)	Regenerative myths (for the future)
OM1: The Flood	RM1: The Phoenix
OM2: Good Old Times	RM2: The Village
OM3: Toxic Waste	RM3: Gaia
OM4: Trash to Treasure	RM4: Sampo

The first obstructive myth (OM1) *The Flood* emerged from the data in the way waste, mass production, and overconsumption were repeatedly described as if they were forces beyond human control. Like a flood, the flow of material goods and resulting waste is never-ending. The term “flood of stuff” (Fin. tavaratulva) was used by a participant, while another noted how waste keeps coming, no matter how much they take it out to be recycled. In this myth, people are passive victims of the capitalist flow of goods, as if there were no stopping it without an outside force. This inability to influence the chain of events relates to the concept of essence-pessimism by Polak (1973, 17). The Flood entails feelings of overwhelm and frustration that can take an individual over when the problem is complex and systemic. It can become a negative force if people give up, believing that their actions have no influence.

As a transformative counterforce to *The Flood*, I created the externally derived myth of *The Phoenix* (RM1). After the flood, the time comes to assess the damage, mourn the losses, and then begin the process of rebuilding. For the regenerative myth, I decided upon the metaphor of the phoenix, a mythical creature that rises from the ashes in an endless cycle of rebirth. For me, it stands for hope and possibilities for renewal and new beginnings.

The second obstructive myth that emerged from the material (OM2), *Good Old Times*, is about a certain kind of reminiscing and nostalgia for a simpler time. The good old times are like a physical place where one could somehow return to live a simpler, and minimally materialistic life. In this myth, the past was a place where consumerist throwaway culture did not exist. In his research about images of the future, Polak recognises that idealized images of the past also exist, often romancing the past as an age of bliss (Polak 1973, 25). In the research material of this study, going back to the old ways and people living like before were mentioned often. However, placing too much value on the past can hinder seeing possibilities in the present, and reminiscing about the past can become a form of escapism.

As a transformative counterforce to *Good Old Times*, I created the externally derived regenerative myth (RM2) *The Village*. The essence of this myth is not nostalgia about the past, but rather including elements of the past into a preferred future. The Village stands for community, self-sufficiency, and learning from elders. It encourages people to revisit

old ways of doing and relearn some of the ecologically sustainable practices that have perhaps become lost.

The third obstructing myth (OM3) that emerged from the data was *Toxic Waste*. Toxic waste is, of course, an existing concept, but here it entails a different meaning. It refers to the current capitalist system of consumerism that the participants referred to as “informational toxicity”, that is “contaminating our minds with wants and desires” (P7). Especially the contemporary trash used in the workshop, with many examples of marketing in product packagings, was referred to by this toxicity. It is a highly negative metaphor.

As a transformative counterforce to *Toxic Waste*, I imagined the externally derived regenerative myth (RM3) *Gaia*. Here the central idea is the possibility of change once people realise that they are being poisoned by the toxic waste of consumerism. Once the toxic poison has been eliminated, healing can begin, and new, ecologically sustainable human-waste relationships may emerge. Gaia also refers to the concept of planetary citizenship – a caring relationship to Earth (see Salonen et al. 2024).

The fourth and final obstructing myth that emerged from the data was *Trash to Treasure* (OM4). The phrase trash to treasure was mentioned several times in the data. Though it could also have been labeled as litany, I think it perfectly captures the myth underneath the current circular economy discourse. Retrieving value from something considered useless is almost like the mythical philosopher’s stone, turning ordinary materials into precious metals. However, the circular economy still relies on and aims for economic growth, and the continuous production of trash is needed for the treasure machine.

As a transformative counterforce to *Trash to Treasure*, I created the externally derived regenerative myth *Sampo* (RM4). Sampo is the magical construction in the Finnish epic of Kalevala, producing endless richness without needing ingredients. As a regenerative myth, this Sampo produces well-being for all, without compromising the physical limits of the planet.

4.1.2 Worldview layer for the images of futures for 2075

Referring to De Simone (2004, 490), on the CLA layer of worldviews, one should “ask what values and social structures would need to be in place to support the preferred approach”, as well as look for “solutions based on differences from the prevailing

mindset”. In my analysis, I examine the data for deeper notions of values and attitudes related to human-waste relationships. For this layer, notions about society in 2075 having evolved past current understandings of sustainability, society as a whole shifting towards a slower lifestyle, the use of ancestral knowledge, and ideas of waste as a historical burden were found in the material. In the following, the findings are again grouped according to the themes that emerged. The four themes, *Beyond circular economy*, *Back to our roots*, *Trash debt*, and *Waste persists* reflect visions of the future worldviews in 2075.

Table 2. Themes on the worldview layer for the images of future for 2075

W1: Beyond circular economy	Moving beyond reduce-reuse-recycle Sustainability embedded in culture
W2: Back to our roots	Return to a time before consumer culture Learning from indigenous knowledge systems
W3: Trash debt	The historical burden of waste debt Mindset in the past deemed unrecognisable
W4: Waste persists	Human activities always produce excess Technology is society made durable

The first theme *Beyond circular economy* (W1) refers to a common thread in the discussions concerning the worldviews of people in 2075. It was perceived that they would have as a society moved beyond the current emphasis on sustainability issues. The current practices in circular economy would already be a part of their infrastructure and therefore no longer a topic of discussion; they would even be considered outdated, as the values would have shifted beyond them. The people of 2075 would perceive our current discussions on sustainability as old-fashioned. Sustainability would be so embedded into their ways of life that there would no longer even be a need for a separate word for it.

Gay Hawkins (2016, 30–31) has emphasized that though there is much good to be said about the current effort to normalize “reduce-reuse-recycle” into people’s everyday practices, it still stems from an idea of control. Portraying waste as something to be managed and controlled can inhibit other ways of being with waste. So, imagining that in

50 years humanity would have perhaps discovered those other ways is exciting. In the workshops, it was imagined that in 50 years people would perceive the whole idea of waste differently, even so much that there would no longer be a word describing it in the same meaning as today, and in doing so, the problem of waste would also in a way disappear.

The second theme, *Back to our roots* (W2), reflects notions of embracing a simpler way of life and rekindling human relations to nature. In the discussions, it was suggested that people in 2075 would have returned in their thinking to a time before consumer culture. They would have understood the superfluity of much of the material ways of the present and embraced a lifestyle devaluing material possessions. This would reflect a de-capitalised society where the economy is no longer the primary driver.

A certain kind of hope for more connected human-nature relationships in the future also emerged from the research material. The participants mentioned wishes of re-establishing a reciprocal relationship with nature, learning from indigenous communities, and returning to ancestral ways were all prominent themes in the data.

I would love to have a more immaterial society and not like consumerism, I'm against that. Yeah, more, more spiritual-like and more communal feeling would help the society and nature, and it's like going back to our roots, like where we come from, and like our ancestors lived. (P10)

Many indigenous people in the present find the concept of waste altogether troublesome because they do not understand it in the same way. The whole idea of waste assumes there is a divide between human and non-human that many people do not recognise as such. (Bell 2019, 117.) Re-imagining the place of humans in nature was seen as a prerequisite for sustainable futures in the research material as well. This includes the idea that there are no boundaries between living and dead material, or humans and more-than-humans. “We are like a small piece in this puzzle, in this mosaic” (P9), as one participant expressed.

The third theme of *Trash debt* (W3) emerged as a concept from several perspectives in the research material. It was discussed how the trash in 2075 would most likely consist of waste from our time, such as electric cars and other electronic waste. Trash debt includes the idea of an intergenerational burden, where people would be responsible for their ancestors' doings.

They will probably deal with ours [waste]. Not theirs but with ours. (P8)

I think they would look back and be unable to recognise the mindset that we had at this time. They would wonder what madness, what madness possessed them, and literally find it incomprehensible because they do things in such a different way that this now feels alien, like we look back at some of the things that were done in the past. (P7)

The idea of waste as a historical burden suggests an emotional baggage attached to it. In this pattern of thought, waste presents as disinheritance, a negative legacy the current generations leave behind for future generations to deal with. The people of 2075 might have developed their own material practices in a more sustainable direction and adopted the current ethos of circular economy into their infrastructure, but the waste problem they would actually encounter would be the material they inherit from the present, such as electric cars. This disinheritance would create an adverse reaction towards the people of the past from those dealing with it in 2075. This opposition very strongly reflects what people in the Global South are already dealing with in the present, as many communities live with the waste often originating from the Global North (Bell 2019).

The fourth theme, *Waste persists* (W4), reflects the notion that human activity has always produced excess in the form of waste, and in one form or another, waste will persist in the future as well.

There is no human culture without also waste as a thought, or clean and unclean categories. (P1)³

The same notion has been made by scholars. Pyyhtinen et al. (2023, 6) write how “The troubling thing about waste is that it does not go away. It can never be fully disposed of, only transformed into something else.” As the participants were analysing the contemporary waste from the perspective of the future, they considered that the people in 2075 might not even recognise some of the materials. Their attribute of waste might be different, and the *problem* waste poses in the present might disappear in that sense, but the idea of waste persists.

A reference was also made to Bruno Latour’s notion of technology being “society made durable” (Latour 1991). Latour discusses the interdependency of technology and society, and how infrastructures impede and allow societal development. Latour’s thoughts link

³ Translation by the researcher, original quote: ”Ei ole sellaista ihmiskulttuuria, jolla ei ole myös jäte-ajatusta tai puhdas ja epäpuhdas kategorioita”.

to the idea that waste itself has agency: it places constraints on society, it shapes and initiates action in humans. The agential quality of waste is increasingly discussed in literature as well, and it is exactly what Lepistö & Pyyhtinen (2025) refer to with their concept of *trash-power*.

4.1.3 Social causes layer for the images of futures for 2075

On the CLA layer of social causes, De Simone (2004, 467) suggests looking for short-term causalities for the preferred changes, as well as notions of the different actors and relationships involved in the issue. Also referencing De Simone (2004, 491), on the social causes layer, I was looking for solutions that are more policy-oriented. The themes discovered still reflect the causalities of the elements introduced in the myth and worldview layers, but the themes here are more detached and practice-oriented.

In my analysis, four main themes emerged from the material. They indicate wider societal and economic shifts in global markets and local economies, as well as in social norms and people's attitudes to waste and consumption. The four themes, *Shifts in production markets*, *Responsible businesses*, *New social norms*, and *Decline in the material standards of living*, again discuss the imagined, preferred futures in 2075.

Table 3. Themes on the social causes layer for the images of futures for 2075

S1: Shifts in production markets	Shift from global to local markets and supply chains Decreasing economies in Finland and Europe Less resource-intensive technology
S2: Responsible businesses	Companies embracing sustainability Repurposed brands in a post-consumerist future
S3: New social norms	New social norms regarding waste and consumption Community perspective instead of individualism Shift from hectic to slow lifestyles
S4: Decline in the material standards of living	Declining level of technology New living standards Waste processed locally

The first theme, *Shifts in production markets* (S1), emerged as the participants imagined a set of shifts happening in the production markets that would, in turn, influence human-waste relations. In the data, two alternative perspectives leading to such a shift emerged. In the first one, a collapse of some kind was imagined occurring, enforcing the change. The participants suggested that technology collapses, or that people regress mentally due to digital media and are thus unable to develop new ideas, which could eventually lead to an economic and technological collapse. In the second, alternative vision the shift happens gradually as a part of a societal and economic re-emphasis. This could happen due to the depopulation of Finland and Europe, as their populations age and economies become smaller, or due to Finland becoming overpopulated because of climate-induced migration. Both options would lead to a period of degrowth. As a result, problems of overconsumption and overproduction would become less of an issue in the year 2075, as they would have “simply disappeared”.

In the material, the current global material supply chains were considered to perhaps turn out to be a unique point in time, and gradually, material sources would become more localised. It was discussed that due to the traceability of smart waste, the people in 2075 would be able to analyse down to the percentage the material and chemical composition of our waste, and perhaps find our collection of “world artifacts” peculiar. Their technology would be less resource-intensive, and they might not even recognise some of our contemporary items.

The second theme, *Responsible businesses* (S2), brings together discussions about a society in 2075 that would have moved past consumerism and capitalism, and where companies would have embraced sustainability into their everyday business models. A very prominent theme in discussions both in the workshops and interviews was the practice of *planned obsolescence*, meaning the contemporary production model where products are designed to break down in the short term. Many remarks were made as to how it contributes to the waste problem. The issue was paired with the problem of repairability, either that products cannot be repaired or that the repair would cost more than a new product.

What is somehow so annoying nowadays is that nothing can be repaired, you always have to buy a new appliance. When the old `something` breaks down, then you have to buy a new one. Somehow, this kind of culture of repair, something that was self-evident in the past, is somehow all lost now. (P2)⁴

Extending the lifespan of products overall was considered important for materially sustainable futures. In June 2024, EU adopted the new Directive on common rules promoting the repair of goods. The directive obligates manufacturers of electronic products to provide repairs, as well as encourages consumers to repair their appliances through information platforms and national measures. (European Commission 2024.) The directive specifically orders to manufacturers to provide repairs at a reasonable price. The contradiction between the price of new products and repair of old ones comes repeatedly up in the research material.

It should be turned upside down, as it currently it is cheaper to buy new than repair old. It should be the other way around, so that it would be more cost-effective to repair the old. (P5)⁵

Sustainability and responsibility of companies were also brought forward through the idea of brands and their role in 2075. Inspired by the contemporary waste in the workshop, participants observed how the bright colours of different consumer brands stood out from the trash. As one participant observed, the colours essentially shout “Grab me! Buy me!”, provoking individual consumers to consume more. The marketing essentially creates the needs that people would not otherwise have. The idea that the participants withdrew from this was that brands in the post-consumerist future of 2075 would be more responsible, not provoking people to buy more through their marketing, as society would have shifted beyond that.

The third theme, *New social norms* (S3), emerged from observations participants made during the trash walk that preceded the workshop. They observed the concentration of trash in the vicinity of trash containers. This was regarded as an indicator of a certain level of carelessness or even disregard by the users. This led to discussions about how it does not matter what kind of infrastructure is built to deal with a problem, if people do

⁴ Translation by the researcher, original quote: *Koska sehän on nykyään jotenkin todella ärsyttävää, että mitään ei voi korjata, että sun on pakko ostaa aina uusi laite, kun se vanha `joku` hajoaa niin sitten sun pitää ostaa se uusi laite. Että jotenkin semmoinen niinku korjaamisen kulttuuri ja semmoinen mikä on noin ennen ollut ihan niinku itsestäänselvää, niin nyt se on jotenkin aivan niinku hukassa.*

⁵ Translation by the researcher, original quote: *Eli se pitäisi kääntää ihan päällelleen, että kun nykyään on uuden ostaminen halvempaa kuin vanhan korjauttaminen, niin se pitäisi olla ihan toisin päin, että olisi kannattavampaa korjauttaa sitä vanhaa.*

not adapt their behaviour accordingly. While it was considered that “people will be people” despite what policies are in place, peer pressure was considered a guiding factor in people’s behaviour, and new kinds of social norms evolving could also affect the futures of human-waste relationships. If there is no waste on the ground, people are less inclined to throw it, as was pointed out by the participants. This notion relates to the *trash-power* conceptualised by Lepistö & Pyyhtinen (2025). Seeing trash in a landscape or environment can push us into action, but it also shapes our attitudes towards the people who put it there.

Perhaps throwing trash in the street will be reacted to in the same way as we do nowadays to throwing up in the street. (P1)⁶

Social peer pressure creates the framework of what is considered normal and what people are accustomed to, and this framework constantly changes over time. As Hawkins (2006, 26–27) points out, the use of disposable objects was once considered a responsible act of commitment to cleanliness and efficiency. The days of congratulating people on the use of disposable products is long gone.

Building on this, an interesting idea emerged in relation to biodegradable waste in the future. It was brought up that if, in 2075, all waste were biodegradable and turned into fertilizer when fully composted, that could lead to profound behavioural changes and new social norms. Throwing waste into nature could be considered a regenerative action, and people would actually be encouraged to litter. The whole concept of littering would therefore be turned upside down, and littering would turn into recommended behaviour.

The fourth theme, *Decline in the material standards of living* (S4), refers to a change in attitudes and understandings of what constitutes a decent or good material standard of living. The idea that, overall, by 2075, material standards of living would decline was prominent in the material. This was not framed in a negative way but rather as a shift in attitudes. The de-materialisation of lifestyles or the adoption of more minimalistic lifestyles in the future was something some participants had already begun to fundamentally think about in their daily lives in the present.

⁶ Translation by the researcher, original quote: *Ehkä roskien heittämiseen kadulle suhtaudutaan samalla tavalla kuin tänä päivänä kadulle oksentamiseen.*

So, you just need some space. Of course, I need space for work. I need space for sleep. I need space for, let's say, it's better to separate my eating process. But that's it. You don't need more. (P9)

Related to living standards is the idea that in 2075, waste would be managed locally, in people's homes. This included the idea of bioreactors in the form of worm factories or bokashi composts existing in people's kitchens. Further building on that, an idea was brought forward that in 2075, water toilets would no longer be used, but also human waste composted in people's homes.

This latter idea has more social ramifications than at first would seem. The development of the public sewer system essentially turned bodily waste into a private practice and changed social perspectives on personal purity and cleanliness (Hawkins 2006, 57). It turned a very private waste into a public affair, as the waste, after leaving the body, is no longer the individual's problem. Modern bathrooms are designed to eliminate any trace of human waste efficiently and have turned this natural process almost invisible in society (Hawkins 2006, 59). Therefore, the idea of reversing this development is quite radical, and would again make also human waste very visible and almost tangible in people's lives.

4.1.4 Litany layer for the images of futures for 2075

On the litany layer, De Simone (2004, 487) guides to look for "soundbites", meaning short remarks resembling news headlines; short-term actions, as well as "official discourse". The solutions in the litany layer are "quick fixes" and instrumental solutions (De Simone 2004, 491).

In my analysis of the futures discussed by the participants, I discovered notions of technological developments in materials and the treatment of waste, policing of waste production, changes in human behaviour, and examples of more-than-human engagements emerged from the research material. The notions on the litany layer were mostly surface-level mentions, such as "fossil fuels are no longer used" or "there is no trash", without answering the questions of how, why, and by whom these changes happen. Futuristic coding was found in the material in the form of smart technology and robots.

The findings in the litany layer are grouped under four main themes formulated as descriptive phrases. The four themes *Technology will take care of it*, *Strict regulation is*

needed, This is just an over-materialistic phase, and You have worms in your kitchen?
 discuss the imagined futures of 2075, as they emerged from the data.

Table 4. Themes on the litany layer for the images of futures for 2075

L1: "Technology will take care of it"	<p>All materials becoming biodegradable</p> <p>Developments in the management of waste</p> <p>Standardization of packing materials</p> <p>Increased robotisation of daily purchases</p> <p>A digital-material hybrid era</p>
L2: "Strict regulation is needed"	<p>Sanctions and fines for producing waste</p> <p>"People will always be people"</p> <p>"Power endures"</p> <p>Waste cap for companies</p> <p>It is illegal to produce trash</p> <p>Waste can be traced to producer</p>
L3: "This is just an over-materialistic phase"	<p>"The new normal"</p> <p>Waste gradually becoming less of an issue</p> <p>More sustainable behaviour</p> <p>People are fully self-sufficient</p> <p>People come back to their senses</p>
L4: "You have worms in your kitchen?"	<p>Only bio-based materials</p> <p>There is no trash, everything is recycled</p> <p>Bioreactors compost waste in homes</p> <p>Habitual changes in more-than-human actors</p> <p>The development of plastic-eating bacteria</p>

The first theme, “Technology will take care of it” (L1), emerged from trusting notions about the role of technological innovations in the management and treatment of waste that were prominently featured in the research material. Ideas about all materials becoming biodegradable and fully recyclable by 2075 were common, and there was also discussion about the innovation of new bio-based materials to replace plastic altogether. The technological development of procuring materials from existing waste was discussed, particularly in relation to reusing the technological waste generated by the current digital era.

A central sub-theme was the development of smart waste, which was essentially the idea that materials in the future carry a digital fingerprint. All materials and objects lifecycles could be traced from their material sources through production and consumption down to the single user. The material future of 2075 was described by the participants as a “digital-material hybrid era”. Automation of consumption processes was another subtheme. Standardization of reusable containers and the use of robots to deliver groceries were seen as ways to eliminate food packaging in particular.

The second theme, “Strict regulation is needed” (L2) gathers notions related to the policing of wasteful practices. In the material, strict policing and sanctioning of waste production were perceived as one way to deal with the problem. Future societies forbidding the use of plastic or even making it illegal to produce trash altogether were brought up. Sanctions in the form of fines or increased taxation were suggested for both companies and individual consumers. It was imagined that smart waste of the future would include a digital fingerprint, allowing it to be identified and traced through its lifecycle. This would enable certain practices, such as policing those who are responsible for littering. Due to the traceability of smart waste, the police could even track down people who litter or do not correctly recycle their waste. For companies, an idea of tradable waste gaps in 2075 was introduced, in the same way carbon gaps are used in the present.

Cigarette butts were very prominent in the contemporary waste material collected during the workshop, and to a certain extent acted as prompt for the discussion on the role of law and regulations in the reduction of waste. Efforts to reduce smoking have been made in Finnish legislation since the 1970s. Smoking in workplaces was forbidden in 1995, but in restaurants as late as 2007, and many of the participants had memories of a time when

smoking was more prominent in public spaces. (ASH Finland 2025.) It was, however, evident from the collected waste material that regulation by law alone was not enough to eliminate the problem. The same probably applies to waste. To deal with the problem, policing, guilt, and moral imperatives can only do so much (Hawkins 2006, 41).



Figure 5. Cigarettes and snuff were frequent finds on the trash walk

The third theme on the litany layer, “This is just an over-materialistic phase” (L3), entails ideas of alternative, more ecologically sustainable ways of living in 2075. This theme emerged as the general idea of “a new normal” state of affairs, where “everything is recycled” and “people will be fully self-sufficient”. Sketchy remarks such as people having “embraced sustainable behaviour” were also introduced.

The term “over-materialistic phase” derives from the material. It holds within it the idea that before was better. The current capitalist-consumerist society was seen as a temporary phase of almost lunacy, after which people would “wake up”, “return to past ways” or “come back to their senses”. The future “new normal” was in many ways seen as opposite to current behavioural patterns and consumerist attitudes. There was, however, also an idea entertained in which people in 2075 would be living a fully digital existence, reducing waste eventually as people would not be as social or mobile anymore.

The fourth and final theme “You have worms in your kitchen?” (L4) combines thoughts of different more-than-human actors and human-nature relations in the future visions. Bacteria developing to eat and digest plastic was introduced as a possible evolutionary response to plastic in nature. A few other ideas involved humans co-living with more-than-human actors in their homes, as solutions to the management of waste were discussed. Both worm factories and bokashi composts were proposed to be used in future kitchens to take care of biowaste in people`s homes. Bokashi composting is based on fermentation through microbes (Kinnunen 2023).

In addition to the more-than-human actors in people`s homes, thoughts on co-living in cities also emerged, illustrated by the idea of crows developing the cultural habit of picking up trash left by people and delivering it to waste bins.

4.2 RQ1: What are the images of futures for human-waste relationships in 2075?

This chapter answers the first research question of this study: What are the images of the future for human-waste relationships in 2075? Through the analysis of the research data presented in the previous chapter, I constructed four images of futures for 2075. Each image is composed of the elements that emerged from the data through the CLA analysis and that have been introduced in the previous chapters. Only for the layer of myth, instead of the obstructing myths that emerged from the research data, I created externally derived regenerative myths. These newly invented myths act as a transformative element guiding the perspective of each image. I then assigned the different themes that emerged from the other layers of the CLA analysis to construct coherent narratives for each image.

In *Smart waste*, technological solutions have led the way to more sustainable lifestyles in the future. In *Co-living with nature*, planetary citizenship and reciprocal relationships with nature are at the heart of multi-species futures. In *A step back*, the emphasis is on thriving local communities and new social norms regarding waste and consumption. Finally, in *Rebuild*, heavy environmental problems have been tackled with strict policing and regulatory measures.

The table on the next page presents the CLA elements of each layer that were used to construct the images of futures for human-waste relationships in 2075.

Table 5. Themes on the CLA layers for the four images of the future for 2075

On the Myth layer, regenerative myths created by the researcher are used, and the obstructing myths derived from the material are in brackets.

	Smart waste	Co-living with nature	A step back	Rebuild
Litany	"Technology will take care of it" (L1)	"You have worms in your kitchen?" (L4)	"This is just an over-materialistic phase" (L3)	"Strict regulation is needed" (L2)
Social causes	Responsible businesses (S2)	Decline in the material standards of living (S4)	New social norms (S3)	Shifts in production markets (S1)
Worldview	Waste persists (W4)	Beyond circular economy (W1)	Back to our roots (W2)	Trash debt (W3)
Myth	Sampo (RM4) (Trash to Treasure)	Gaia (RM3) (Toxic Waste)	The Village (RM2) (Good Old Times)	The Phoenix (RM1) (The Flood)

Though these images of futures were constructed by the researcher and not the participants themselves, I have made an effort to make sure that the images reflect the perspectives that emerged from the research data as closely as possible. I emphasized the diversity of the futures depicted, as well as the internal coherence of each image. Though all of these images of futures present a preferred future, they have distinctive features due to the diverse elements that emerged from the research material. All images depict a post-sustainability transformation future where the everyday life of people fits within the planetary boundaries. As the focus of this study was on the futures of human-waste relationships, these images of futures do not aim to present an overall description of the futures in 2075. The emphasis is on elements related to human-waste relationships and the cultural sustainability transformation that has changed values and worldviews. In the following subchapters, each image is presented as a short descriptive narrative.

4.2.1 Image 1: Smart waste

In this image of the future, by 2075, society has experienced rapid technological development. Innovations have led to the adoption of new, alternative materials that have replaced the use of plastic. All materials are engineered to be recyclable and biodegradable, and the recovery and reuse of materials is extensive.

Businesses thrive on a sustainable premise. New fields of industry have been born around repairing, the recovery of valuable materials from landfills, and the retrieval of plastic waste from oceans and forests. Society is built around circular economy practices, which enable economic growth without the extraction of new natural resources. Materials carry a digital fingerprint, and object lifecycles can be fully controlled.

Efficient infrastructure makes it easy for people to manage their waste properly, and individuals are an integral part of the circular economy machine. Doing one's duty for the environment is considered a part of responsible citizenship, and environmentally friendly behaviour is highly valued. However, due to the efficient system, people's personal relationships with waste remain somewhat detached.

4.2.2 Image 2: Co-living with nature

In this image of the future, people in 2075 have turned their backs on consumerism and embraced a minimalist lifestyle. De-materialized lifestyles produce less waste. Material

wealth is no longer highly regarded, and sustainability is perceived to be a slightly outdated concept, as society's values have shifted beyond it.

In this future, people have discovered new fulfilment in reciprocal relationships with nature and consider themselves planetary citizens. Multispecies perspectives are taken into account in decision-making towards just and fair futures. Due to efficient regenerative action from humans, the environment has started to heal.

Waste is also accepted as a neutral part of daily activities. All household waste is increasingly processed within homes, using bio-based solutions such bacteria that have evolved to digest plastic. Some are still adapting to such intimate interaction with waste, but overall, it has resulted in caring relationships with the discarded material.

4.2.3 Image 3: A step back

In this image of the future, people in 2075 live in a post-capitalist society. Local communities thrive both in cities and in rural areas, promoting self-sufficiency and communal well-being. Numerous circular economy start-ups have emerged, innovating new ways to repurpose recycled and discarded goods.

Society has adopted a slower pace, generously allocating time not just for work, but also for other areas of life. People seek well-being in spiritual and communal practices. Many have relearned to harvest and use materials from nature, and traditional craftsmanship and skills are highly valued.

People can hardly remember a time when litter would disturb them in the streets. Nowadays, they can dispose of their biodegradable waste in designated composting areas also found in urban spaces. Waste is no longer out of sight. Rather, its multisensory presence is considered a natural part of the material environment.

4.2.4 Image 4: Rebuild

In this image of the future, by 2075, a period of degrowth has taken place. Decreasing economies have shifted the focus from global markets to more localized supply chains. Technology has become less resource-intensive, making it easier to tackle the dwindling supplies of scarce raw materials.

There is some resentment towards previous generations, who left a heavy legacy of environmental issues for the people in 2075 to deal with. “What madness possessed them?” people mutter when they read about the exuberant consumption in the early 2000s. They can no longer imagine taking part in such environmentally hostile practices.

To minimize additional deterioration of the environment, society has reorganised itself through strict policing and regulatory measures. Waste production on both the societal and individual levels is monitored and heavily taxed. Some still seek ways to bend the rules, but the majority are happy as they feel society is finally on the right track.

4.3 CLA analysis of the research material: heritage futures

In this chapter, I present the findings of the CLA analysis on heritage futures from both the workshops and interview data. Overall, the heritage futures created by the participants were diverse and rich, embracing a holistic understanding of the concept of heritage futures that resulted in concrete actions as well as shifts in values and worldviews.

As I was conducting the analysis on the heritage futures, I found rich data regarding the CLA layers of litany, social causes, and worldview. However, I struggled to find content that I would have considered belonging to the layer of underlying myths and metaphors. In the end, I decided to forgo the layer of myth/metaphor for heritage futures and focused on the three others.

I again present these findings in the reversed order, starting with the worldview layer and then proceeding through social causes to the litany layer, discussing the thematic entities that emerged from the data regarding each layer.

4.3.1 Heritage futures on the worldview layer

On the worldview layer, two themes emerged from the heritage futures created by the participants. They are named here as *Having enough* and *A caring relationship with nature*. On the worldview layer, heritage futures for human-waste relationships are about changing one`s values and understanding related to consumption and material needs, but also about adopting regenerative, healing practices regarding waste. Therefore, the heritage futures on the worldview layer can also be framed as elements of *care*.

The first theme, *Having enough*, relates to the idea of sufficiency. Redefining convenience and a comfortable lifestyle, and separating wants and needs were prominent points of view in the material. The idea of redefining convenience emerged among the participants, especially in relation to the contemporary waste used in the workshops. It was noticed that many of the objects in the trash had to do with convenience: single-use cups and wrappers from quick snacks along the way, plastic packaging keeping separate cans of beverages together. The participants identified a connection between hectic lifestyles and the production of waste, especially when it came to single-use and disposable items. The idea of “taking just one more minute” to place the trash in the right container was discussed. It was also mentioned that partaking in repairing clothing for example, required the devaluing of one’s own time because mending takes time. Overall, slowing down the pace of life was suggested as heritage futures.

But most of all, if we can be, like, we can have the bare minimum and if we can satisfy with that, I think that would help most. (P10)

Another point of view within this theme was redefining comfort and a comfortable lifestyle. This includes the idea of de-materialisation of lifestyles, but also the intentional effort to live more modestly than one could perhaps afford. In relation to consumption, this holds within it the knowledge to separate what one wants from what one actually needs to live a comfortable life.

The second theme, A caring relationship with nature, gathers the heritage futures brought forward by the participants related to human-nature connectedness. Understanding oneself as a part of nature, and understanding where different materials originate from were seen as key knowledge regarding also human-waste relationships.

The act of composting was introduced by several participants as heritage futures. Though I initially thought it belonged more on the litany layer, I eventually decided to approach it also from a worldview point of view. Though composting is an everyday activity, it can actually reflect a new kind of worldview in relation to nature. Veera Kinnunen has studied the practice of Bokashi composting and linked it to corporeal experiences and a caring, even loving engagement with waste. She further links the practice with feelings of excitement and curiosity, underlining the deep connection between humans and more-than-human nature. (Kinnunen 2023.) In the literature, the act of composting has been

identified as an activity practiced especially by humans. When perceived as a practice of care, it also becomes a feminist action. (Rogowska-Stangret & Cielemecka 2020.)

One action mentioned by the participants as heritage futures was adopting the habit of going on trash-picking walks. This idea was clearly inspired by the workshop exercise, as some participants described:

It was really surprising for me. I didn't expect so that in centre of Turku there'll be such a lot of such kind of waste. (P9)

Yeah. Because when you are in the city you don't like look specifically for waste, so maybe you don't see that it's there, but it's there. And then in like half an hour we collected like a lot of it. Yeah, and that was interesting. (P8)

While trash-picking could also have been framed as a straightforward action on the litany layer, I decided to place it as well on the worldview level. I think the act of practicing trash-picking can be considered a regenerative practice. Collecting trash from the environment and recycling it properly can be perceived as an act of caring, and therefore, I perceive it to go beyond the conceptual litany layer.

4.3.2 Heritage futures on the social causes layer

On the social causes layer, two distinct themes emerged from the heritage futures the participants created. They are introduced here under the themes of *Social responsibility* and *Legacy*.

The theme *Social responsibility* refers to being aware of one's externalised impact, counteracting social norms, and influencing society as a concerning citizen. Being aware of externalised consumption and waste resulting from one's lifestyle and choices was emphasized a lot by the participants. A huge portion of the waste created by our lifestyles is externalised and thus invisible, and generated out of our sight. Digital services were brought up as examples of reducing waste (digital tickets instead of paper tickets, digital books instead of hard copies), but their environmental footprint often remains unclear to the consumer.

The emotional difficulty in counteracting social norms was discussed in relation to heritage futures as well. One example brought up was the idea of reusing and repairing clothes, which many agreed was something they wanted to adopt in their everyday lives. However, using the repaired clothes in a professional setting was considered almost a

separate level of commitment that some were hesitant to take. Therefore, changing one's attitude and wearing repaired clothing as almost a badge of pride was also considered an element of heritage futures.

The participants also emphasized the need to be mindful of links between affluence and sustainable lifestyles. Ideas such as using composted waste to grow one's own food are recommendable, but require a level of financial security, such as having a house and garden to grow that food in. The participants felt it important to point out that even in Finland, people live in very different financial and social realities, and when thoughts revolve around one's own survival and livelihood, the option to choose environmentally friendly products at the store might not even exist.

Another aspect of social responsibility builds on the premise of living in a democratic society. Influencing sustainable development in society through voting was brought up by several participants as a form of heritage futures. Having decision-makers in power who understand the necessity of transformation was seen as one path to more sustainable human-waste relationships as well.

The second theme that emerged in the social causes layer considering heritage futures was what I named *Legacy*. It has to do with educating others and raising awareness. These themes were brought forward by several of the participants as distinct actions they could take towards preferred futures. Promoting awareness and encouraging sustainable behaviour among family, friends, neighbours, and other close relations were repeatedly mentioned.

I can't influence other humans in terms of shaping their behaviour except by sharing with them ideas that might influence their thoughts, which might influence their worldviews, which might influence their actions. (P7)

In particular, the thought of legacy emerged in discussions related to the some of the participants' children and the influence they hoped to bestow upon them. Children were brought up on occasion in the workshop data, but were mentioned much more prominently in the interview material. Perhaps the participants considered the interview situation more comfortable and relaxed to also reflect on such personal aspects as one's family. In my opinion, this kind of heritage futures is quite intimate and entangled with the expectations, hopes, and fears people may have regarding their children and their futures.

I have two children so I think about my own choices from that perspective as well that I can act as a model for those children because in many cases they might adopt their behavioural patterns from me. (P5)

I have kids, and they should have such kind of attitudes. And this is maybe my specific task...To grow up them as very concerning citizens, eco-citizens. (P9)

If we can, like, inspire them, not like making them question our behaviour, as we are doing wrong, but if we can like also inspire them by doing something good and make them aware of the consequences. So, I think, at least in their future, they will leave a better future for their kids someday. (P10)

Overall, I would describe the heritage futures that emerged on the social causes layer as varying examples of agency. The ideas of social responsibility, influencing others and the society, and bringing up children as concerning eco-citizens reflect the concept of planetary citizenship brought forward by Salonen et al. (2024).

4.3.3 Heritage futures on the litany layer

Heritage futures on the litany level fit within the current 3 `R`s of circular economy, and I grouped them all under the theme *Reduce, Reuse, and Recycle*. The heritage futures the participants brought forward approached sustainable consumer and citizen behaviour from different perspectives, with examples of reducing consumption overall, reusing objects and materials, and recycling waste responsibly. Some of these habits the participants already practiced in their everyday life, but many concluded that more focus and effort could still be placed on them.

Practices related to reducing consumption included the planning of meals and other purchases beforehand to minimize waste and avoid unnecessary, impulsive purchases or “the useless stuff we love to buy to have another dopamine portion” (P9). Especially single-use or individually packaged items were seen as something to avoid, and using own reusable containers for drinks and snacks was brought forward as an alternative.

Practices related to reuse focused on repairing, which included both acquiring the skills to repair items but also using those skills to give items another life in some other use. This applied to clothes in particular, but also furniture and smaller items such as glass jars. Reusable shopping bags and buying clothes and furniture second-hand as well as sharing, loaning, and swapping items with other people, were also mentioned.

Recycling practices were something most of the participants already practiced. Many also used their compost to fertilize their own gardens and even grow food. A particular form of composting brought forward was that of bokashi, which was also discussed in relation to the future images. Experienced practitioners among the participants pointed out that bokashi liquid also has alternate uses, such as keeping drains unblocked.

Overall, heritage futures on the litany layer featured concrete actions and practices, as well as new skills to be acquired. Naturally, the actions on the litany layers are an embodiment of the values and ways of thinking reflected on the social causes and worldview layers. These layers remain conceptual, and there is a lot of overlay and entangled relations between the heritage futures on different layers.

4.4 RQ2: What are the heritage futures for human-waste relationships?

My second research question was “What are the heritage futures of human-waste relationships?” As has been presented earlier, heritage futures as a concept is about change in the present, aimed towards ecologically sustainable futures. I have in the previous sections presented the heritage futures created in the workshops and interviews through the analytical layers of Causal Layered Analysis. As presented in this analysis, heritage futures created in the workshops took a variety of forms, ranging from seemingly small, practical activities to more abstract, but intentional changes in thinking and attitudes. In the workshop material overall, but especially regarding heritage futures, waste was perceived as inexplicably intertwined with consumption. Heritage futures regarding waste are presented in many ways as actions towards reducing consumption, which eventually leads to the reduction of waste produced.

As has been brought forward repeatedly in this thesis and also elsewhere, heritage futures can manifest in several different forms: as new skills and knowledge, as action, as attitudes and values, or as the abandonment of old ways of knowing and doing (Siivonen 2022). Based on the CLA analysis of the heritage futures created in this study, I have further categorized them into three interrelated but still distinct spheres: Action, Agency, and Affect. These three spheres align somewhat with the CLA layers of Litany, Social causes, and Worldview, but the heritage futures framed here are more interconnected. I have framed these connections between the three spheres using the concepts of *intention*, *reaction*, and *care*. Next, I will further introduce these interconnected spheres.

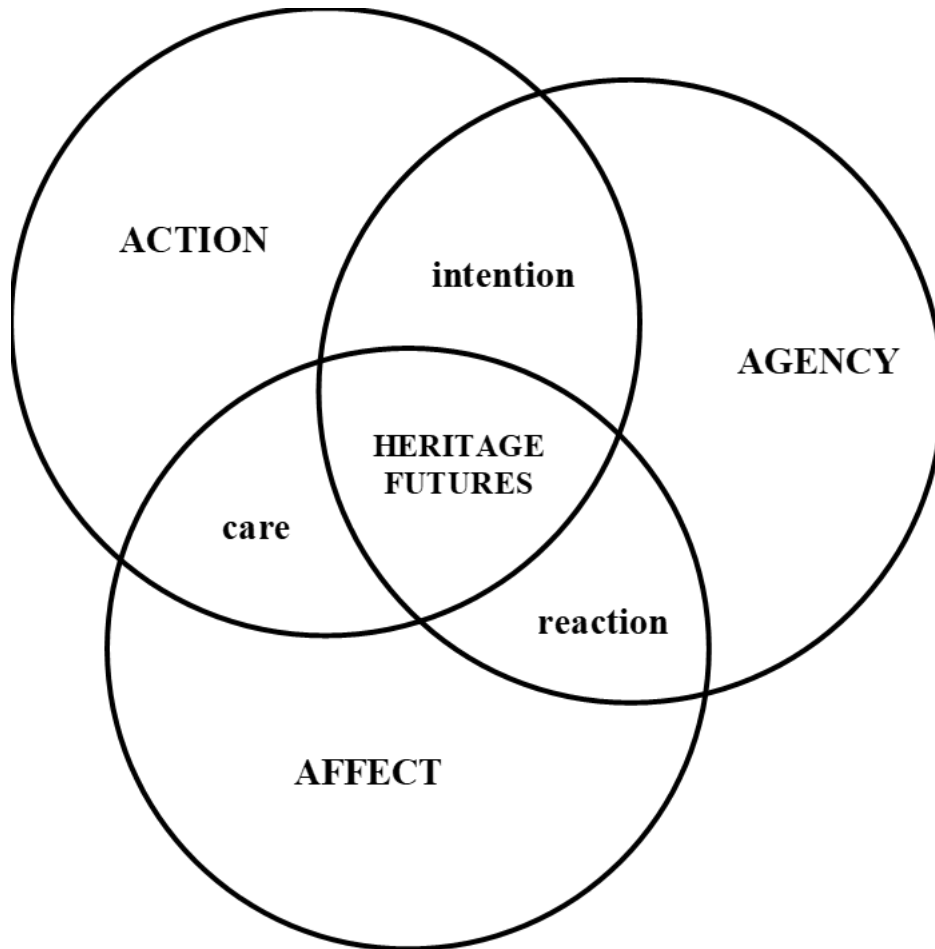


Figure 6. The three spheres of heritage futures for human-waste relationships

In the Action sphere, the heritage futures of human-waste relationships present as corporeal activities. The everyday actions of sorting and recycling waste become heritage futures with *intentionality*. The skills of repairing as well as using the material of different objects to create something new continue the corporeal attachment to the materiality of waste and the processes of transformation. Processes of mending challenge the idea of waste as something beyond use and in a way take that which could be considered the end point of a lifecycle and turn it into a new beginning.

When one actively engages oneself in such activities, they become more than the action itself – they also become an act of *caring*. In these interactions, one is in an intimate relationship with the traces of their own consumption. Composting biowaste challenges the boundaries between human and nature and involves the participants in the processes of transformation between waste and nature, involving a caring relation to waste.

In the sphere of Agency, the heritage futures of human-waste relationships present as social interactions. They consist of using one's own voice to have an impact on the world. This can happen through everyday discussions with close relations or through actions such as voting or investing. *Intentionally* acting as an example or educating children to become conscious individuals can also be considered manifestations of agency.

The Agency sphere also contains the idea of the agency of waste, and the role waste itself plays in the construction of new social norms for sustainable behaviour. As long as waste stays “out of sight, out of mind”, it remains unknown and does not necessarily initiate action. Hawkins (2006, 1) points out that the moment waste is detected in a familiar landscape, something shifts. Waste initiates an affective *reaction*, which can result in physical action (as in removing the trash and disposing it elsewhere) or an emotional response (such as resentment towards the litterer). This ability to initiate reaction in humans is what Lepistö & Pyyhtinen (2025) have conceptualised as trash-power.

This third sphere of heritage futures for human-waste relationships is that of Affect, which in a way forms the basis for the other spheres of heritage futures introduced above. A seemingly small change mentioned by the participants, such as using a porcelain cup instead of a disposable coffee cup, becomes meaningful when approached through the lens of human-waste relationships. Because that small action, as indifferent as it may seem, is also an act of *intentional caring*.

This reflects responsibility both on the individual and planetary scale, referencing to the idea of planetary citizenship (Salonen et al. 2024). Changing one's understanding of convenience and comfort also reflects on something outside of oneself. These acts of caring; caring about waste, caring about the environment, caring about the planet and all that it contains, when executed with intentionality, become heritage futures.

5 DISCUSSION

As I have attempted to bring forth in the pages of this study, waste is an integral part of the polycrisis of ecological problems in the present. Waste is both material and immaterial, as it is a part of the material flows of contemporary society, but also continuously reproduced in the meaning-making process of the anthroposemiosis. Waste is something each individual deals with in their daily lives, and therefore each of us exist in complex personal and sometimes very intimate relationships with waste.

In this study, I have studied these human-waste relationships through the lens of cultural sustainability transformation. I have investigated what kind of images of futures emerge for the future of these relationships in 2075, and what kind of heritage futures created in the present can pave the path towards more ecologically sustainable futures. This chapter discusses the key insights gained and offers some thoughts on further study, as well as on the limitations of this study.

5.1 Key insights on the findings of this study

As a result, this study produced four distinct images of futures for human-waste relationships in 2075. The first image, *Smart waste*, emphasized the role of technological solutions in transforming societies to be more ecologically sustainable in the future. In the second image, *Co-living with nature*, multispecies relationships and the ethics of care steer societal transformation towards planetary citizenship. In the third image, *A step back*, the emphasis is on local communities and the evolution of new social norms regarding human relations to waste, and consumption. In the fourth image, *Rebuild*, the transformation is perhaps still underway, ruled by strict policing and regulatory measures.

In this study, the images of futures were constructed based on the CLA analysis of the research data created by the participants. In the construction of the images, I have done my best to be mindful of the themes brought by the participants. The discussions in the workshops were rich and there were some contradictions between the different futures elements discussed. In the end, all four images depict preferred futures of 2075, but vary with their distinct elements.

Polak (1973, 17) categorized images of futures under the categories of essence-optimism, essence-pessimism, influence-optimism, and influence-pessimism. Using his framework,

I would categorise the images of futures constructed in this study under essence-optimism (*Smart waste* and *Rebuild*) and influence-optimism (*Co-living with nature* and *A step back*). Naturally, as the aim was to construct preferred images of futures, they embody optimism towards future developments. However, in *Smart waste* and *Rebuild*, the transformation happens at least partially due to an outside force. In the case of *Smart waste*, technology is the prime motor accelerating change, and in the case of *Rebuild*, change is achieved through policing and regulations. In my opinion, the images *Co-living with nature* and *A step back* embody more the idea of cultural sustainability transformation, as changes in values and worldviews are the key drivers in these images.

This study also produced a variety of skills, practices, and new ways of thinking as heritage futures for human-waste relationships. Through my analysis, I further grouped the heritage futures created by the participants under the thematic spheres of Action, Agency, and Affect. While this abstraction helped me as a researcher to analyse the data and find internal connections and layers within it, the greatest value of heritage futures is not that which stays within this thesis, but what continues to live on in the daily lives of the participants.

In the interviews, participants were asked whether participating in the workshop changed their relationship to waste. While no one reported a significant change, several did report being more mindful of their waste practices after the workshop, paying more attention to waste in the landscape, or giving more thought to their consumption practices. One participant reflected on the physical waste in the workshop, and how in everyday life there is a disconnect from waste because it is thrown out of sight, and the relation of, for example, plastic rafts in the oceans to one's own consumption becomes blurry. One participant noted that the workshop has left them pondering their own material trace:

Yeah, I always remember the trash from the past. And then I was thinking about like small things like bones, and some metal items. Those were the things that were left in the trash can in the past, and so I always get, when I see these single-use plastics and polythene stuff, I always remember that, and how much in the history we are going to leave for the next generation. So that, that comparison also always comes to my mind since the workshop. (P10)

This quote perfectly encapsulates where this thesis began: as a personal pondering of mine on the similarities and the relationship between waste and heritage. The trace our activities leave on this planet is material, and I think there is transformative power in simply reflecting on that thought.

5.2 Reflection on the workshop process

This study sought to understand human-waste relationships through the method of a heritage futures workshop. As this was my first time designing and facilitating such a workshop, how the process supported and enhanced futures thinking was of interest to me. In this chapter, I share some reflections on this matter.

In the anonymous feedback collected immediately after the workshops, the participants were asked to describe their feelings at that exact moment when the workshop was over. Four out of the eleven responses included the word *hope* or *hopeful*. Other adjectives used were *excited*, *enlightened*, *inspired*, *content*, and *ambitious*. One participant described feeling “like a crow that received a treat for depositing trash in a bin”. One shared they were left puzzled, glad, but not very optimistic about change, as they perceived the problems related to waste being more systemic and therefore felt a disconnect with approaching the topic on the individual level. One person said that the workshop awakened new thoughts, while another one reported they felt better, as they had realised that they were already doing what they could at this moment. Another participant said participating in the workshop made them feel more responsible towards future generations. Based on these comments, the workshops appear to have succeeded in being a meaningful and thought-provoking experience for the participants.

While heritage futures was a concept new to many of the workshop participants, they were able to grasp the term quickly, and created a rich variety of heritage futures. One participant encapsulated the idea of heritage futures in their interview like this:

We have to start with those thoughts and skills now if we want to have change in 50 years' time. If we don't have the ability or skill now, we won't be able to come up with it later either, if not now. There has to be some beginnings now, from which the heritage futures can start becoming. And on the other hand, I think that what you listed there, they can be thoughts that are self-evident in 50 years. They begin from the present but are by then mainstream in practice and thinking. (P2)⁷

⁷ Translation by the researcher, original quote: *Nythän meidän pitää ne ajatukset ja taidot niinku aloittaa jotta me saadaan sitä muutosta aikaiseksi sinne 50 vuoden päähän, että jos meillä ei nyt ole sitä mitään kykyä eikä taitoa, niin eihän me sitten tietenkään pystytä sitä ehkä noin vaan keksimään myöhemminkään, jos ei sitä nyttenkään pysty. Että täytyyhän niiden olla niinku nyt jotain sellaisia alkuja mistä voidaan lähteä niinku sitä tulevaisuusperintöä sitten tekemään. Ja sitten se toisaalta niinku että mä ajattelin että nääkin mitä tuossa nyt luettelit, niin nehan voi olla sellaisia ajatuksia mitkä sitten 50 vuoden päästä on taas aivan itsestänselvää, että se on niinku tästä hetkestä lähtenyt, mutta se on niinku sitten semmoinen valtavirta käytäntö ja ajatusmaailma.*

In a heritage futures workshop, essential is the interplay between the past, present, and future (Paaskoski et al. 2022). Visiting the discussed phenomenon in the past provides understanding of the changes that have happened leading up to the present, how past choices have affected the issue at hand, and the unrealized futures that might have existed. The discussions the participants had during this phase were not extensively analysed in this study. The purpose of visiting the issue in the past was to give the participants insights into long-term changes regarding human-waste relationships. This workshop phase was something the participants referred to in the interview material:

It somehow concretized the topic, and particularly when we got to think about what they, why these people's things were somehow important, that was in a way a nice perspective to this, also to futures. (P2)⁸

I thought it was good for drawing these lines, drawing these connections between all of these, kind of like events or moments or objects, and this workshop was just helping us to kind of make the connections between all of those and to turn that into a narrative, which I thought was quite effective. (P7)

This confirms the necessity of having these different temporal layers in the heritage futures workshop process to deepen understanding of the topic and of long-term change.

It was a personal interest of mine to use this study as a way to experiment with implementing an archaeological perspective to the study of futures, within the method of a heritage futures workshop. The pre-workshop exercise in the form of a trash walk copied an archaeological fieldwork method in a contemporary setting. Though perhaps not that explicit to the participants, it did encourage them to look at the urban space from the perspective of material traces of past activities. As long as we do not notice waste, our relations to it cannot be reframed (Hawkins 2006, 80). To notice waste, we need to actively look for it, seek it out, and interact with it. Go on a trash walk, maybe?

5.3 The temporality of waste

The methodological contribution of this study was the incorporation of contemporary waste into the futures phase of the heritage futures workshop, and the parallels drawn between archaeological finds and contemporary waste. Bringing the present into this

⁸ Translation by the researcher, original quote: ”Se oli, jotenkin se konkretisoi jotenkin sitä asiaa ja sitten ehkä nimenomaan sitten se kun sai miettiä niitä että mitä ne, miksi näiden ihmisten tavarat on ollut jotenkin tärkeitä, niin sitten oli jotenkin se kiva perspektiivi kuitenkin tähän, tähän niinku myös tulevaisuuteen.”

phase by using the trash as a medium, created a contrast between the current state of affairs and the preferred futures, inviting new insights and alternative solutions.

What I think this study has shown is that in a workshop setting, physical objects can help facilitate the mental time travel needed for imagining possible futures. Museum objects, such as the archaeological finds material used in this study, are physical evidence of past activities, choices, and valuations. Through their own materiality, these objects provide a physical link to the past; they have existed in the past, just as they now exist in the present.

In chapter 2, I introduced Jane Bennett's (2010) conceptualisation of *thing-power* to describe the vibrancy and vitality of matter, and its ability to provoke affects in humans. In their study of trash activists, Pyyhtinen & Lepistö (2025) introduced a more detailed conceptualisation of *trash-power* as the affective capacity of waste to provoke action or an emotional response in humans. Building on both conceptualisations, I further propose that objects can also possess a quality I name here *future-power*. By it, I mean the capacity of things to not only transport us mentally to the past, as in the case of museum objects, but also to the future. Museum objects are cared for to withstand time, with the explicit purpose of preserving them for the future. Waste, as has been discussed, also persists over time. I suggest that in their temporality, these objects could stand as a testament to the future in the same way that they carry evidence of the past and present. Through their materiality and affective quality, they can support and enhance the imagining of possible futures, spanning beyond a human lifetime.

In my study, this *future-power* manifested in the workshop setting through the use of contemporary waste in imagining preferable futures, and as the capacity of these things to invoke heritage futures: Action, Agency, and Affect. In my opinion, it was in many ways the waste material itself that inspired and provoked the participants to react, imagine, and create elements of futures and heritage futures. As of now, this thought is only supported by my own observations during the workshops. However, I am taking this seedling of a concept with me continuing further in my studies, and further research into the idea could support my argument of *future-power* as an anticipatory capacity in material things.

5.4 Limitations of the study

As this study was done with the scope of a Master's thesis, there are some limitations that I, as the researcher, wish to acknowledge. First, the insights and findings of this one study are not widely generalisable in society. As a qualitative study, this study aimed to rather understand the topic at hand, than to thoroughly explain it. As qualitative research does not aim at generalisations, it has been pointed out that a better measure is the depth of the analysis rather than sample size. (Tuomi & Sarajärvi 2012, 85.) While the number of participants in this study was limited, I estimate it was still a sufficient amount to receive interesting data to the point of saturation. After saturation, the data starts to repeat itself, and truly new insight is no longer added (Tuomi & Sarajärvi 2012, 87.)

Another limitation I identify has to do with diversity of participants. While the participants in this study do represent different age groups, genders, and nationalities, the majority had a higher education degree and therefore represented a very well-educated social class. Therefore, I acknowledge that the groups could have been more diverse in background to invite different points of view into the discussions. This was something also pointed out by one of the participants:

It has to do with difference in education. This came to my mind as I decided to attend. That in many countries unfortunately inequality between different groups of people has increased. In Finland also, income disparities are still growing. Then those, who are left outside of society, their thinking revolves around survival and livelihood, so they have less capacity to consider these kinds of things, and less opportunities to choose environmentally friendly products at the store. This kind of thing also affects, so it would be important that sufficient justice and equality last in society, so that everyone would have these opportunities for influence. (P5)⁹

In addition, though it has been already brought up, it feels important to further stress that the perspective of this study is that of the western countries or Global North. Waste as a topic would present as totally different from another part of the world.

⁹ Translation by the researcher, original quote: *Se liittyy oikeastaan näihin koulutuseroihin, tuli mieleen siitä kun minä päätin että minä tulen tänne. Niin se, että tuota monissa maissa valitettavasti on se eriarvoistumiskehitys lisääntynyt ihmisryhmien välillä. Suomessakin nämä varallisuuserot, ne on edelleen kasvussa. Niin sitten ne, jotka jää siitä yhteiskunnan keskusta syrjään niin niillä se ajatusmaailma usein pyörii sen oman selviytymisen ja toimeentulon ympärillä, eli niillä on vähemmän kapasiteettia miettiä tällaisia asioita ja vähemmän mahdollisuutta valita siellä kaupassa se ympäristöystävällinen tuote. Eli tällainen asia myös vaikuttaa eli olis tärkeää, että yhteiskunnassa kuitenkin säilyisi kohtuullinen oikeudenmukaisuus ja tasa-arvo, että kaikilla säilyisi niitä vaikuttamisen mahdollisuuksia.*

6 CONCLUSION

This study aimed to understand waste as a relational phenomenon, and to study the futures of human-waste relationships. The study posed two research questions: “What are the images of the future for human-waste relationships in 2075?” and “What are the heritage futures of human-waste relationships?” In order to find answers to these questions, two heritage futures workshops as well as nine semi-structured interviews were conducted. On the basis of the data analysis using CLA, four distinct images of preferred futures for 2075 were constructed. In *Smart waste*, technological solutions lead the way to more ecologically sustainable relationships with waste. In *Co-living with nature*, multispecies relationships and the ethics of care steer societal transformation towards planetary citizenship. In *A step back*, the emphasis is on thriving local communities and new social norms regarding waste and consumption. Finally, in *Rebuild*, heavy environmental problems have been tackled with strict policing and regulatory measures. Through their distinctive elements, these images of futures emphasized both societal and personal change in relation to waste.

As a part of this study, participants co-created heritage futures as new intangible skills, practices, and values related to human-waste relationships. The heritage futures created included new practices and actions such as being more attentive with one’s consumption, learning the skills of repairing and reusing items, and placing increased emphasis on recycling. In addition, the heritage futures created related to social responsibility, and influencing others through raising awareness and acting as an example. The heritage futures created by the participants also reflected changes in values and attitudes related to waste and consumption. This included rethinking convenience and comfort as a way to de-materialize one’s lifestyle. Finally, heritage futures appeared in the data as regenerative action through composting and trash-picking. Analysis of the heritage futures created using the vertical layers of CLA resulted in the conceptualisation of Action, Agency, and Affect as the three spheres of transformative heritage futures connected by elements of intentionality, reaction, and care.

The heritage futures workshop proved to be a suitable method for the purposes of this study. By connecting the temporal frames of the past, present, and future, the workshop functions as a platform where the entangled nature of tangible and intangible cultural

heritage can be explored. The method allowed me to explore my personal endeavour to attempt to connect archaeological finds material with the contemporary problem of waste.

The contributions of this study are twofold. As a methodological contribution, the incorporation of the archaeological perspective into the heritage futures workshop introduced a new, distinctively material element to the workshop, drawing parallels between archaeological heritage and contemporary waste. As a theoretical contribution, this study introduced the idea of `future-power` as the capacity of physical objects, such as waste or heritage, to support and enhance futures thinking.

This study also revealed that material relationships can be a fruitful perspective for discussing sustainability and transformative futures. The physical materiality of a research subject, such as waste, can help imagine and visualise the intangible, immaterial, and sometimes elusive images of futures. Continuing with my doctoral studies, my aim is to further study how materiality, material relationships, and human-material entanglements relate to and contribute to cultural sustainability transformation.

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Appendices

APPENDIX 1 invitation letter to the workshop

Dear recipient,

you are warmly invited to take part in my thesis workshops. I am doing my Master`s thesis in futures studies on the heritage futures of waste. Please find further information below and don`t hesitate to contact me if you have any questions!

Exploring future relationships with waste

We humans use and consume materials at an unsustainable pace. These materials have a life cycle that usually ends up with their discard as waste. Waste is, however, culturally defined and can change its meaning. Understanding this, we can explore what an ecologically sustainable relationship to waste could be like? What are the heritage futures of waste?

In a heritage futures workshop, the topic is approached through time jumps from the past to futures and back into the present. Heritage futures is new kinds of intangible cultural heritage, existing only in our thoughts and in our relations with the material world. Its purpose is to build sustainable futures by providing new understanding of the planet and our place in nature. It invites us to develop aspects of our culture towards more ecologically sustainable futures.

Take part in a heritage futures workshop!

I organise two heritage workshops related to my thesis. The workshops take place at the Aboa Vetus Ars Nova museum (Itäinen rantakatu 4-6, Turku) and are free of charge.

heritage futures workshop in Finnish Thu 26.9. from 3 pm to 6 pm

heritage futures workshop in English Tue 1.10. from 3 pm to 6 pm

Before each workshop, at 2.30 pm, there is a possibility to take part in a Trash Walk in the museum`s vicinity. The material collected will be used in the workshop.

Sign up to the workshops: janna.jokela@utu.fi. Tell which workshop you are attending and also notify me of any special diets or allergies (there will be refreshments served). Additional information on the workshop and the Trash Walk will be sent to those participating.

APPENDIX 2 workshop script

Workshop: heritage futures of waste 1.10.2024 15–18	
1. Introduction – 20 min (workshop space)	
10 min	<p>Warm-up exercise</p> <ul style="list-style-type: none"> • Write down on the post-it notes all the things that come to your mind when you think about waste. They can be things, feelings, adjectives, anything. Use single words or small sentences. You have 3 minutes for this exercise. • Thank you! Now look at the things you wrote down. Choose one that you would like to share with the group. You don't need to elaborate on it but you can, if you want to.
10 min	<p>Introduction lecture: Waste as a contemporary problem Heritage futures and progression of the workshop</p>
2. Understanding the past – 30 min (Aboa Vetus)	
5 min	<p>Archaeological heritage – trash of the past</p> <p>Human activities have always created waste. A large amount of archaeological find material especially here in the city is trash from the past. Things people have thrown away, scraps and leftovers from cooking or crafts, construction material, human and animal feces. Turku is the oldest city in Finland, established a little over 700 years ago. Under the city there is a “ghost city”, layers from the past, which this museum is just a small portion of.</p>
5 min	<p>I will now read you a short auditory tale to help us move in our thoughts to the past. You can close your eyes if you feel like it.</p> <p><i>Imagine you are travelling back in time to Turku 500 years ago. You are standing on a paved street. On your both sides you see walls of building built of either stone or wood. At first, you pay attention to the soundscape. The constant hum of traffic is not there. You can hear the sounds of human activity; someone is shouting further away, there is a loud clanging noise and some talk. A dog barks elsewhere and further from the street you can hear the rattle of horse-drawn carriages against the pavement. Next, your nose picks up scents. The smell of burning wood is prominent all around the city. It is mixed with the smell of dung or animals. You can sense the sea being near from the whiff of salt in the wind. Somewhere nearby, someone is cooking something that smells delicious.</i></p> <p><i>You turn around the corner to a smaller alley and walk to the backyard of one the buildings. There is a lot happening in the yard. Someone is in the garden plot, picking up the last of the autumns crops. Another person is sitting on a bench, carving some kind of an utensil out of wood. In the animal shelter you see a cow and a few chickens walk around the yard. A third person comes from inside the house with a bucket and empties it in the trash pit in the corner of the yard.</i></p>

20 min	<p>These objects were found in a trash pit on the yard of a house excavated a few years back. They date to the turn of the 15th and 16th century.</p> <ul style="list-style-type: none"> • What kind of events and decisions led to these items being discarded as waste? • What was these people's relationship to waste 500 years ago? • What kind of similarities and differences are there compared to the present? • What has changed and what could have gone differently?
30 min	coffee break
3. Jump to the future – 35 min	
5 min	<p>How to discuss futures?</p> <ul style="list-style-type: none"> • There are multiple possible futures. • The future is not pre-determined. • We can all contribute to futures with our actions – or our inactions. • Humans have the unique skill of imagination, which allows us to time travel both to the past and to futures. It is not easy but possible as long as you let your mind wander and your imagination run free. • When discussing futures, all opinions are equal. •
5 min	<p>I will now again read you a short text. Please sit as comfortably as you can. You can close your eyes if you want to.</p> <p><i>Next we travel in to the future. The more we can relax and open our minds, the easier it is to imagine things that do not yet exist. Concentrate on your breathing, try to make it relaxed and steady. As you breathe, you can explore how different parts of your body feel. Is there a part of your body that feels tense? Try to relax it as well. Let your thoughts wander through your body. Start with your shoulders, and then move on to your arms and hands. Wiggle your fingers a bit and then let them relax as well. Turn your attention to the middle of your body: can you feel your chest moving as you breath? Pay attention to how the chair feels against your body. Then continue with your thoughts down to your legs and feet. Wiggle your toes and then let them relax as well. Your body is very physically here, in this space, but your mind is free to wander, both in place and in time.</i></p> <p><i>We next move on to the year 2075. Because we are travelling mentally, we can go anywhere we like. We do not know this world that we are travelling to, because we have never yet been there. Therefore, we can imagine it to be anything we like or wish it to be. We can imagine, that in 2075 many of the challenges we are facing in the present have been solved, even though we do not yet know exactly how. Perhaps people have come to realise how their activities have been burdening nature. Perhaps they have found new ways to live more sustainably as a part of nature. New challenges may have risen that we do not yet know of, but in this imaginary year 2075, the planet is healing.</i></p>
25 min	<p>These are finds discovered from the Turku of 2024. Looking at them from the perspective of the people in 2075, what would they think of them?</p> <p>What would surprise them, feel odd or familiar to them? What kinds of</p>

	<p>questions might they ask?</p> <p>What is this future of 2075 like? What is their relationship to waste like?</p>
4. Heritage futures – 35 min	
5 min	What is heritage futures?
30 min	<p>What needs for change can you identify in your behaviour, habits or thoughts related to waste?</p> <p>What kind of new, small things could you do in the present to achieve preferable futures?</p> <p>What would an ecologically and socially sustainable relationship to waste be like?</p>
5. Sharing – 30 min	
30 min	<p>Sharing and discussion</p> <p>Last words from the facilitator (about interviews)</p> <p>Feedback on the workshop</p>

APPENDIX 3 workshop feedback form

RETHINKING TRASH – HERITAGE FUTURES OF WASTE

Heritage futures workshop 1.10.2024

Questionnaire

you can continue your answers to the back of the paper if needed

What words would you use to describe your feelings just after the workshop ended?

What heritage futures will you take with you from this workshop?

In the workshop, what was...

... familiar?

... surprising?

Was the pace of the workshop good?

Was the aim of the workshop clear?

Were the assignments in the workshop clear?

Other feedback on the workshop:

APPENDIX 4 interview script

Introduction

- objectives of the interview
- recap on the use and storage of the data
- short summary of the workshop process

Background questions

1. Have you previously participated in futures-oriented processes such as workshops or questionnaire/interview studies? (In how many / for how long?)
2. Thinking of your personal choices and decision-making in your everyday life – what is the role of futures thinking? How often would you say you think about futures and in which ways? (time frame, personal/global perspective)
3. Is your relationship with waste something you have thought about before this workshop? (How, can you give examples?)

Reflection on the workshop

4. When you now reflect on the workshop discussions, what kind of topics and thoughts foremost come to your mind? What do you remember?
5. Which of the themes or topics discussed in the workshop do you find most important? (Why?)

Future relationships with waste in 2075

6. In the workshop, future relationships with waste were imagined for 2075.
 - What kind of changes or aspects do you still recall from those discussions?

I have here a short recap of the themes that emerged in the workshop:

Technological innovations and developments (new biodegradable materials, digital fingerprints and traceability that could also be used for sanctioning), practices have become extinct (singular packagings, cigarettes, masks), a change in mindset (brands and consumer culture, feeling of responsibility), people in 2075 dealing with our trash (trash debt as historical burden), more-than-human actors (worms in bio factories in homes, plastic eating bacteria, cultural memory of crows collecting trash), shifts in economy and values (degrowth, moving beyond reduce/reuse/recycle mentality)

Is there anything you would like to add to these topics?

7. Out of these elements of the imagined future of 2075, what do you think are the most significant aspects discussed?
8. How likely do you view those changes are to happen? (unlikely/possible/likely/very likely)
9. Which changes do you feel you can influence yourself? (If yes, how strong would you estimate that influence to be? If not any, why do think that?)

Heritage futures

10. The workshop ended with a discussion about heritage futures related to the topic. Heritage futures is intangible cultural heritage created in the present, purposefully aiming towards more ecologically sustainable futures. What kind of heritage created can you remember from that discussion?

I have written a short recap of the themes discussed:

Reducing/rethinking own consumption, recycling and eg. composting at home, educating children and promoting awareness, planning meals and purchases, avoiding certain materials and purchases altogether, trash picking as activity, learning new skills such as repairing, change in attitudes: re-evaluating convenience and what is a comfortable lifestyle, living a more modestly than one could afford, de-materializing, also preserving a sample of present waste for posterity

Is there anything you would like to add to this?

11. Do you feel that participating in the workshop affected your activities or thinking in the present? (behaviour, values, emotions) (How, can you give examples?)
12. Did participating in the workshop affect the way you think about futures? (How, can you give examples?)
13. Is there anything else you would like to add to the themes discussed?