

An investigation into improving the reuse of soft plastic wrapping materials pertaining to the short-term and repetitive packaging of framed art for art fairs.

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This research and dissertation would not have been possible without the participation from the research respondents and specialists in the sector, who have invested their knowledge to improve our industry. With particular thanks to Kim Kraczon, who made extra steps to involve me in the research group at the National Gallery in London. I would also like to thank the Museum of Croydon for providing materials and space for the Alternative Packaging Proposal experimentation. And finally, a special thanks to all my friends and family for their endless support in my academic and professional career.

Abstract

The aim of this study was to investigate and initiate a method to reduce the damage inflicted on soft plastic wrapping materials when unwrapping artwork, with the aim of increasing practitioners' ability to reuse these materials. The study focused on how this could be implemented into events such as art fairs, in which art is packaged multiple times, and as a result, tremendous amounts of non-recyclable and non-reusable packaging is disposed of. This study's packaging method proposes to remove the damaging factor, adhesive tape, and replace this with cotton tape to tie up packaged framed artwork, allowing the work to be both easily unwrapped, while also saving the soft wrapping materials for future use. The study used interviews and a physical demonstration as the primary research for this alternative packaging method. The argument for encouraging practitioners to adopt this, or a similar method, is supported by cradle to gate GHG data from STiCH to analyse the environmental impact of replacing versus reusing bubble wrap. The research found that it is possible to create a secure and well protected packaged artwork without using any adhesive tape. However, this does not extend to the package remaining air tight or water tight, and so this should be taken into consideration by practitioners looking to adopt the method. The study proposes that this could be overcome by packaging art in environmentally managed crates. The study concludes that there are certainly challenges to change the standardisation of packaging, and while there are factors that may not qualify the use of cotton tape in replacement of adhesive tape for some artworks, the method is possible and will allow the art sector to take further steps to reduce its environmental impact.

Introduction

Improving professional practices to become more sustainable is not a new concept in our day and age. Sustainability is an overarching theme within all areas of conservation. It is this motivation to preserve cultural heritage for future generations that drives the industry. The research for this dissertation for the Masters of Preventive Conservation aims to be a resource to aid innovation surrounding soft plastic wrapping materials used to package artwork for short-term events, such as art fairs. The research chose to focus on art fairs due to the frequent nature of this form of exhibition and the repetitive rewinding of multiple artworks. Considering the requirements for the short time period that artworks are packed for transportation to and from art fairs, this research proposes that there are adaptations that can be integrated into packaging for such events. The adaptation that this dissertation proposes is for practitioners to replace adhesive tapes, such as vinyl tape, with cotton tape. If unfamiliar with the product, cotton tape is an acid free cotton ribbon, frequented by conservators, and does not have any adhesive properties, as the name might suggest (Fig 1).



Fig 1: Cotton tape (Preservation Equipment, 2022) is a non adhesive, acid-free ribbon type product that can be used to tie packages. The product comes in multiple thicknesses, diversifying the application to use the product instead of adhesive tapes for different types and sizes of artwork.

Derived from this dissertation's primary researcher as an art dealer at several international affairs, the research was driven by the motivation to contribute to the body of knowledge with the hopes of improving the sector. Drawing from my own experiences at art fairs including Art Basel and Frieze London, I understood some of the constraints surrounding art fair packaging, such as time and monetary cost. Pairing this with a solution driven dissertation built upon the foundations of preventive art conservation, this body of research seeks to promote the idea of solution based thinking.

This dissertation has a particular focus on bubble wrap as the primary example of a soft plastic wrapping material, however the proposed theorised solution could be applied to other soft plastics that are damaged when removing adhesive tapes. The research focuses on plastics because of their prevalence in the visual art and conservation sector. With no current materials performing to the same level as products such as bubble wrap, explored in 'Chapter Three: Research', this body of research used the 'Waste Hierarchy' (Fig 2) to champion 'Refusing, Reducing and Reusing' (Finch, 2022); This ethos laid the foundation for this body of research. As we are not always in a position to refuse non-recyclable soft wrapping plastics in the art conservation and art handling sector, we can see this message in the hypothesis of switching adhesive tapes to the non-adhesive cotton tape, by which, refusing the consumption of a non-recyclable product consequently alters the harmful consumption of this factor of packaging.

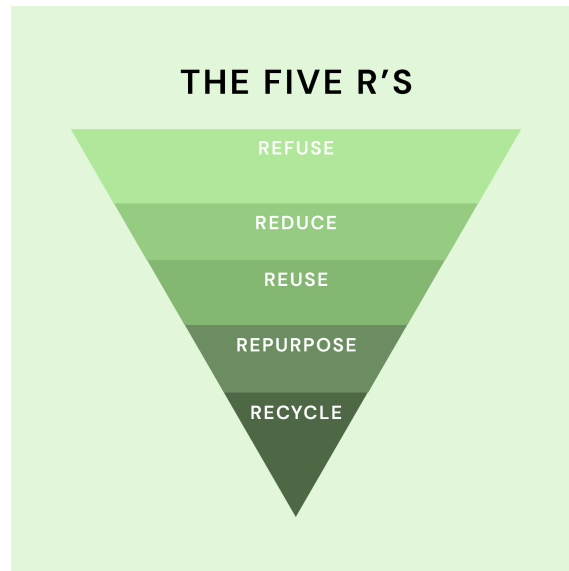


Fig 2: *The 'waste hierarchy' diagram (Gallery Climate Coalition, 2022c) communicates a more diverse range of practices beyond the simple 'reuse, recycle'.*

This dissertation will begin by analysing the body of knowledge in a literature review, in Chapter One. Chapter Two will analyse and explain this dissertation's methodology and ethical considerations, and finally Chapter Three will present the research. The literature review will analyse material surrounding environmental concerns and government requirements, illustrating the growing concerns surrounding the environmental impacts of the sectors, as well as the views pertaining to institutional responsibilities. The literature review will also analyse the professional advice surrounding art packaging and preventive conservation practices linked to this. The literature review intends to not just inform the body of knowledge, but also contextualises the reasons for why this dissertation should sit within this body of knowledge and ongoing research. A significant component of the research relied on collecting sentiment data from professionals within the wider sector or art packaging, which will be explained further in 'Chapter Two: Methodology'. The penultimate chapter, 'Chapter Three: Research', presents and analyses the research, including the results from the interviews, along with other supporting research. The conclusion will include a discussion for the space of further research to determine how the hypothesis can be extended for a wider range of artwork.

Chapter 1: Literature Review

Sustainability is heavily targeted, with a plethora of groups, institutions, charities and individuals constantly contributing to the field of knowledge. This comes as no surprise, as the issues surrounding a move towards eco-conscious decisions in all industries is a clear response to the needs of our time. In keeping with this, the contributions towards building a better tomorrow in the visual arts space are a heavily invested area of research. With the vast contributions to the field of knowledge, it is important that new research builds upon the current knowledge from our industry fellows. Contributing to new areas of development will allow this important topic to develop and expand, allowing our industry to make the necessary steps towards a sustainable reality. The aim of this research was to investigate the issues surrounding non-recyclable and non-reusable packaging materials used to package artworks for travel over a short-term timeline, and consider possible solutions to improve practices across this field. This literature review will cover the body of knowledge through the relevant topics and questions that this study aims to clarify, analyse and expand.

In this literature review, we shall identify the roots of sustainability within the visual arts industry, understand the concerns raised by our predecessors, analyse how the industry has evolved to solve these primary issues, how this movement towards change catalysed the evolution of a more sustainable visual arts industry, and what this involves, including practices within preventive conservation. The chapter will then analyse the field of knowledge surrounding the following topics; Plastics Emissions and the Basic Recycling Restrictions, The Role of Institutions, The Waste of Art Fairs, The Guidance Surrounding Packaging Art, Finding Solutions, and The Specifications for Reusing Materials. Sustainability is a global concern, and so, along with the international nature of art fairs, this literature review considers research from a wide range of origins, while still remaining relevant to the research topic.

1.1 Plastic Emissions and the Basic Recycling Restrictions

Reducing our consumption of plastics is a critical step in moving towards a more sustainable future. Currently, plastics contribute approximately 1.8 billion tonnes of carbon emissions annually across the globe (WRAP, n.d), and in the United Kingdom, plastic packaging accounts for almost 70% of the annual plastic waste (WRAP, 2022a). There has been a high level of response from governments to achieve a more circular economy. In 2021, 120 world leaders from almost 200 countries, and thousands more participants, were brought together for COP 26 in Glasgow for a two week conference to target climate change action (United Nations, 2021). 2021 also saw the British government amend their previous target of an 80% cut in carbon emissions, pledging to achieve net zero by 2050 under the Climate Change Act (Dray, 2021).

While this sounds like a positive change, we should be realistic; there is a reason plastic is in so many of our products. Plastics are polymers, a structure made up of repeating long molecular chains (Alliance To End Plastic Waste, 2021). This structure allows plastic to be engineered to present different characteristics that can be manipulated to suit the needs of a versatile range of products. Plastics are also a highly stable material, which is both a blessing and a curse. This stability, while qualifying the material to be used in some of the most vulnerable environments, within the conservation of art and cultural heritage, for example, also results in a material with a slow degradation timeline; a contributing factor to the overflow of waste into our oceans and landfills (Natural History Museum, 2015).

However, there are decisions that one can make as a consumer to reduce the environmental impact by deciding to use some plastic products instead of others and can reduce energy consumption during the manufacturing process. Compared with using 'virgin' materials, remaking plastic products from recycled plastic cuts energy output between 66% (This Is Plastics, 2017) and 75% (WRAP, 2022b). With this in mind, it is important that unnecessary efforts or inconveniences to recycle packaging products are reduced, or ideally removed. Bubble wrap is commonly an LDPE, which can be recycled (Hall, 2021), but as a soft plastic, the recycling process is far more

complex, as the gift film “can clog the machinery typically used to recycle plastic waste” (Hall, 2021). In addition, adhesive “Tape is brutal” (Shaver, 2022) and cannot be recycled (Gallagher, 2021), and if not completely removed, will contaminate the bubble wrap, disqualifying it as a potential recycling material. The importance of reuse to the highest potential is a crucial action to tackle accumulated waste, not least because of the hidden complexity of the recycling process. Less than 10% of plastic is recycled per year (UN Environment Programme, 2021). Recycling takes one product and makes it into another, however, this is not so simple. Only a maximum of two different types of polymers can be recycled together (Shaver, 2022). Along with differentiating the thousands of different polymers, homogenising the correct polymers together is an enormous undertaking.

1.2 The role of institutions

Hughues de Varine first coined the term 'eco museum' and Georges Henri Rivière in 1971, in response to the growing popularity of the green movement in France during the 1970s (Porter, 2017). Porter describes the term as a political decision, with de Varin's motivation to democratise museums and "promote the role of the community" (Porter, 2017). De Varine's museums adopt the role of helping communities adapt to new societal changes, and alongside Rivière, with a background in ethnographic work and rural material culture, "favoured the ecological and environmental aspect" (Porter, 2017) of the concept of eco museums. This new museological identity has been further extended by the contributions of Peter Davis whose 1999 work 'Eco museums: A sense of Place' (Davis, 1999) responded to the initial concept by investigating two key aspects, which have an overarching theme of responding to the communities they serve, and using their influence to represent a variety of groups, ideas and values.

In a compilation of twenty-nine essays, Stephen E. Weil (Weil, 2002) argues that museums have a responsibility to enrich the audience they serve, and therefore must respond to the needs of their community, to hold a valuable and enriching position in a community. While this notion can be applied to areas within curatorial and educational

practices, the actions and procedures in relation to sustainability must also be considered.

Galleries and museums continue to evolve to meet the needs of our time, by integrating environmentally sustainable practices into their executions (Fenn, 2012:p.5). Fenn's research investigated the contrast between British and Canadian galleries and museums, mentioning that institutions within the United Kingdom implemented more environmental initiatives and sustainable policies, and found a reduction in their carbon emissions (Fenn, 2012:p.87).

The idea of museums and galleries adapting to the needs of their communities is not new. Visual arts institutions endlessly reinvent themselves (Glaser, Zenetou and Smithsonian Institution, 1996). The British museum sector has long been discussing how museums could expect to make environmental improvements (Mellor and Tate Modern, 2008).

1.3 Art fair waste

As demand for wider access to a diverse range of art has risen, art fairs have fulfilled this call by condensing hundreds of pieces of work from international sources into a single space. However, with this vast display of work comes tremendous amounts of physical packaging, required to protect the work before, during, and after the event. Max Beinhacker critiques the "bacchanalia of carbon emissions" (Beinhacker, 2020) produced by art fairs around the world, criticising the lack of recognition of the environmental impact, calling on consumers to "confront the art market's responsibility towards sustainability" (Beinhacker, 2020).

Reiterating the crisis of the waste produced by the art world, Frieze published author Tom Jeffreys also raises the issue of the harmful environmental impact of visual art events. Reluctantly stating "It thus remains unclear whether the art market can become

truly sustainable without a radical overhaul of our entire economic system” (Jeffrey's 2021), Jeffreys raises the stark reality of the scope of the problem.

For one week per year, an art fair can become the beating heart of a country's art scene. As art fairs have become increasingly important to galleries' survivals (Burns & Gerlin, 2011), increased numbers of participating galleries can be seen year upon year. Frieze London's gallery line-up grew from 147 galleries in 2018 (Frieze, 2018) to 276 galleries from 39 countries in 2021 (Art News, 2021).

Art fairs are huge events and, therefore, sources of high levels of carbon emissions. However, in response to the needs of our time, art fair organisers have made changes to improve their impact. We can see this through Frieze London's change in carbon emissions between 2018 and 2019 (Fig 3 and Fig 4).

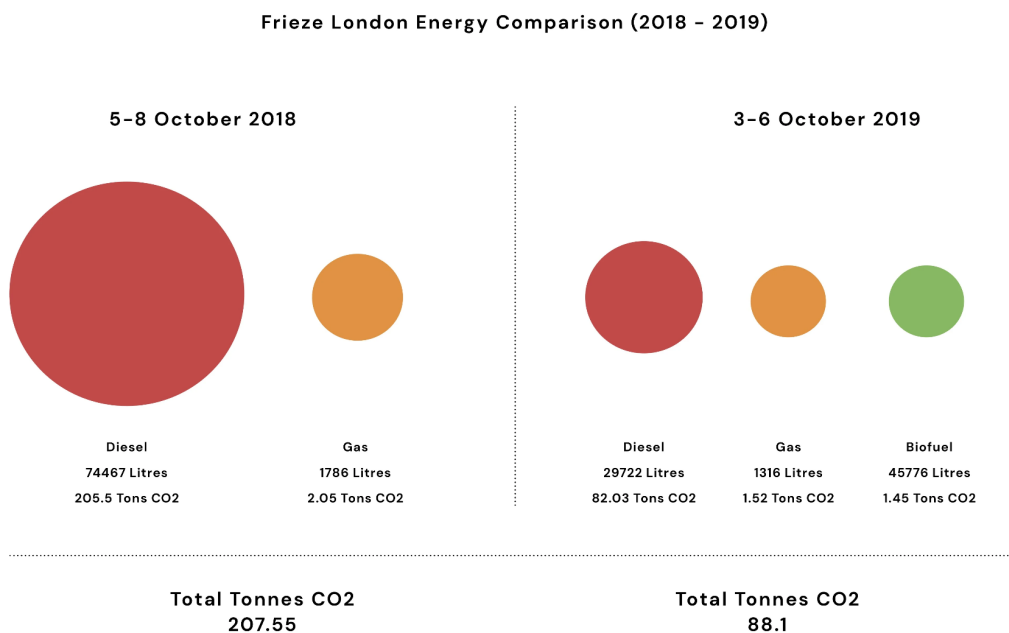


Fig 3: (GCC, n.d) Research carried out by Hope Solutions, showing the reduction of energy consumption at Frieze London between 2018 and 2019 (Gallery Climate Coalition and Hope Solutions, 2022a)

	2018		2019	
	Amount	CO2 (tonnes)	Amount	CO2 (tonnes)
Fuel				
Diesel	74467 litres	205.5	29722 L	82.03
Biofuel (HVO)	0	0	45776 L	1.45
Gas	1786 Kg	2.05	1316 Kg	1.52
Waste				
Recycling	Not recorded		42.8 tonnes	0.92
EfW	Not recorded		86.1 tonnes	1.84
Water				
Borehole	Not recorded		200 m3	0
Mains (potable)	Not recorded		161 m3	0.06
Waste water	Not recorded		343 m3	0.28
Total		207.55		88.1
Visitors		61353		58182
CO2 per visitor		3.38 Kg		1.51 Kg

Fig 4: (GCC, n.d.) Research carried out by Hope Solutions, showing the breakdown of the energy consumption at Frieze London between 2018 and 2019. (Gallery Climate Coalition and Hope Solutions, 2022b)

In response to the harmful environmental impacts of the art industry, the Gallery Climate Coalition has provided online resources to help practitioners change their practices to become more sustainable. Other environmental groups, including Julie's Bicycle and Ki Culture, are endorsed by the group, who are committed to researching and improving many areas in the art industry. The GCC provides a free Carbon Calculator for users to track their carbon emissions during the transport of their work. The Coalition aims to dismantle the hurdles surrounding sustainable practices, and makes the suggested solutions accessible to their audience (Gallery Climate Coalition, n.d.)

1.4 The Guidance Surrounding Packaging Art

Packaging art has many components. Cases are a staple in art fairs and crucial to protecting the wrapped pieces of work. However, despite the cases being so integral, they are not always built for longevity, and, like many packaging products, are disposed of once they have served their purpose. Cases can hold numerous pieces of work, and can therefore be incredibly large. It has been observed that as a result of these large sizes, cases are often disposed of as it is too expensive for some organisations to store the cases outside of their art fair participation timeline (Harris, 2018). Harris' article disappointingly speaks about the stark reality of art fairs, stating "The amount of waste is disgusting" (Harris, 2018).

The importance of properly packaging artworks should not be underestimated. Fine Art Restoration gives advice on how to package different works, such as framed paintings, frameless paintings and damaged paintings (Fine Art Restoration, 2019). However, there is a level of ambiguity when it comes to art handling and packaging art. Although most art handlers are careful and experienced individuals, improper handling can be surrounded with human error, as each package and crate will be potentially packed at different stages by different people with different levels of experience. Art handlers can also be expensive (Anthony Browne Art Handling, 2015; Artwork Archive, 2022; Artists' Union England, 2019), which may also affect the level of handler chosen by a gallery or institution who is tighter on funding. Art fairs often use an art handling company to unpack and install work at art fairs, however the standards for how each item is packaged pre-fair is open to interpretation, and suggested materials do not always include sustainable alternatives. The Affordable Art Fair's Packaging and Delivery Guidelines include important details, such as always facing bubble wrap outwards so the bubbled surface does not subject a frame or the work to its uneven surface, adding foam padding to a frame's corners, and adding an extra layer of plastic to protect the packaged art during transit,(Affordable Art Fair, n.d.). While these notes are undeniably important, the guidance does not extend to more sustainable products, and fails to mention how to unpack the works to optimise the reusability of the materials post-fair.

1.5 Finding Solutions

While there is considerable effort and investment in sustainable packaging, the reality of change is certainly not straightforward. In a thorough academic literature review studying progress between 1997 and 2017, Xuezi Ma and James Moultrie (Ma and Moultrie, 2017) investigate the challenges designers face in their efforts to make environmentally viable packaging. The researchers found that the problems surrounding the topic were largely recognised, but the solutions to the problems were far less conclusive. As explored by Sonneveld et al, our current attitude towards packaging is a throw away and disregarding ideology (Sonneveld et al., 2022), discarding packaging once it is deemed to no longer serve its purpose (Sonneveld et al., 2022). This view creates an opposing narrative, transforming packaging from being a necessary and useful material, to a harmful and wasteful burden to the environment. Perhaps our wasteful output would change if we could harness the reusable potential of some of these materials, and change our language around the topic. One example of this change of language can be seen in Ki Culture's Kim Kraczon's job title, which has evolved from 'Director of Waste and Materials' to 'Director of Circularity and Materials, in a bid to "urge the re-contextualisation of the materials that we use" (Primal Green, 2022, 01:47), reframing them as useful to keep them in circularity for as long as possible.

Efforts by governing bodies and political leaders have sought to regulate practices with new standards surrounding waste, however these have created confusion for manufacturers who can access the required tools and materials (Gómez-Navarro et al., 2005). Tools, we should note, do not always refer to physical labour assisting objects, but also includes knowledge, education, time and financial tools, without which many manufacturers are left not knowing how to realistically alter their procedures to fulfil these new government standards, whilst continuing to run as a business. These barriers to change are recognisable issues, and efforts to build solutions are also an investment area, globally, under organisations such as The Sustainable Packaging Alliance (SPA) in Australia, the Sustainable Packaging Coalition (SPC) in the United States of America, and The Industry Council for Research on Packaging and the Environment (INCPEN) in

the UK. However, there are many changes to ensure that new, well-intentioned environmental standards are streamlined into the manufacturing of packaging products.

Case studies allow us to evaluate data in hindsight. We can evaluate the successes, weaknesses, and consider areas perhaps previously completely overlooked. Nunberg, Eckelman and Hatchfield use case studies in their research paper "Life Cycle Assessments of Loans and Exhibitions: Three Case Studies at the Museum of Fine Arts, Boston" to assess the environmental impact of the loans and exhibition of cultural heritage items. Driven by the role that sustainability plays in the fabric of conservation (Nunberg, Eckelman and Hatchfield, 2017, pp.2-11), the researchers highlight the necessity for exhibitions, in discussing the role that exhibiting cultural heritage plays in our communities and wider societies, but equally how this translates in environmental impacts. The authors hypothesise that without change, the materials used to transport cultural heritage items are finite, as dwindling natural resources will lead to the inability to physically produce such items (Nunberg, Eckelman and Hatchfield, 2017, pp.2-11).

There is no doubt that reusing materials will reduce physical waste and carbon emissions. The more we reuse, the less of a new product we consume, and the frequency that this material is discarded as waste is reduced. But what does this reduction of carbon emissions look like? Depending on where one looks, the reduction in carbon emissions ranges from a 60% reduction (Reusable Packaging Association, 2021), to an 80% reduction (Repack, 2017) in carbon emissions. These are significant statistics, but they should be treated with caution, as they are positive advertisements for promoting companies, and will carry an air of bias. However, despite this, it is clear that there can be environmental savings to be made when producing some reusable products.

The trends surrounding packaging are ever changing, with research development and government legislation restricting certain products in some cases. Understanding the state-of-the-art knowledge surrounding these factors allows us to identify the direction of current changes and further research (Coelho, et al., 2020). Reusing packaging is

beneficial from an environmental standpoint, and is also financially attractive. In other sectors, designing packaging that can be reused has saved companies £1 million a year, while avoiding 1000 tonnes in cardboard boxes, while also reducing damage to their product (Hutchinson, 2019).

There are strong arguments for moving towards reusable packaging products, but there are complexities that make it challenging for companies to do so. Further research is needed to determine the impact of reusable packaging in different industries (Rigamonti, Biganzoli and Grosso, 2019). Investment in the design of such products is a time-consuming, but necessary process that would affect the efficiency and effectiveness of a reusable packaging product (Coelho, et al., 2020).

Approaching research to find alternative packaging products can be an overwhelming task for consumers. However, alongside raising awareness of the many areas that galleries and museums can improve, the Galley Climate Coalition has also invested in creating clear and accessible research for consumers within the industry to use. Kimberly Kracson's research for GCC 'Plastic Alternative Packaging Materials Research', in 2021, compiles alternative packaging products that environmentally conscious consumers can consult (Kracson and Gallery Climate Coalition, 2021). Alongside listing the product, replacement category, and company and distributor, the resource lists contain sustainability information and conservation notes. Kracson's alternative products include those that are plant-based. Plant-based products use organic crops, such as corn, to create a product rather than polymers. Kracson's resource importantly highlights that each plant-based product failed the Oddy Test. The Oddy Test (Oddy, 1973) is a staple of the conservation science industry to determine the deterioration characteristics of a material that is intended to be used with artefacts or artworks in any conservation capacity, such as cleaning, packaging and display. As a rule of thumb, those products that fail the Oddy Test are not suitable to use with artwork or other heritage artefacts. Including these test results allow those without a conservation background to make an informed decision about the products they choose to use. Built for this accessible use, Kracson has consciously included a disclaimer that

notifies the user of the limitations of organic based products, and their inappropriate use for long-term use. However, the time scale of short-term versus long-term is ambiguous. Conservation resources reference these time scales (Getty Conservation Institute, 2008:p.8; Arnold, Baker and Canadian Conservation Institute, 2017), yet there is no clear timescale for what these translate to. In reference to these timescales, Kraczon's resource does not expand on whether plant-based materials would be appropriate for short-term use, nor what the timescale of a long-term versus short-term timeline is. The resource could also be adapted to include further details about the exact testing that each product had undergone, which would give us further context when considering alternative products for practical use.

Sustainable products can be fantastic alternatives and have the potential to make a positive environmental impact. However, it is tempting for companies to promote their product to consumers by simply labelling their products with key words and phrases. While some products might be labelled as 'sustainable', 'green' or 'eco-friendly', among other trend phrases, "care must be taken to ensure that these products are sustainably produced and are as free as possible of embedded economic and social inequalities within their production chain" (Gallery Climate Coalition, 2022b). As consumers, we are aware of the impact of non-recyclable products that end up in landfill and our oceans. However, this extra concern is daunting, and more research is needed to determine the extra impact of a product.

Improving the environmental impact of the visual arts industry can be seen as a priority for institutions in the United Kingdom, as seen in a census conducted by Julie's Bicycle between 2014 and 2017. The results are positive, demonstrating that 69% of the respondents see that being environmentally sustainable has become more important to their organisation during the census' time frame, and nine out of ten respondents within the visual arts industry consider their environmental impact a relevant factor in their ethos (Tickell, Badiali and Julie's Bicycle, 2018:p.39).

Although those within the industry may want to make a change, it could be unknown how that change will translate in its real input. Simon Lambert and Jane Henderson's 2010 pilot study at Angueddfa Cymru - National Museum of Wales produced a methodology using data from the museum's art department to measure the environmental impact of museum loans. The paper acknowledges four key components of a loan; wrapping materials, packing cases, transport, and couriers. The authors importantly note that carbon footprinting is not an exact science, and although great care might be taken to collect the data, there can be areas of discrepancy (Lambert & Henderson, 2010:p.212). Despite this, calculating carbon footprints is a great management tool to indicate climate change and environmental impact. To streamline the task of calculating the museum's carbon footprint, the study focused on limited artwork types with standardised sizes, and generalised how the works would be packaged. The methodology assumes that framed paintings are wrapped in clear polyethylene sheeting of 100µm thickness, with a total of three times the surface of the painting itself (Lambert & Henderson, 2010:p.216). Although there may be other variations within packaging in other museums or institutions, the calculations act as a stepping stone for further improvements and recognition of packaging materials consumption. The authors also touch on the impact of reusing packaging materials, stating that "there is no evidence to suggest that wrapping and packaging materials cannot be reused several times for loan purposes" (Lambert & Henderson, 2010: p.220). In 2006, the Art Department at Angueddfa Cymru - National Museum of Wales "saved about 840kg of carbon dioxide" (35.Lambert & Henderson, 2010:p.220) because Kent Services reused all its foams.

In addition to calculating the carbon footprint of artwork transportation with the Gallery Climate Coalition transportation calculator, it is now possible to also calculate the life-cycle carbon footprint of some products and materials through the STiCH Carbon Calculator. Designed by engineers, conservators and designers, the calculator allows users to input the quantity of a product and calculate the 'cradle to gate' carbon footprint (Eckelman and Nunberg, 2022). The calculator uses existing data from databases including CAMEO, AIC Materials Working Group, alongside new data gathered by the

participating researchers (Eckelman and Nunberg, 2022). However, with this in mind, we should reiterate Lambert and Henderson's apprehension that calculating a Life Cycle Assessment of any product is unlikely to be 100% accurate (Lambert and Henderson, 2011). Instead, this information can be used to indicate potential GHG emissions, but more importantly, it informs ours and increases awareness of how our product consumption translates into environmental impact data.

There are three main elements that are considered when it comes to sustainability in packaging; "eliminating leakage of packaging into the environment, increasing the reusability and use of recycled content in the packaging, and reducing the carbon footprint of packaging" (Feber et al., 2021). In the report 'True packaging sustainability: Understanding the performance trade-offs' (Feber et al., 2021), the authors highlight the potential conflict between fulfilling new environmental requirements or more positive intentions. They explain that in some cases, an unintentional consequence of companies producing a material or product with a lower carbon footprint can lead to it being non recyclable. Therefore, it is important to inform consumers about changing specifications across the value chain. As the authors point out, the transparency of this information is at the mercy of the manufacturers and producers of such products.

In the 2022 report 'Climate impact of plastics', overseen by McKinsey and Company, plastic packaging products were assessed against their alternatives, summarising that "Plastics have a lower total greenhouse gas contribution than alternatives in most applications" (Helmcke et al., 2022:p.2). The paper examines the greenhouse gas contributions over products' full life-cycle, from cradle to grave, using data from the United States in 2020. Although the paper summarises that 13 of the 14 cases with lower GHG emissions were plastics, the paper focuses on food packaging, not wrapping materials. However, there is still value in considering these results due to the raw materials that food packaging is made from, and the correlation to be some raw materials often found in conservation packaging materials. Polyethylene is the raw material used in bubble wrap (Kite Packaging, 2022), which is also the raw material

used to make many food packaging products (Helmcke et al., 2022; Feber et al., 2022; Cooper, 2007; Cruz et al., 2019)

Along with products that are made from reusable materials, physically reusing packaging materials also significantly reduces an individual's Carbon footprint (Reusable Packaging Association, nd). Packaging artwork properly will protect it from damage, by disrupting forces from accidents such as dropping (Marcon and Canadian Conservation Institute, 2021). A concern for reusing packaging materials is that they will not provide the same level of protection to the artworks in a reused state. However, as is the decision surrounding how an artwork is to be packaged, the decision to reuse a packaging material could be judged on a case by case basis by the art handling team, or a conservator depending on the place of packaging.

1.6 Conclusion

Sustainable packaging is a vast topic, and while this could make it a challenge to remain focused, it also means that we have countless resources to consider and translate into other areas of industry. Although perhaps not particularly specific to art conservation, there is compatibility of research from other industries, such as the food packaging industry; Concerned with how one's actions will impact the collections one works within art conservation, a material's stability required for food packaging is highly translatable to art conservation standards. As with other industries, the visual arts sector is constantly evolving, as is the art conservation industry. Sustainability is "about changing habits" (Finch, 2022:p.4), and to do this, it is vital for us to recognise the views and practices partaken by professionals, and continue to find ways to ensure that our industries will evolve to meet the environmental targets of our governments.

Increasing demands for exhibitions displays a pattern of re-exhibition that will continue for the foreseeable future. Conscious of dwindling natural resources, it is imperative that galleries, museums, and independent practitioners strive to ensure that they are practising sustainable procedures, to avoid unnecessary strain on our planet.

Chapter 2: Methodology

The focus of this study was to investigate how soft wrapping materials, could be reused for short-term and repetitive exhibitions, such as art fairs. This study does not exist to repeat the obvious concerns about waste, but has instead been designed to be a useful tool for those within the industry to improve their own practice, by providing an accessible solution. As with our practices in conservation, the decisions during this study have specific intention and purpose. This methodology chapter will first analyse 7 research design choices. Subsequently, the chapter will discuss the research limitations and conclude with an overview of how the methodology ensured that the study produced successful research outcomes, which will be informative to the field of knowledge.

2.1 Research Philosophy

This research follows, and is strongly influenced by, an interpretivism research philosophy. The primary research sees practical experimental, shaped by semi-structured interview data with individuals whose experience allowed this primary researcher to identify a comprehensive understanding of practices and views within the field of art packaging. The interview results were observed, interpreted, and implemented in the 'Alternative Packaging Proposal', found in Chapter Three. The process of choosing research participants had specific criteria that must be met; individuals must have specific experience in conservation, packaging, handling art, or worked with or in art fairs. The choice to correspond with respondents from a wide range of sectors was to investigate how integrated the topic of reusable packaging is across the wider industry.

2.2 Research Type

This study was born from the curiosity derived from personal experience during professional roles at art fairs between 2018 and 2021. While bias could be argued to be a destructive catalyst to a tunnel view study, there is no doubt that waste on a large and frequently repetitive scale is environmentally detrimental. Aiming to contribute to ways that industries adapt to meet the needs of our time, this study engaged with the conservation and visual art industry, and is confirmatory in its approach; Reusing non-recyclable plastics improves environmental impact and monetary consumption. Adopting a qualitative and deductive approach, this study engaged with practitioners to deduce the barriers to changing procedures. It allowed this primary researcher to understand the professional's views surrounding the topic, finally implementing this data to propose a solution. The qualitative element can be seen in the investigatory nature of the interviews and experimentation aspect of the research.

The deducting research type was an integral component of how the research ensued. The research began with the hypothesis that we could improve our consumption of soft packaging wrapping materials by removing the damaging factor, allowing it to be reused. Data from the interviews was collected and incorporated in the execution of the Alternative Packaging Proposal experimentation. This selection of data was analysed as a whole, and a conclusion was derived from these results. While there is also a quantitative aspect within the research, these results are included to support this research, and to enhance the message of the importance of change that the research topic promotes.

2.3 Research Strategy

The full 'Alternative Packaging Proposal' (Appendix 9), is intended for implementation into shipping work to art fairs, and other repetitive events where the art will potentially be repackaged and exhibited repetitively. Art fairs are a global and multifaceted industry

so the consultation of resources from global and varied sources was crucial for informing this study. This study's research design adopted an essence of collaboration by collecting sentiment data from a wide range of industry professionals to inform the qualitative aspect of the research. Action towards positive changes within the art fair and art packaging industry is governed by individual's choices, as so it was imperative to this research to investigate individual views in response to the topic, and assess how these can feed into one another. With this as a driving factor, the research strategy for this project followed an action research design. Allowing individuals to contribute to the research by reflecting on their own experiences and views feeds into the notion of individual action making collaborative change in the larger system. This design approach allows the study to respond to relevant and current issues, and solutions, and applies them in the experimental component of the research, to create a realistic and practical solution to the issues surrounding non-recyclable and single use soft plastics in the packaging of artwork for art fairs.

The research participants contributed integral knowledge to this research. Individuals within the art conservation industry shared ideas and knowledge, with the motivation to develop the field of research, so that the industry can grow. I used my own address book to reach out to research participants, which led to interviews by secondary contacts who had relevant and valuable experiences and insights to share. The literature review was also a resource in which some participants were contacted, such as Jasmine Fenn, Green Cell Foam and Stiffy Bag. Unfortunately, not all of these participants responded to interview requests. This will be expanded upon in the limitations category of this methodology chapter.

2.4 Time Horizon

The time horizon for this research is cross-sectional. The interviews, experimentation, and quantitative investigation analysed research between June to September 2022. The aim of the study was not to assess how practices have changed over a long period, but to create a snapshot of current issues, views and data available at the time of the

research undertaking, with the aim of then implementing these considerations into the Alternative Packaging Proposal (Appendix 9).

2.5 Sampling Strategy

The sampling strategy followed a non-probability strategy. Due to the specification of the research topic, it was important to remain focused by selecting participants with relevant knowledge and experience. Although it could be argued that this would produce sampling bias, this primary researcher made efforts to include professionals from as many subsections of the art fair sector as possible, from art conservators, to crate companies, to art consultants. All the participants who agreed to participate in the study were interviewed, which decreased the sampling bias as much as possible to collect the most equal overview possible.

2.6 Data Collection Method

To reiterate, the aim of this study was to propose a method to reduce packaging waste of soft plastic wrapping materials to wrap art, and simultaneously allow practitioners to harness a longer lifetime of these products. The primary source of data collection came from semi-structured interviews. The findings were then implemented into the second portion of the qualitative research, the 'Alternative Packaging Proposal' (Appendix 9) experimentation. As found from some participants' responses, a significant barrier for change within the industry is re-education of other industry professionals who could be wary of changing their practices. As a result, additional quantitative research was included as supportive evidence of the environmental impact of the Alternative Packaging Proposal. The qualitative research relied on data from the STiCH Carbon Calculator, as it was an endorsed source by a research participant and built on reliable resources.

The questions for the semi-structured interviews focused on collecting relevant data for the research, and the same questions were included in the majority of each individual

interview to allow the data to be compared. However, some questions were adapted or added in order to harness the expert knowledge of each participant. Each participant was sent the questions prior to the interview, and had the opportunity to review the questions. Complete transparency with how their interview data would be used was practised with all participants. Prior to any data collection and interview scheduling, all participants signed informed consent forms to ensure that they understood exactly how their data would be used, as well as the intentions for including them in this research.

To ensure everyone's personal health and safety, all of the interviews were conducted online. This developed from the initial ethics proposal (Appendix 8) where I had the intention of using video call software alongside in-person interviews. However, due to geographical and time constraints, and the current COVID-19 concerns, online video software became the primary method of interview arrangement. All participants were informed that the interview would be recorded in full. This detail was included on the informed consent form, and was also a question at the beginning of each interview. All recording consent was given by the participants, which can be seen at the beginning of each transcript in the Appendices. However, it should be noted that anonymous Participant 2 requested no direct transcript be reproduced. This request was honoured, and only notes about the participants interview responses are included in replacement of a transcript (Appendix 2d). The participants were also all given the opportunity to retract any of their responses. Finally, all records of every participant's personal data will be destroyed in accordance with Northumbria University's Data Retention Schedule. All of the signed informed consent forms can be found in the Appendices. Forms from anonymous participants have been edited to hide their names. The ethical procedures ensured that all participants were fully informed about how their data would be used, and created a safe environment for them to share their expertise.

2.7 Data Analysis Methods and Techniques

The data collected through the interviews was exponentially informative in influencing the packaging experimentation, and informing the analysis for the further data collection

surrounding the Carbon Footprint of packaging materials. The interview questions were based around the same subject of investigating industry professionals' opinions surrounding the level of sustainability of art packaging materials. However, each interview was personalised to the participant, in order to assess their professional experience and insight productively.

Each participant was asked between seven to ten questions surrounding the research topic. All of the questions allowed participants to expand in as much detail as possible, in order to gather as much data as possible. Unlike statistical analysis, the data produced by the participants was opinion based and therefore open to higher interpretation. However, as previously discussed, the aim of this study was to investigate true practices surrounding short-term packaging, to gather views and research surrounding sustainable packaging, and ultimately produce usable and useful research for the industry. Therefore, it was imperative to collect first-person data from members of the sector.

Along with the interpretive data sourced from the interviews, it was also important to identify the environmental impact of different materials using numerical data. This scientific, “hard” data was more challenging to find, as materials manufacturers do not transparently produce the relevant figures. However, the insights provided during interviews suggested resources to help establish this information. In particular, the interview with Kim Kraczon (Appendix 5) is a prime example of how members of the conservation industry share their experience for the benefit of others. Using STiCH, the online GHG calculator used to identify the cradle-to-gate emissions of materials used in the conservation industry, I was able to compile and compare the environmental data of a range of packaging materials, in order to analyse their environmental impact. We will expand upon this in the Research chapter.

The materials that I chose to analyse using the STiCH calculator were decided through my own experience from packaging art for art fairs. I chose to consider the plastic based materials involved in packaging art for transportation, as plastics have been the source

of much environmental concern, as we explored in the literature review (list of sources surrounding plastic environmental damage in lit review). There were limitations with using STiCH, as the data that the software produces is sourced from existing databases, such as CAMEO. It is therefore important to remember that there is likely to be areas of inaccuracy between the source of the data used to inform the STiCH calculator, and each consumable product. However the data, although perhaps not one hundred percent accurate for every product, can still give us an important indication of an environmental impact.

2.8 Methodology Limitations

While my research methodology allowed this study to explore the research topic, which provided successful results, there were limitations that meant areas of the research had to be adapted.

Participant contribution was an integral component of the methodology. However, it was difficult to source interviews from all of the participants I contacted. Individuals were more willing to participate in interviews, whereas representatives from packaging companies, such as Green Cell Foam and Stiffy Bag, were reluctant to contribute to the research. This is understandable for large companies, where participation in research may not be a priority in an already busy schedule. However, the lack of interest did result in collecting sentiment data from participants who consume soft plastic wrapping materials, rather than the manufacturers and distributors. Although this would give the study another valuable layer, the research remained relevant in the field of knowledge, as it focuses on reflecting the views of individuals who consume packaging materials, rather than those who produce and distribute them. Another group that I was unable to include in this study was art handlers. Arguably the most important community in the art fair packaging industry, this was a group that I felt determined to include, however I was unfortunately unsuccessful in receiving responses from any art handlers that I contacted. This limitation, while initially undesirable, allowed the study to lend more focus to the preventive conservation position that this research was built upon.

A driving consideration in this study was what could be achieved with the budget and facilities that I had access to. In addition to the interviews, the other portion of the qualitative research, the Alternative Packaging Proposal, derived through experimentation, took place at The Museum of Croydon, in the United Kingdom, who provided the space and materials I needed for the experimentation. The museum's resources did not extend to conservation science laboratories and testing facilities, and so the research could not integrate more sophisticated and advanced experimentation and test results. While this could be viewed as a huge limitation, these restrictions demonstrate what can be achieved before testing and expensive facilities and resources, and larger budgets are accessed.

As a self-funded study, the budget for materials was incredibly modest. However, as we will see in 'Chapter Three: Research', the results of the semi-structured interviews revealed that financial constraints were a concern for those in the industry looking to change their practices, and so limiting my budget arguably made the research more relatable to industry professionals with this concern.

2.9 Conclusion

In conclusion, the methodology design followed an unofficial process of 'collect and apply'. Following a design that allowed this primary researcher to collect relevant data surrounding the research topic and subsequently integrate it into the secondary aspect of the qualitative research component, ensured that the research outcomes remained focused and relevant to our current industry and its professional's views and concerns. While there were limitations with the methodology, and what type of research could be undertaken, the process for research adopted the same solution based thinking that this dissertation was originally derived from.

Chapter 3: Research and Analysis

The aim of this study was to investigate and analyse practitioners' concerns surrounding the waste produced for packaging art for travel purposes over a short-term timeline, for events such as art fairs. The research began with the hypothesis that we could utilise and extend the lifespan of bubble wrap by removing the damaging factor. This damaging factor is adhesive tape, and the hypothesised outcome is that by removing tape, we can reduce the risk of ripping the bubble wrap when removing the tape during the unwrapping of an artwork. Artworks are constantly repackaged for an art fair; wrapped up before transportation, unwrapped upon installation, wrapped again for transportation away from the fair, and either unwrapped for installation with the buyer or unwrapped upon re-exhibition post fair, whenever this might be. The research was informed around the information provided during seven semi-structured interviews with a range of practitioners. The semi-structured interviews contextualised the area of research, and also informed the criteria for the experimentation, or practical solution, proportion of this research. From the offset, the research intended to propose a practical solution to reduce the waste created from such events, with a key focus in the solution to remain low cost and accessible in order to make the proposal a realistic action that could be easily integrated within the art packaging sector. As mentioned in this paper's introduction, this primary researcher's own professional experience motivated the research as a gallery representative at Art Basel, Switzerland, S.E.A. Focus, Singapore, and Frieze London, United Kingdom. While selling contemporary art at these art fairs, it became starkly apparent how extreme the accumulated waste is from these international events. As an event that is a prime survival necessity for galleries, the art fair has a great economic and social impact. This research does not see to berate the sector, but is however motivated to investigate and propose methods that can reduce the environmental impact of the art fair, to allow us to sustain them for future generations of creatives and audiences.

This chapter is structured through four key topics; 'Understanding the Industry', 'The Alternative Packaging Proposal' (Appendix 9), 'The Carbon Emission Analysis of Reuse Versus Replacement of Bubble Wrap', and 'An Enquiry into the Use of Other Alternative

and Reusable Art Packaging Products’. Subcategories inform the four key topics to contextualise and expand the research. The chapter begins by looking at the challenges of packaging waste produced during art fairs, and subsequently the barriers towards change within the industry. These two topics inform the requirements that should be considered in the second key topic, ‘The Alternative Packaging Proposal’, which is also sometimes referred to as the ‘physical experimentation’. The chapter will then look at cradle to gate carbon emissions data between reusing bubble wrap versus replacing the material each time a work is repackaged, to support further reasoning why it is so integral that we utilise the full potential of our packaging products. Lastly, the chapter considers other packaging materials, including plant-based materials and other reusable products.

The key topics and subcategories in the chapter incorporate relevant discussions from semi-structured interviews to contextualise the justification for each key topic and the reasoning behind some decisions within the research outcomes, alongside presenting critical knowledge from professional practitioners. The full transcripts of the semi-structured interviews can be found in the Appendices (Appendix 1d to 7d). Anonymous Participant 2 requested their interview not be transcribed, however notes of the interview can be found in their correlating Appendices chapter (Appendix 2d). Any reference to this participant will also be written as notes, which will not include any direct quotes, upon their request. Beginning the study with the intention to propose a solution, the research began with several semi-structured interviews with professionals within the conservation and visual art industry. The aim of the interviews was to access as much knowledge as possible from professional practitioners in different areas of the sector.

Seven semi-structured interviews were conducted with industry professionals. Caroline Bendix ACR (Participant 1, Appendix 1) is a British accredited book and library conservator with extensive experience in the conservation industry, contributing to multiple research papers and academic resources over her career. Participant 2 (Appendix 2), who chose to remain anonymous, is a professional working for a reusable

art crate company whose ethos and mission is planted in making the art world more sustainable. Participant 3 is Luke Stones (Appendix 3), the preventive conservator manager at Chatsworth House, in the United Kingdom, who has also shown interest in growing the Chatsworth House Museum practices towards a more sustainable outcome. Participant 4 (Appendix 4), who chose to remain anonymous, is a product designer representing an American company who has invested time into using plant-based foams to package paper-based corporate gifts. Participant 5, Kim Kraczon (Appendix 5), is an American conservator and packaging researcher who has contributed to and produced multiple research and resources, such as the 'Plastic Alternative Materials' resource in collaboration with the Gallery Climate Coalition and is currently the Director of Circulatory and Materials at Ki Culture. Participant 6 is Jasmine Fenn (Appendix 6) produced a research paper in 2012, which investigated eco-conscious practices in British and Canadian museums, and has worked in curatorial roles at the Royal Academy of Art, in London, United Kingdom. The final participant, Participant 7 (Appendix 7), who chose to remain anonymous, is an art consultant with over 2 decades of experience within the contemporary art industry, working with sales teams for multiple galleries at some of the biggest art fairs in the world.

Each participant has different areas of expertise in the arts sector, which was crucial to assess, given the breadth of areas within the visual arts industry affected by sustainable packaging. While it could be argued that accessing this range of participants could cause a lack of focus within the research, this primary researcher felt it was important to assess the reach of the topic, and the areas of similarity across the sectors, to analyse how these similarities can cross over to create a wave of impact across the board. This allows us to understand how integrated the study is in multiple areas of the arts industry, and sheds light on the scope of change that must be implemented to achieve a sustainable art world in the future.

8th September 2022 saw the inaugural Soft Wrapping Sustainable Alternatives Workshop, "Wrapping up Sustainably", at the National Gallery in London, United Kingdom, of which this primary researcher was in attendance. The workshop was

organised by conservators from English Heritage, National Trust, National Gallery and National Portrait Gallery, with guest speaker Kim Kaczon from Ki Culture. In attendance were professionals from museums and conservation studios from around the United Kingdom. The workshop first discussed research surrounding Life Cycle Assessments, which we will look at in more depth later in this chapter under the subheading 'Calculating the Environmental Effects of Soft Wrapping Materials'. We then looked at 21 soft wrapping materials, assessing their performance and functionality as a soft wrapping material for packaging artworks. More about the findings from this portion of the workshop will be discussed in the third key topic, 'The Alternative Packaging Proposal'.

3.1 Key topic 1: Understanding the Industry

The research began with a hypothesis, that we could utilise and extend the lifespan of bubble wrap by removing the damaging factor. When artwork is susceptible to mechanical damage, such as dropping, it is often wrapped in bubble wrap and secured with an adhesive tape to protect it. Installation at art fairs is a time sensitive event, and priority is lent to physically curating the galleries individual spaces. Therefore, unpacking the artwork must be a time sensitive task. Upon unpacking, the many layers of tape can be challenging to unwrap, resulting in a handler tearing the soft plastic to remove the artwork from its padded cocoon.

So the majority of the time, it tends to get ripped off rather than cut. And it's inevitable if you're using a really strong tape, or even if you're using the packer's own branded tape, which most of these guys have by the way, or the fragile tape, it just rips half of the bubble wrap with it. It's inevitable. (Participant 7, Appendix 7d, 06:04)

When the adhesive tape is successfully removed, the bubble wrap can sustain damage from the strain of separating the adhesive from the bubblewrap's thin plastic epidermis, resulting in inevitable ripping (*Fig 3*). This irreversible damage to the bubble wrap renders it unusable, and the material is disposed of.

There's so much damage done to the materials that I don't think they can reuse a lot of them. And then I always got a bit suspicious because if they're reusing

them, how come every time we ship to somewhere different, it all looks brand new? (Participant 7, Appendix 7d, 04:51)

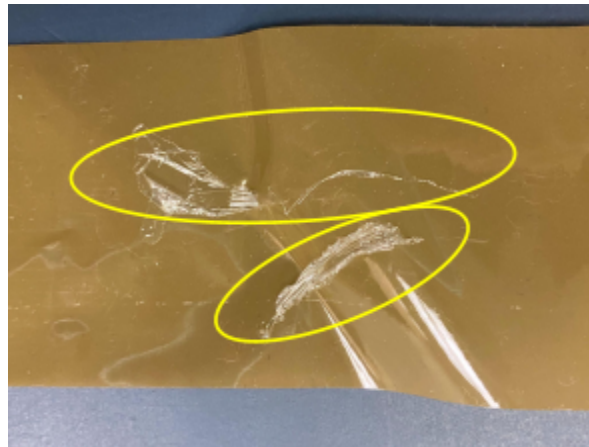


Fig 5: Remnants of torn bubble wrap surface on attached to the adhesive packaging tape after removal of the tape.

Participant 7 provided critical insight into the stark reality of the soft plastic packaging waste produced at art fairs, and poses the question ‘who is responsible?’. Participant 7 suggests that the onus is on the galleries to make the switch in practices, and hold themselves to a higher standard. However, the participant also documents how gallery representatives take a step back during the unwrapping and repackaging of works, while the art handlers take over the role.

when you're dealing at big art fairs, you're not doing any of the unpacking yourself. They've got their own art handlers. (Participant 7, Appendix 7d, 04:51)

To be fair, that's probably where the onus should be a little bit more on the galleries. We don't really think about it. (Participant 7, Appendix 7d, 07:15)

it's also having that on the agenda that's not really something that's discussed. So for example, be great to be in a meeting, preparing to go to the gallery and preparing to go to a fair, and say 'right, what are we going to do about packaging'. That doesn't get discussed. Packaging gets done by the third party, the packers, shippers, whatever, and it's not even an item of discussion. (Participant 7, Appendix 7d, 19:52)

There are many steps that must be taken with multiple faculties to improve waste consumption at these mass exhibitions. Driven by priorities, Participant suggests that the key to initiating change is to make alternative packaging proposals an attractive

agenda for galleries, who hold the power to shape the industry, despite not being packaging facing at the art fairs. However, as we can see, the route to change is far more complex than a simple switch fuelled by a single factor.

3.1.1 Barriers towards change and changing behaviours

With a problem can come a solution. However, there can often be barriers to realising or achieving these solutions. The interview participants were asked about what they saw as barriers in the industry in becoming more sustainable. Changing practices is possible, however there are challenges that will make the process arduous. Galleries and museums are not simple structures, but rather a large entity with many layers of hierarchy. Therefore, the process for changing a system could be long, as it travels through many teams for approval. While it should not be assumed that the respondents dismissed the other barrier types and factors because they were not mentioned in their responses, there was an overriding agreement that monetary costs are of great concern, with participants 1 and 6 focusing on the factor in detail, and participant 5 mentioning the overlapping relevance between time and financial restraints.

... funding is likely to be the major one, because, for example, bubble wrap is cheap. So I think financial constraints are going to be key. I think, yes, there needs to be re-education, of course, but I think that people are thinking along those lines now. (Caroline Bendix, Appendix 1d, 06:41)

Probably all of those things. I think number one would be cost, because every little bit of detail... You also need time to test new materials, and also to have them be vetted by other institutions. I think what is key is getting some of the larger institutions on board, starting to use these materials, and then they become the status quo. (Jasmine Fenn, Appendix 6d, 06:35)

Time encapsulates everything. You need time to inform people, you need time for the systems to change, it takes time to educate people, it takes time to figure out your own needs within your own institution, or museum or gallery, or what would work best for you, and what is available for you... But then time is also money, so then financial recourse as well. (Kim Kraczon, Appendix 5d, 23:07).

Participant 2 agreed that there is a financial constraint, however they also highlighted that the frequently chosen materials are trusted. It would be a challenge to convince organisations to use something new, especially if the alternative is more expensive. (Participant 2, Appendix 2d, Question 4).

Participants 3 and 7 assessed that mindsets within the field can stunt progression. Participant 3 states that there must be a change in the way of thinking, while participant 7 mentions that sometimes the topic is not thought about from the offset.

They're all really good examples, they are all barriers, and very real barriers... I think that if you really want to [make advances in sustainable practices], you will find that you will come up against a barrier very quickly. A barrier that seems almost impossible to kind of shift, because ultimately you're trying to shift a way of thinking. (Luke Stones, Appendix 3d, 19:04)

I think the cost is definitely an issue, but it's also having that on the agenda, that's not really something that's discussed. (Participant 7, Appendix 7d, 19:52)

3.1.2 How is sustainability viewed within the industry?

We can see from the respondents that there are varying levels of awareness of how the visual art industry responds to the environmental impacts of packaging art. Kim Kraczon, Participant 5, is an example of how highly invested the area is, by working with multiple organisations, including Ki Culture, Gallery Climate Coalition, Christies and English Heritage, who are all looking to make key steps towards a more environmentally conscious and improved packaging industry, with institutions such as Christies looking to “create an industry standard” (Kim Kraczon, Appendix 7d, 33:55). We can see from these organisations alone that progress is being invested into.

Luke Stones, Participant 3, draws a comparison between his current organisation, Chatsworth House, with his previous experience in the art industry, stating that coming to Chatsworth House has been refreshing, as they have a long history of reusing and recycling materials, down to the screws they use, compared to his experience “coming in from a contemporary art gallery... which is an incredibly wasteful part of the art sector

I would say" (Appendix 3d, 10:16). Stones recalled that "it's one of those things that it wasn't a principal factor in your thinking or in the company's thinking. It was very much a, oh it's a nice to do if you can" (Luke Stones, Appendix 3d, 17:17). However, Stones also recognised that "that was based on eight years ago, and I know that in the eight years companies have changed massively with regards to sustainability" Luke Stones, Appendix 3d, 17:40), and as a result, the Chatsworth preventive conservator is optimistic that significant improvements have been made in the contemporary art gallery sector.

In contrast, art consultant Participant 7, has experienced no such exposure to the changes towards more sustainable art packaging practices, describing that the topic is "not even an item of discussion" (Appendix 7d, 19:52) at gallery level. Furthermore, change doesn't seem to be a driving force in the industry; "I was going to say, I'd like to think it was different in the United Kingdom, but having experienced Frieze and then experiencing FIAC in Paris less than a year ago, there was the same wastage." (Appendix 7d, 17:56)

Jasmine Fenn, Participant 6, reiterated similar views to Participant 7, noting that sustainable exhibitions are difficult because of the quick turn around of exhibitions from her experience at the Royal Academy. From her experience, the priority lent not to improving the institute's environmental impact, but rather, and understandably, to the protection of highly valuable works and the success of their exhibitions (Appendix 6d, 04.39). However, we should note that these first hand experiences are derived from her time at the academy between 2015 to 2016 (Appendix 6d, 06:02), and since then it is highly possible that steps have been made towards achieving more sustainable practices.

Participant 2 works for a reusable crate company, whose ethos is driven by the idea of low environmental impact through facilitating a high level of reuse of their products. By its existence alone, this area of the industry is a clear demonstration of a movement

towards the more eco-conscious transportation of art. Similarly, the professional role of Participant 4 is grounded in achieving a high level of sustainable practice.

While there is no unanimous view of whether the visual art industry is making sufficient steps towards achieving more sustainable outcomes, it can be seen that there are positive areas of initiative that are paving the way for other areas of the industry to follow. This lack of clarity surrounds one main theme; the lack of standardisation. With standardisation comes productivity and proficiency. This topic was spoken about at the Soft Wrapping Sustainable Alternatives Workshop, 'Wrapping up Sustainably', at the National Gallery in London. Jasmine Fenn also commented that a driving factor towards changing practices and integrating new standardisation needs to be driven by larger institutions to "become more of the status quo" (Jasmine Fenn, Appendix 6d, 07:40). While we are currently in an exciting time that lends itself to research and innovation, there is also confusion and ambiguity around the lack of standardisation within the packaging industry. This statement does not mean to reprimand the art packaging industry, which is filled with highly knowledgeable and valuable professionals. However, standardisation would be an opportunity to improve the waste consumption collected from events such as art fairs. If this step focused on standardising a reuse percentage of soft packaging materials, and did not seek to restrict the innovative methods that art handlers adopt to protect complex works of art, we could see practices that prioritised valuing and reusing materials, whilst moving away from a discard led mindset.

3.2 Key Topic 2: 'The Alternative Packaging Proposal'

This first key topic of the research chapter was fundamentally to identify categories to consider in this second key topic. The interviews demonstrate that cost, time and ease are key factors that needed to be considered in the implementation of cotton tape as a replacement of adhesive tape. With this in mind, it was clear that any proposal must be easily implemented, cost effective, and accessible to those who may not have enough time to invest in researching or understanding new methods to improve environmental impacts. This study began with the idea of replacing adhesive tape with cotton tape,

with the supposition that this replacement would allow practitioners to utilise a greater potential of the lifespan of bubble wrap. Before the commencement of any practical research and experimentation into this hypothesis, it was integral to engage further with the professional views of the respondents.

The respondents with relevant experience were asked whether they would replace adhesive tape with cotton tape to reduce the damage to bubble wrap, with the intention to then reuse the soft plastic wrapping material. Participants 1, 5, 7 all agreed they would support this alternative method, although Participant 5, Kim Kraczon, expanded to explain the further necessary steps to ensure that the package was environmentally managed. Participant 7 was particularly supportive of the method, as long as the new method was just as protective to the artwork as a package using adhesive tape.

Yes. Definitely. That would certainly work. There are tapes, something like masking tape and Scotch tape, stick sort of more the longer they're on. So if it's a short term thing, like a couple of days, you can probably get away with that kind of thing. But if it's longer term than that, you would probably need to use cotton tapes to secure things. (Caroline Bendix, Appendix 1d, 22:18)

Yeah, I would use it. I feel like there are certain cases where a humidity and temperature buffer are necessary, and that also depends on the mode of transport and length of transport, then you need to have a seal, you also can use Tyvek for that. (Kim Kraczon, Appendix 5d, 24:55)

As long as you say to me it's just as protected, it's just being held in a different way, then great. And also if that meant you could reuse whatever it came wrapped in, that's amazing. (Participant 7, Appendix 7d, 15:57)

Stones mirrored Kraczon's concerns of environmental stability, stating that there would need to be further protection to ensure that the wrapped artwork is not affected by environmental factors. These were mainly focused on whether the application of cotton tape would protect the package from environmental factors, such as moisture, and pest infestation.

Think off the top of my head, with regards to loans, those things that we would send the loan, we wouldn't use cotton tape. The reason why we use adhesive tape is because it creates a seal and creates a closed environment. (Luke Stones, Appendix 3, 33:46)

While the concern is clear, Stones did subsequently state that he was “not opposed to the idea” (Appendix 3d, 33:46), however implementing the method would not be suitable for the current processes at Chatsworth House. However, if there were other packaging materials which were suitable for conservation use, Stones additionally said that “we would absolutely be front of the queue for buying that” (Luke Stones, Appendix 3d, 26:00) so there is still huge support from Chatsworth House under the right circumstances.

An extended hypothesis for this study is whether an environmentally managed crate could supersede these concerns, as their construction is intended to mitigate such risks. Participant 5, Kim Kraczon (Appendix 5) raised concerns about ensuring the cotton tape is securely tied enough to ensure it does not come undone when handled. However, she agreed that the technique would be a contender for works packaged in a crate. Kraczon's advice was also followed when securing the open ends of the package, by rolling the bubble wrap to attempt to seal the package and create a microclimate.

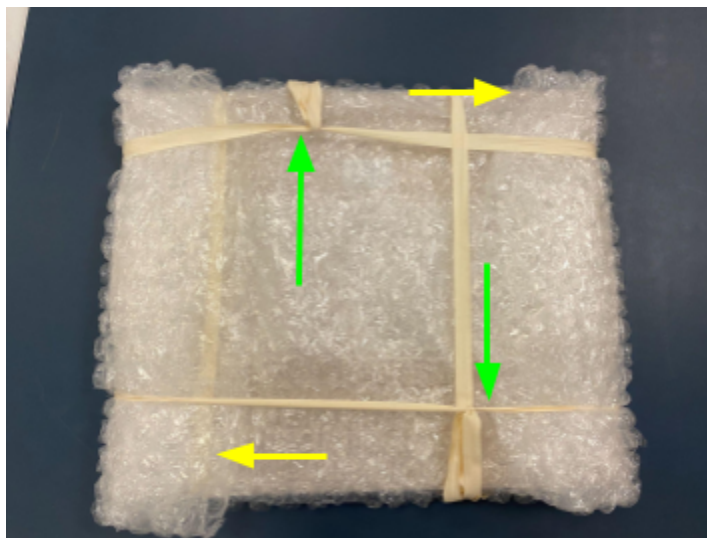
So I think that would be a major issue. You could also roll down the sides. You could use techniques to try to trap and create a microclimate. I would not use that method if there was no external sort of packaging, if it was just an artwork wrapped in bubble wrap that was being moved around, and then the ties could potentially get caught on something. Like if there was an exterior, encased, packing system. (Kim Kraczon, Appendix 5d, 24:55)

Participant 4 was not asked about this topic, as their interview focused on plant-based packaging. Participants 2 and 6 were asked the question, but they did not have experience with the topic. Their responses can be found in Appendix 2d (Question 2) and Appendix 6d (20:46).

3.2.1 Alternative Packaging Proposal: Experimentation

The responses were kept in mind to create a criteria for the packaging experimentation. The following figures illustrate the process of the alternative packaging method using

cotton tape in replacement of adhesive tape. The full list of figures displaying the experimentation process can be found in Appendix 9.



*Fig 6: Artwork is wrapped in bubble wrap, with the bubbled surface facing outwards, away from the surface of the artwork, following the guidance by Affordable Arts Fair (**Affordable arts Fair, n.d.**). Yellow arrows: Bubble wrap is folded over at the ends, however the cut edge is still open. Green arrows; 2 pieces of cotton tape tied around the work, to increase the points of contact, improving the air tightness and security of the design.*

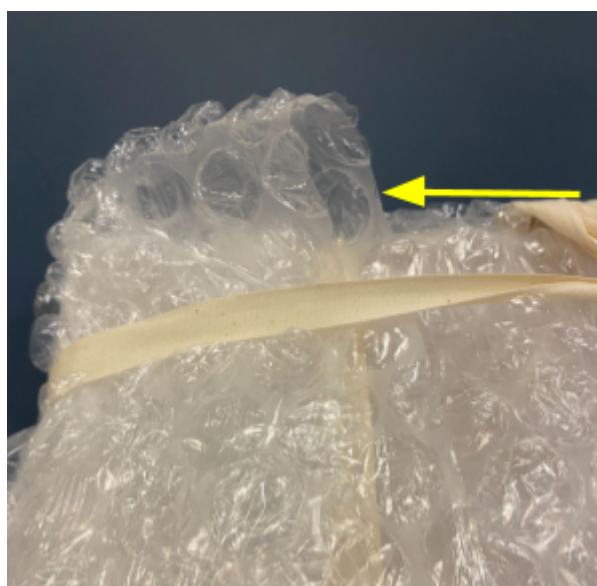


Fig 7: Open end of folded bubble wrap can also be seen here (yellow arrow).

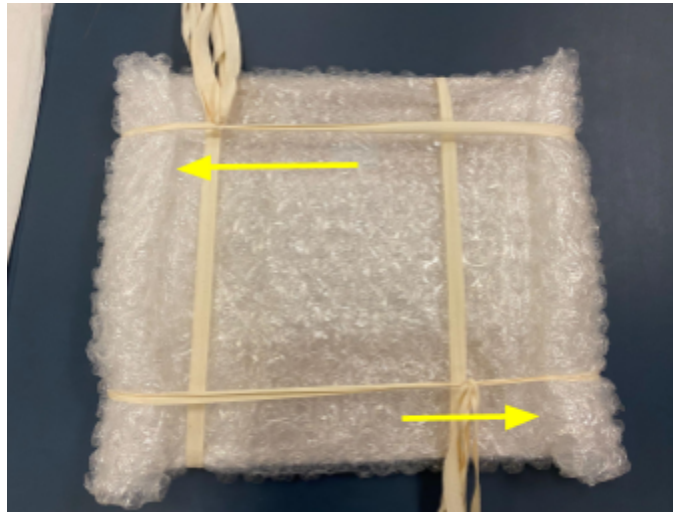


Fig 8: Following the advice of Kim Kraczon (Appendix 5d, 24:55) A solution to the open edge was to roll the bubble wrap (yellow arrows) and ensure there was no open edge on either side of the package.

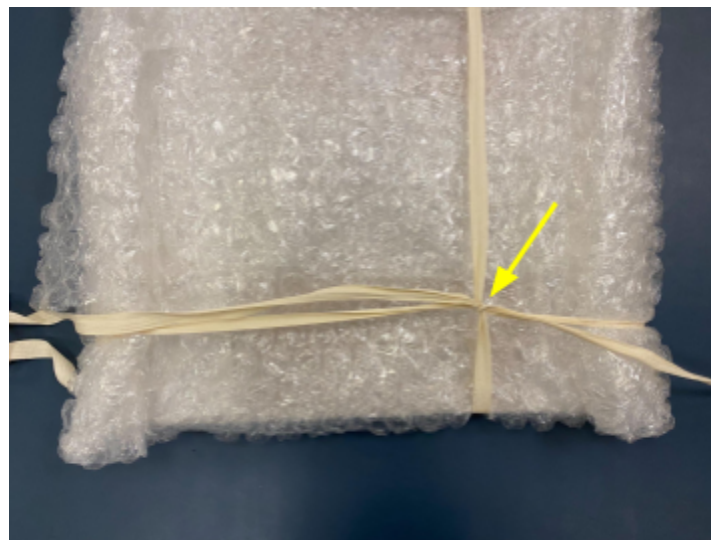


Fig 9: A knot can be tied around the vertical section of cotton tape (yellow arrow). However, this causes a tight knot that could be difficult to untie when unpacking. This could lead to the handler cutting the cotton tape to unpack the work. Cutting the tape would damage the cotton tape and reduce the usefulness of the material, defeating the purpose of designing a method to reuse the packaging materials.

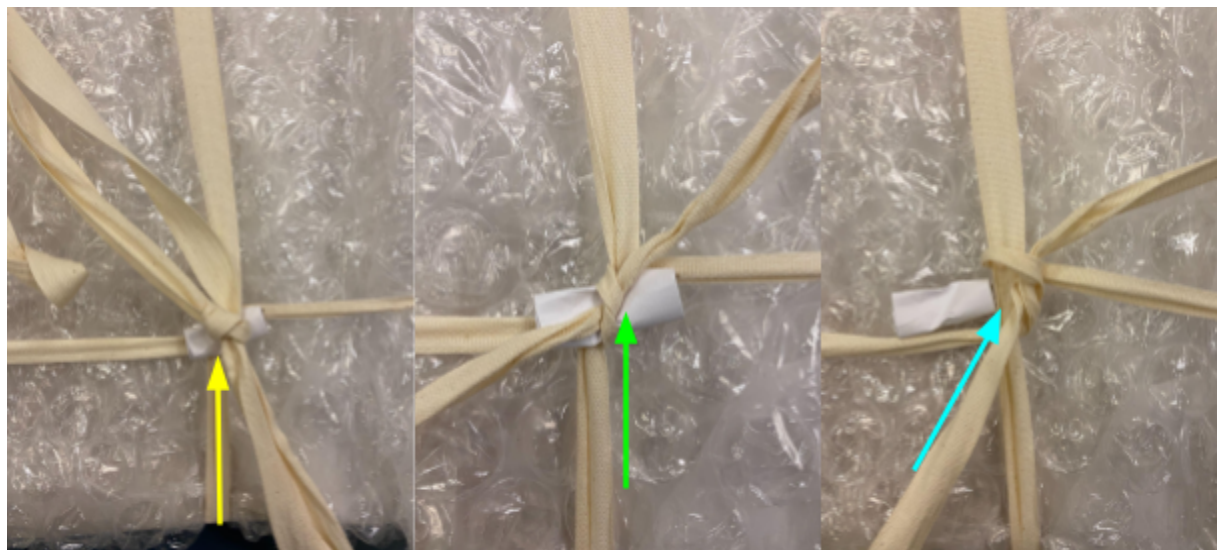


Fig 10: A series of 3 images showing the solution to the tight knot seen above in Fig 9. Yellow arrow: The cotton tape is tied around a rolled piece of acid free paper. The paper is malleable, and will compress under the pressure of the knot, ensuring that the knot can be securely tied. The Green and Blue arrows show how the paper is released when the cotton tape is untied.

The paper roll can be removed by hand, leaving a loose knot which can easily be untied, reducing the chances of the handler cutting the cotton tape during unpacking. We want to avoid cutting the cotton tape, as this defeats the purpose of using a design to harness the opportunity to reuse as many materials as possible in a packaged work of art.

The same package of work was then packaged using adhesive packing tape to illustrate the damage sustained to the bubble wrap upon its removal (Fig 11, Fig 12, and Fig 13).



Fig 11: Removing the adhesive packing tape physically pulls on the delicate surface of the bubble wrap, causing mechanical damage. Risks a shorter reuse of the material.



Fig 12 (left) and Fig 13 (right): Remnants of torn bubble wrap surface on attached to the adhesive packaging tape after removal of the tape.

The experiment should be seen as a starting point for further rigorous testing to establish whether cotton tape in replacement of adhesive tape would be a viable solution in professional practices. These tests would include assessing whether the package can secure a microclimate to protect artwork from environmental factors. We

would also need to establish a timeline for whether there is a finite time that works that are susceptible to the same environmental damage could be packaged without using adhesive tape. Most importantly, it should be noted that this method will not be appropriate for all types of artwork. Condition assessments would need to be undertaken to determine whether a work is in appropriate condition, and is made from appropriate materials, to be packaged using cotton tape in replacement of the adhesive tape. Some works that may not be appropriate for this packaging method could be unframed works on paper, or works including delicate frames, which would often be mounted inside an independent crate, as the pressure from the contact points of the cotton tape could create too much pressure on the artworks and cause them to deform. It would then need to be seen whether the method, or similar variations, would be adopted by other professionals in the industry.

While this method has space for further innovation, it is not a completely new idea. The method of using a strap or reusable tie in replacement of adhesive tape was briefly discussed in the Environmental Sustainability Network lecture with ICON, 'Plastics, Sustainability and Systems - One Bin To Rule Them All' (Shaver, 2022) on the 7th September 2022, and again in the Soft Wrapping Sustainable Alternatives Workshop "Wrapping up Sustainably", at the National Gallery, 8th September 2022. While there may well be further areas to develop, as is the hope with many areas of research, the mention of this as a progressive idea was an exciting validation of this research and hypothesis.

3.3 Key Topic 3: Carbon Emissions

While the theory, participant results, and practical experimentation results could be convincing to other practitioners within the industry, I felt it was important to accompany this main research component with evidence illustrating how reusing bubble up would translate in an environmental impact. During the August 2022 Soft Wrapping Sustainable Alternatives Workshop at the National Gallery in London, guest speaker Kim Kraczon presented her lecture 'The Challenges of Sustainable Strategies for

Heritage Objects', discussing the challenges surrounding calculating Life Cycle Assessments (LCA), alongside the challenges derived when navigating the balance between plastics and sustainability. Collecting the data to determine an LCA is an unenviable undertaking, not simply because of the nebulous disclosures from manufacturers, but also because of the many layers requiring assessment throughout production. 'STiCH' is a free online calculator used to determine the greenhouse gas emissions produced by materials used in the conservation industry. Born from the initiatives of conservator Sarah Nunberg and engineer Matthew Eckelman, the free software allows individuals to calculate the emissions of materials, by their weight, from cradle to gate, meaning from creation to the start of distribution. Cradle to gate assessments do not allow us to analyse a full life cycle assessment. However, completing assessments over a full lifecycle must take into account the emissions of the post-gate distributors, which is a far more complex undertaking.

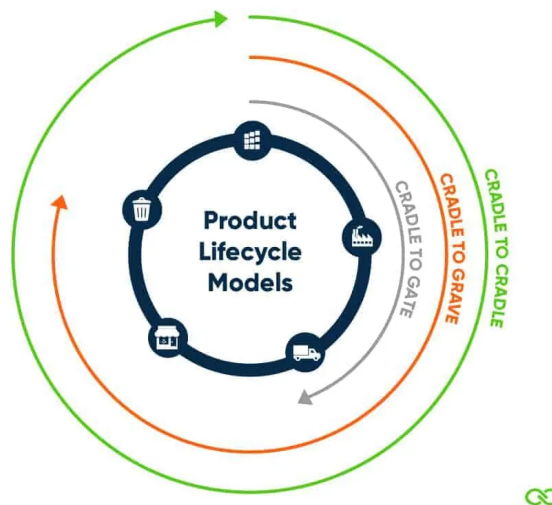


Fig 14: Ecochain's diagram illustrates the different types of lifecycle assessment periods (Ecochain, 2021)

Other factors to consider are the variables between different manufacturers of the same product. STiCH collects its data from other databases used by conservators, such as CAMEO, as well as independent research, however it is not disclosed exactly how the data is collected. It could be argued that these factors could make the software

somewhat unreliable. However, we should also recognise that STiCH has been developed by some industry leaders over the past decade. While we need to be aware of these variables, the data can still be valuable, as it gives us an indication of how our consumption impacts our environment.

While it would be a case-by-case assessment as to whether a certain piece of bubble wrap remains in good enough condition to be reused, as there are still potential damaging factors, including handling, the following equations and tables illustrate the emissions between reusing a weight of bubble wrap, versus replacing with the same weight of bubble wrap upon each re-wrap. The chosen weight is 1,290.8g, correlating to the amount of bubble wrap used to wrap the framed work in the wrapping experiment. STiCH currently does not have data to calculate the emissions for adhesive tapes and cotton tape, which would further illustrate the emissions produced between using these two materials in the Alternative Packaging Proposal. However, the comparison of the bubble wrap emissions still illustrated some startling results.

3.3.1 Calculating GHG Emissions

The artwork was 29.7cm wide × 42.0cm high × 5.0cm deep. An excess of 10cm of bubble wrap was accounted for to fold over through the width, and at each end to secure the ends of the package. The calculations account for the work being wrapped in three layers of bubble wrap to sufficiently pad and protect the artwork.

The total bubble wrap required is a rectangle with the dimensions of 62cm × 208.2cm. To calculate the ghg emissions, we need to find the weight of the total amount of bubble wrap.

$$1\text{cm}^2 \text{ of bubble wrap} = 0.1\text{g}$$

Total surface area of bubble wrap used to wrap experiment artwork:

$$62\text{cm} \times 208.2\text{cm} = 12,908.4\text{ cm}^2$$

Eq. 1

Thus, total mass of bubble wrap used:

$$12,908.4 \text{ cm}^2 \times 0.1 \text{ g/cm}^2 = 1,290.8 \text{ g}$$

Eq. 2

Therefore, the total mass of bubble wrap required to wrap experiment artwork was 1,290.8g.

Using the STiCH carbon calculator, we find that the cradle to gate GHG emissions of 1290.8g of bubble wrap is 3.672kg CO₂ emissions.

This study looks at the emission 'cost' in two hypothetical situations. Firstly, if this amount of bubble wrap is reused in each packaging process, and secondly if a new piece of the same amount of bubble wrap is recut for each time the example work is repackaged. The number of hypothetical reuses and replacements correlated to the number of times a work is repackaged through an art fair; wrapping before, and after the fair.

Table 1: The kg CO₂ emissions (per use) table illustrates the divided 'cost' of emissions each time the same mass of bubble wrap is reused. Note that the total consumed cost will still be 3.6720 kg CO₂ emissions for the reused category, as this is what has been physically consumed to produce the amount of the material, however the table illustrates how this cost of carbon emissions is split over each use.

Number of uses or replacements	<u>Reusing bubble wrap every time the work is repackaged.</u> (3.672 ÷ [number of uses]) <i>Eq. 3</i>	<u>Replacing bubble wrap every time the example artwork is repackaged</u> (3.672 x [number of replacements]) <i>Eq. 4</i>
	<u>kg CO₂ emissions (per use)</u>	<u>kg CO₂ emissions (for all uses)</u>
1	3.6720	3.672

2	1.8360	7.344
3	1.2240	11.016
4	0.9180	14.688
8	0.4590	29.376
16	0.2295	58.752

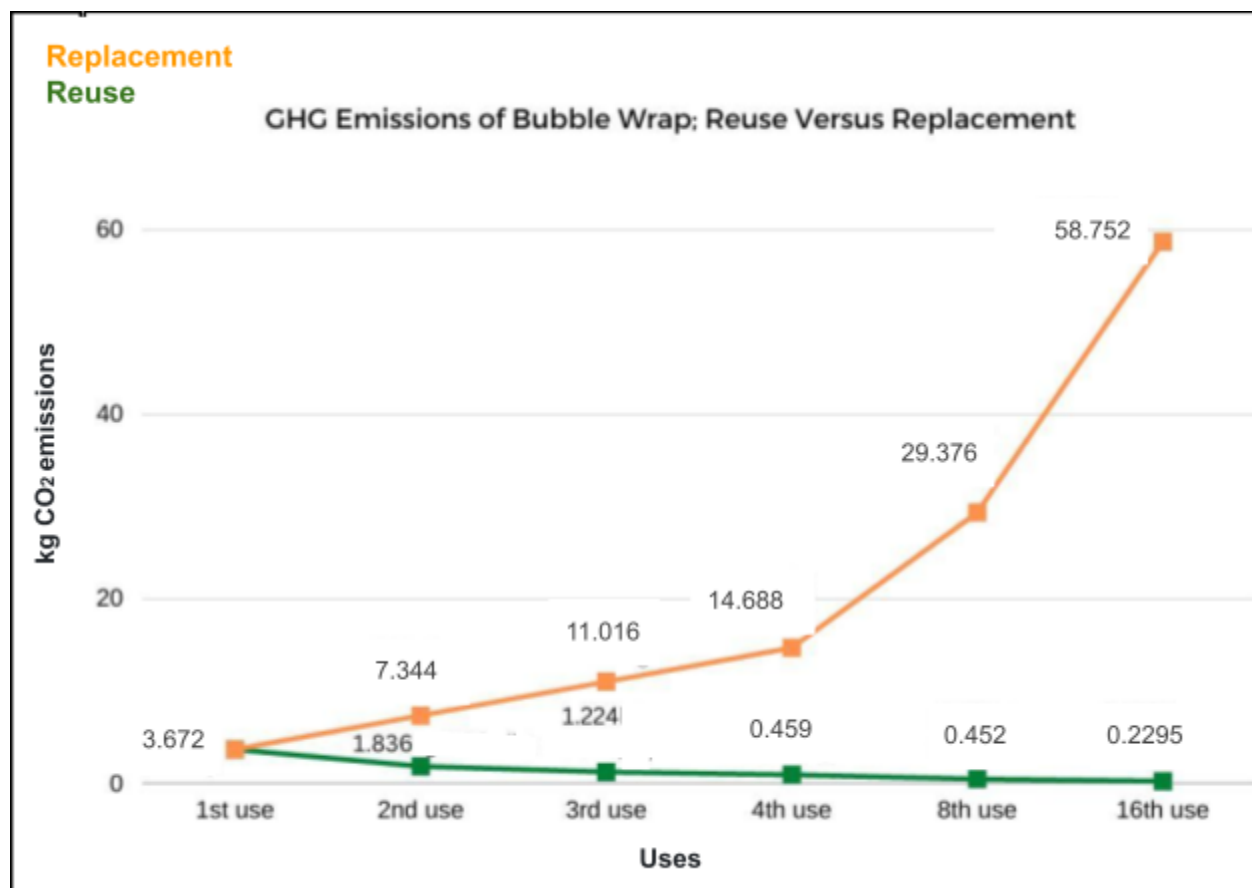


Fig 15: A graph showing the data from Table 1, comparing the kg CO₂ emissions (per use) when replacing bubble wrap upon every use versus reusing the same amount of bubble wrap (1,290.8g).

As demonstrated by the line chart (Fig 15), replacing the same amount of bubble wrap to re-package the example size framed artwork causes the GHG emissions to rise at an exponential and appalling rate. In comparison, the data derived from the hypothetical reuse of the same weight of bubble wrap illustrates how impactful the reuse of the soft

wrapping material is. These statistics demonstrate the impact of reuse and replacement for a single piece of artwork. The data collected for an entire gallery's collection for an event such as an art fair would be even more stark. Another attractive factor of this reuse is the cost. If steps were made to reuse their soft packaging materials, galleries would not only make positive steps towards their environmental impact, but also save monetary costs by reducing their material consumption.

3.4 Key Topic 4: An Enquiry Into the Use of Other Alternative and Reusable Art Packaging Products

This research is investigatory, and aimed to enquire about some methods to improve the environmental impact of packaging art for travel purposes to events such as art fairs. The alternative packaging method, as seen in this study's experimentation, looks at how we can replace one product with another to reduce material consumption and environmental impact. As demonstrated in the literature review, sustainability in the art packaging sector is one with a plethora of interest from professionals. This dissertation aims to be a useful resource, so it was important to also enquire whether there are other materials and products that are more sustainable, and could be used in replacement of other materials or products for art fairs. This fourth and final key topic will be divided into two categories: plant-based materials and reusable products.

3.4.1 Plant-Based Products

Integrating plant-based wrapping materials was questioned through the initial development of this research, including the topic in most of the semi-structured interviews. While the premise of using these materials was partially supported by both Caroline Bendix (Appendix 1d, 10:15) and Luke Stones (Appendix 3d, 24:34), there were also concerns. Bendix highlighted the agriculture and resources required to grow the initial plants, and questioned whether these should be used for growing products for packaging in potentially impoverished communities, where the resources could be used for human wellbeing instead. Conservators also mirrored this concern at the National

Gallery's wrapping workshop. Stones response similarly began with a 'Yes', but quickly followed with apprehensions about the functionality of these products and the level of testing required to approve plant-based materials for conservation use (Appendix 3d, 24:34).

The Oddy Test (Oddy, 1973) assesses the deterioration characteristics of a product and determines if these characteristics will have any adverse effects on cultural heritage artefacts and artworks. Plant-based products offgas Volatile Organic Compounds (VOCs), which are harmful to artworks, and so using them raises risks to the work's integrity. As illustrated in Kim Kraczon's 'Plastic Alternative Packing Materials Research' (Kraczon, Gallery Climate Coalition, 2021), plant-based foams such as Green Cell Foam and other plant-based products did not pass the Oddy Test, making them inappropriate for use in the conservation sector. Due to the nature of our time, we must look at our consumption and determine if there can be areas of compromise. We see this idea of compromise in other areas of conservation, and so there could be space to assess if this way of thinking could be applied in our decisions around alternative packaging products. While it is currently determined that all plant-based products are not suitable for use around artworks, as they will fail the Oddy test (Kim Kraczon, Appendix 5d, 08:24), determining whether there is a shorter timeline that plant-based products are deemed suitable is yet to be seen. Kraczon speaks about determining the "tipping point" (Appendix 5d, 09:44), which would allow us to investigate whether there was a more suitable, shorter time frame that these products could be integrated into conservation practices.

However, before testing to determine stability, testing the functionality of a product or material should be undertaken. Kraczon determined that Green Cell Foam, which was the plant-based product that one was previously exposed to through Participant 4, was not a suitable material for sufficiently padding artwork, due to its physical characteristics when it was compressed.

I don't think it [Green Cell Foam] can actually provide the impact resistance... because once it's compressed, it stays compressed. When you push down on it,

it stays compressed and you need something that has a bit of resiliency. (Kim Kraczon, Appendix 5d, 16:04)

However, as Kraczon identifies, “you can find applications for anything” (Appendix 5d, 17:37). This level of problem solving is a theme that runs through the foundation of art conservation and art handling, and so the space for further innovation and testing could still remain.

3.4.2 Reusable Products

There are products on the market specifically designed for reuse. Jiffy Bag, mentioned numerous times by Participant 7, is a bubble wrapped filled envelope available in different sizes. Jiffy bags allow packers to simply slide in a framed artwork, and thanks to their durability, they can be reused multiple times.

As long as you're careful with it, which you will be, right, I still have Jiffy Bags now from 2005. (Participant 7, Appendix 7d, 12:43)

As Participant 7 reiterates, “the Jiffy Bag has been the best packing solution” (Appendix 7d, 09:47) that they have found for ease of use and reliable reuse. So far, this sounds like a fantastic product that could be the answer to the reusable art packaging goal. However, why are these not in more circulation? Participant 7 suggests that due to the nature of the goal of an art fair, for galleries to move art from their ownership to new buyers, the higher cost of the Jiffy Bag, and their design as a long-term packaging solution as opposed to a short-term or temporary solution, in comparison to bubble wrap, does not fulfil the needs of their packaging.

... from the gallery's perspective, especially if you're talking from the context of a fair, the whole idea is you're trying to get things out. So you don't really care about strength and longevity, because your goal is not to have to store anything... if you're just a commercial gallery, and your goal is to go to a fair and move as much stock as possible, then again, that is one area that you're going to try and cut back on, because once they go out the door, that's it. You just need to make sure they arrive safely. And after that, it's off your hands. (Participant 7, Appendix 7d, 13:49)

ArtPak was sampled in the Soft Wrapping Sustainable Alternatives Workshop, "Wrapping up Sustainably", at the National Gallery in London, 8th September 2022. ArtPak comes in different sizes, and like Jiffy Bag, is an envelope type product. However, rather than using bubble wrap to protect the artwork, ArtPak consists of a felt-like material. The participants at the workshop were impressed with the product, particularly noting the reusability and strength of the product. The higher monetary investment into using these long-term solution products would be an important consideration to convince galleries to integrate these types of products into their packaging regime, as highlighted above by Participant 7.

There are options available on the market, and there is an exciting space to implement more of these reusable products into the museum and gallery space. However, like other proposed alternatives, practitioners require time and trust to confirm that these reusable products will protect their artwork to the same degree as traditional materials. This change could be challenging. As Caroline Bendix stated she hasn't "yet found something that is as good as bubble wrap" (Appendix 1d, 16:45), however, as we have seen from Bendix and the other research participants in this dissertation's research, there is an abundance of willingness to change the packaging materials that practitioners use.

Conclusion

In summary, the research outcomes show that it is possible to remove the damaging factor to soft wrapping materials, such as bubble wrap, to enable practitioners to reuse their packaging materials, while remaining cost effective, timely, and continuing to protect the encased artwork. Building on the ideas of Stephen E. Weil (Weil, 2002), museums, and galleries alike, must change in response to the needs of our times. It is unrealistic to assume that we can eradicate non-recyclable and single use soft plastic wrapping material; as we have seen, there are no materials that suit so many purposes as bubble wrap (Caroline Bendix, Appendix 1d, 16:45). However, this primary researcher concludes that although the path towards changing our practices is certainly a complex issue, there is hope in the many teams, organisations, institutions and individual practitioners who look to innovate and improve our sectors.

The main aim of this research was to form a proposal in which the method adopted would allow practitioners to reduce the damage generated by tearing off adhesive tape when unwrapping artwork. This research outcome was achieved. However, this is not to say that there are no improvements to make. An exciting and indispensable next step would be to continue to improve and innovate the idea, focusing particularly on ensuring that the method remained easily obtainable and fast, so as not to discourage practitioners from adopting the method. Furthermore, there is space to 'test run' the method, assessing how efficiently it can be integrated at the fast paced art fair. From this, we can speak with practitioners, particularly art handlers who would be physically involved in adopting the alternative method, to overcome any unforeseen barriers and areas for improvement. This process of innovation would have to be overseen by conservators, who would be in tune with ensuring that the method still ensured the protection of the work.

It should be recognised that this method may not be appropriate for all types of artwork. Those that are unframed, unglazed, built of particularly fragile materials, or 3-dimensional works with challenging forms, which may not withstand the pressure of

the cotton tapes contact points. The protection of the artwork must be a priority. But, by making small changes for the work that is deemed suitable, we can slowly start making an impact; The bubble wrap that is reused reduces the overall consumption. Over time, these savings would add up exponentially.

This dissertation was motivated by the first hand professional experiences of this primary researcher's experiences at art fairs. It is the hope that this body of research will sit alongside the wider body of knowledge and aid the opportunity for further innovation and change within the preventive conservation and art packaging industry to improve our environmental impact. Art fairs are a crucial component of galleries and artist survival and, as this dissertation displays, there is an opportunity for practitioners to make changes to improve the industry, allowing us to continue our practices without jeopardising our natural resources.

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Appendix 1

Appendix 1a: Informed Consent Form of Student Dissertation



Informed Consent Form of Student Dissertation

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Project Details

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

This dissertation will be researching and enquiring into the ways to help reduce the amount of non-reusable and non-recyclable products used in short term packaging, particularly in relation to international loans and travelling exhibitions such as art fairs, in the UK.

- What are the alternatives to sealing packaging materials, which will not cause damage to the materials, and therefore allow for reuse of the materials? For example, reducing damage on bubble wrap from adhesives such as Duct tape.
- Are there some vegetable based packaging options, such as Green Cell Foam, which might be suitable for short-term packaging of art. If so what are these packaging options, and what are suitable artefacts that can be packaged with such materials?
- What are some of the barriers for change within institutions or in independent professional practitioners that are preventing procedures and chosen materials from changing?

Statement of Confirmation

As a voluntary participant you will be asked questions about the topic described above. The purpose of these interviews or conversations is to gauge an understanding of professional practices, new ideas, contemporary methods and statements about current and/or sustainable packaging practices.

Should you are dissatisfied with having your personal data processed, you have the right to complain to the Information Commissioner's Office. For more information please visit www.ico.org.uk

**Please read and tick below**

I have read and understand the purpose of the study



I have been given the chance to ask questions about the study and these have been answered to my satisfaction



I am willing to be interviewed



I am willing for my comments during the interview to be audio or video recorded



I understand that I can withdraw at any time if I change my mind during the interview and this will not affect my treatment/education/care



I am aware that I have the option to remain anonymous, in which case my name and details will be kept confidential and will not appear in any printed or published documents.



I am aware that I have the right to withdraw my contributed information at any point up to 30 days before submission (21st August 2022).



I am aware that my personal data will be stored for 6 months after it is collected, and will subsequently be destroyed.



All the information I give will be true and accurate, to the best of my ability.



I confirm that I am aged 18 or over and can give informed consent to voluntarily participate in this research



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

**Please read and tick one**

I would like to remain anonymous. In this case my name and details will be kept confidential and will not appear in any printed or published documents.



I am happy for my name and institution to be used in any printed and published documents





This information will be held and processed for the following purpose(s):

Article 9(2)(j)

processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

I agree to the University of Northumbria at Newcastle recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in the information sheet supplied to me, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act 2018 which incorporates General Data Protection Regulations (GDPR).

Name CAROLINE BENDIX

Signature C. Bendix Date 6.6.22

Appendix 1b: Consent Form Where Personal Data is Collected**CONSENT FORM WHERE PERSONAL DATA IS COLLECTED**

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Please tick or initial where applicable -

I have carefully read and understood the Informed Consent Form.



I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.



I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.



I agree to take part in this study.



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.



Name CAROLINE BENDIX

Signature C.P. Bendix **Date** 6.6.22

Appendix 1c: Semi-Structured Interview Questions

SEMI-STRUCTURED INTERVIEW QUESTIONS WITH CAROLINE BENDIX ACR

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

- 1** What are the materials that you would use for packaging artworks for short-term packaging for events such as art fairs or international loans?
- 2** Do these differ from materials you would use for longer-term storage of artworks?
- 3** What would you classify as short term versus long term in relation to storing and packaging artworks?
- 4** What do you see as some of the barriers for changing practices within institutions or your own private practice? E.g. financial, knowledge, research, manpower, or time resources.
- 5** Would you consider using sustainable, biodegradable, plant based packing as an alternative so some of the traditional materials, such as bubble wrap.

- 6** Are there any materials that you have found in your own practice or experience that you see as more sustainable?
- 7** Tearing bubble wrap and other materials destroys them, rendering them unusable. Would you use cotton tape to tie up packages of work instead of using an adhesive tape?
- 8** Do you have any further comments about changing the ways we package materials for short-term use?

Appendix 1d: Interview Transcript

[00:03] - Daisy Green

Okay, so this is interview one for Daisy Green, dissertation research interview for MA Preventative Conservation. Before we start, Caroline, are you happy for this interview to be recorded?

[00:16] - Caroline Bendix

Yes.

[00:17] - Daisy Green

Great. To start with, please can you state your full name and give a brief overview of what you do?

[00:25] - Caroline Bendix

Caroline Patricia Bendix and I am a library conservator with 38 years experience now specialising in collections, care for libraries, and to a certain extent, archives.

Question 1**[00:55] - Daisy Green**

I'll start off with the first question. What are the materials that you would use for packaging artwork for short term packaging for events such as art fairs or international loans?

[01:07] - Caroline Bendix

Well, for books, I almost invariably will wrap historic books individually in acid free tissue paper. Some people use slightly heavier paper, but that doesn't fold as well. And you don't get the same cushioning effect within the crate when you've laid the books flat in the crate. So I think acid free tissue works best from the point of view of having books wrapped in crates. It stops the abrasion if there's any movement of the crate, because obviously there will be a thing being transported, and I would line the crates with bubble wrap. That's what I've been doing to date. It has a smooth surface and it has a very good cushioning effect. So for those two reasons, it has been an ideal material up to now.

[02:03] - Daisy Green

And do you very often recycle those materials after you've used them?

[02:11] - Caroline Bendix

I'm not usually dealing with that aspect of it because I am usually brought in to move and pack the libraries and not unpack them. It's up to the clients, really, because I don't have the storage space and I don't pack things that often. Just one extra thing to say on packaging is that we might also, depending on the vulnerability of the book, whether it's an individual book going away on exhibition rather than a whole library being packed up. The book might be individually packed in a card box or another type of individual tailor made box. But that will usually be made of some kind of board. As in cardboard.

[02:59] - Daisy Green

And I'm guessing if that's made specifically for that book, that would be likely to be reused.

[03:06] - Caroline Bendix

It would then stay with the book. Yeah, absolutely.

Question 2**[03:12] - Daisy Green**

Moving onto the second question, still referencing those materials that you've just talked about, do any of those materials differ from the materials you would use for longer term storage of artworks?

[03:24] - Caroline Bendix

We might not leave things wrapped up in long term storage. We might unpack and put onto shelving because the cost of leaving things crated is expensive. If you have wrapped books and they're being pushed into a shelf, you have potential issues with the packaging material tearing and ripping, especially if there is going to be any use while they are in storage, because sometimes a library might be renovating or moving to another building. But if the books are in store for, say, three years. It's a brilliant time for them to get the cataloguing up to date. So it depends on the handling, whether they stay wrapped or not. If they are staying in crates flat in store for ages, then there would be no difference in the materials.

Question 3**[04:19] - Daisy Green**

Great. Okay, thank you. So on to question three. How would you classify short term versus long term in relation to storing and packaging artworks? Is there a specific time frame that comes to mind when you think of those two?

[04:33] - Caroline Bendix

I think short term is less than a year, and then I would probably go for a sort of midterm two to four years. And once you get to five years, then you're in long term, it's probably not going to affect the packaging that much. But, for example, I packed up the library at St. Catherine's monastery in Mount Sinai in Egypt. And for that, supposedly the books were going to be packed for two years max and the crates that were supplied for us were not the ones I specified, and they were lower quality. And for two years I thought, well, that's I'll probably take for two years, we'll pack the books intelligently, et cetera, et cetera. In fact, I think quite a lot of the books are still in the crates and I have sent emails saying, I did not pack for this because you would have to have much more robust materials and things. So I think there is a bit of an element that if you use high quality packaging materials, right, from the word go, so decent strength, proper plastic lidded crates rather than cardboard boxes, and you have a much longer time built in anyway.

[05:52] - Daisy Green

So you've almost got a little bit of a buffer period that you can work around, because life happens, pieces can be in storage for much longer.

[06:07] - Caroline Bendix

Yes. If you start off with things that are designed to last and to cope, then you are in a much better position than if you skimp. But costs, sometimes of course can get in the way and you have no option.

Question 4**[06:19] - Daisy Green**

Yes, of course. So, moving on to question four. What do you see as some of the barriers for changing practises within our institutions? Or your own private practice? For example, financial knowledge, research, manpower or time resources?

[06:41] - Caroline Bendix

I think funding is likely to be the major one, because, for example, bubble wrap is cheap. I think if you pop the bubbles, you can recycle it at Sainsburys now, but it's still that would be a time consuming job to do. Fine for a bit that comes with post with your own parcels, but not so good if you've got metres and metres and stuff. So I think financial constraints are going to be key. I think, yes, there needs to be re-education, of course, but I think that people are thinking along those lines now. I mean, the whole eco sustainability arguments and needs are out there and I think you'd have to be living in a desert somewhere without the internet not to know that they're going on. I think in

conservation, we are very aware of the materials we use. So in books, restorers and book binders are less concerned, but conservators are extremely concerned about using the right materials and high quality materials and things that don't deteriorate, and things that haven't got acid in them are made from ragpulp and all the rest of it. So we have, I think, a mindset that lends itself to sustainability and eco, because we're already thinking along those lines in the way that we judge our repairs. I think the problem is, when you have a material that is perfect for the job, like bubble wrap, how far are you going to compromise and how far is one going to go to try and design something else? Now, some of us are designers and groundbreakers and some of us aren't. So I think that the re-education that something can do equally well, even if it feels different, looks different, handles differently, is possibly the most crucial element in the education, and just to show that it'll do the job just as well for that particular object. Or it may be that the objects need to have a different level of packaging within the crate so they don't need to have the bubble wrap to line it. So we need to explore those. It's not necessarily sort of which comes first, the chicken or the eggs. We have to look at it from all the angles and then come up with the solutions that will work with what we're trying to achieve.

[09:19] - Daisy Green

Yes, absolutely. I think that a lot of the mindset within conservation is looking after to preserve for future generations. I'm very much of the mindset that I don't think that should just stick to art or to cultural heritage. I think it should be enveloped in everything that we're doing is as practitioners.

[09:42] - Caroline Bendix

Yeah, I think that's absolutely right. And I think that chimes very well with the stress that the planet is under and what we need to do to reduce that stress.

Question 5

[09:54] - Daisy Green

Yes, definitely. So, moving on to the next question, which is question number five. Would you consider using sustainable biodegradable plant based packaging as an alternative to some of the traditional packaging materials like bubble wrap?

[10:15] - Caroline Bendix

I would, but I would also have a caveat there I think that the fact that it's say for example the Green Foam and stuff like that it's corn based, it's not based, it's soluble in water absolutely fantastic. However that means that agricultural land will be required for creating packaging materials. I don't know how much water is required to grow corn, but is that water more important for the human population and packaging material? So I

think that in principle, yes, it sounds good and it may well be good but I think that the process and the holistic look at the production of such materials has to go hand in hand with their use. I really think we have to be careful because as a generalisation the population is now urban rather than rural and I don't think growing materials long with rainfall is something that is in a lot of people's psyche any longer. I live in the middle of nowhere, down a dirt track and it's all around me so it's something that I focus on much more I see the biodiversity and pasture. So, I'm not trying to get on to a rant here, but I do think that the production of it is as important as the fact that it is not plastic. I think it's really crucial that balance is struck. So like I said, I'm absolutely happy to use it and something like Green Foam would probably do the job really well in a crate but I just don't know how it's produced. I don't know what it needs to produce it and it may be that actually in some ways it's worse on balance than plastic is. I don't know. It's a very important part of the research I think.

[12:35] - Daisy Green

And of course with using plant based packaging there would come different deterioration characteristics. Everything is going to behave in a different way. Plastic we love because it's so stable. Do you have any particular concerns about how something like Green Cell Foam would deteriorate and what those effects might be on something like books?

[13:00] - Caroline Bendix

Well, I think the problem is of course that until something has been around for a longer length of time, the age testing is fine but it isn't the same as time itself. Now, I think the key is that if you have something that is tried and tested like acid free tissue in contact with the object and the foam is not in contact with the object, you then have a barrier. But I mean, bubble wrap itself has problems, because if you put the bubble wrap side towards the object and the bubbles break, you can get little round marks from the gas in the bubbles. So, if I'm lining a crate, I always line it smooth side towards content bubbles towards the crate. So, I mean, even something like bubble wrap, which we use regularly, has to be used in a particular way because some materials will react badly if the bubbles break. So I think having that barrier of acid free tissue, which is on the books for a number of reasons, helps in that particular element as well. If the crates have ventilation, you are less likely to have any problems with any kind of off gassing. If there's more sealed units, then obviously that could potentially be a problem. And as ever, these things have to be tested, but it takes a long time to do it. Also something like that [Green Cell Foam], because it's soluble in water, I would want to do tests at quite a high RH, because some storage areas are not as good, or you could have a leak and what does that increase in the RH do to the material in the crate or wrap around the object, or whatever. So I think that particular, I would want to know very much what happens in a high RH, because that, I think, is the risk. I suspect desiccation is less of a risk and possibly ordinary environmental condition is fine, but if there is a problem and you suddenly get a huge increase in the RH, that is where I would wonder whether things might start sticking.

[15:34] - Daisy Green

Yeah, absolutely. I mean, even thinking about just exporting work to art fairs, if you're exporting something from the UK to somewhere like Singapore, where the humidity is sometimes like 80%, there's definitely going to be problems when the pieces on the plane, when it's going through handling from a plane to its storage facility. That's not going to be regulated environment, unless the crates are environmentally controlled.

[16:09] - Caroline Bendix

Yeah, which can be done, but it's expensive.

Question 6**[16:15] - Daisy Green**

So, moving onto our next question, are there any materials that you've found in your own practice or experience that you would see as more sustainable than others ?

[16:29] - Caroline Bendix

Obviously, I know that paper is not always sustainable, but that having been said, it is a material that can be used and reused several times. So your top quality rag pulp paper might end up as a cardboard box, but it might have been through several uses having been recycled before it gets down there and then it can go into the compost heap and back into the ground. So I think that paper is, although it obviously takes up a lot of space to grow and all the rest of it, I think it is a pretty sustainable material, all things been considered.

[16:45] - Caroline Bendix

Bubble wrap? No, not good plastic. But, I haven't yet found something that I've used that is as good as, and I would want to know more about some of the things available now before I used them. I would really want to know that the testing had been rigorous before I start replacing them. So open to anything or suggestions, but haven't yet found something that works in the way I need it to work. I can't remember the name from school, but there's paper, which comes in a flat sheet and then you pull it, it becomes three dimensional into a sort of cell pattern. It's got a particular name, which I've forgotten. That's very rough. It gives you good buffering against vibration, but it's a rough material. So if I was using that, I might have to have an inner crate with that around the outside to give you the buffering, which is definitely possible. It's definitely possible to do, but it adds to the expense and it has different aspects. It would take up a bit more space, not much. So if that was the answer for my type of object, I would need to have an extra layer between it and the tissue wrapped objects. So it could be in that case that one would need to use a heavier paper, in which case I wouldn't need to worry about the buffer layer. And then I could probably use that cellular paper. I think it's all

possible. Everything is possible. But one would have to change one's practises a bit to make it work. If that became the standard for conservators, because it's more sustainable and eco, in which case one would adapt to do it. But I haven't yet found something that is as good as bubble wrap, but I haven't actually, having said that, I haven't packed a library for a while and I haven't had to do the research. So, I've been having various chats with people, like with you, but I haven't actually tested anything out in practice.

[19:42] - Daisy Green

Okay, so just backtracking a little, you said that you haven't found anything that's as good as bubble wrap. Can you just elaborate on what you sort of mean by 'as good as', and what the characteristics are in bubble wrap that you like so much?

[19:55] - Caroline Bendix

The smooth surface and the cushioning and the fact that when you have odd spaces in the crate, you can just rip off a bit of bubble wrap, scrunch it up and shove it in the space and it works beautifully. It's a very versatile packaging material for all those reasons. Also, if we have books that don't fit in the crates, we can wrap them in several layers of aspiration tissue. We can wrap them in two or three layers of bubble wrap. You've got a really good protector, but also good buffering material. So you'll get a much slower rate of environmental change within that parcel than you would without the bubble wrap. So I know it's not days, it's hours, but it just slows down any potential damage from changes in the RH in this country, particularly. I mean, if you were going from here to Singapore, you might get problems with compensation with it, but certainly in this country, I've never had a problem with it.

[21:03] - Daisy Green

And just so I can sort of understand your timeline, where you mentioned that you haven't sort of had the need to do any extra research into new materials because you haven't packaged the library for a while, can you just let me know when the last time was that you packaged the library?

[21:21] - Caroline Bendix

It was Paul's Cathedral and I was involved in that. And that was about five years ago. It was before Covid, somewhere around 2018.

Question 7

[21:48] - Daisy Green

That's super, thank you. So, one of the things I was really concerned about with my experience being in art fairs was the inability to reuse bubble wrap. And so this brings

me on to the next question, which is removing adhesive tape from bubble wrap can tear it, damaging is and rendering it useless. Would you use cotton tape to tie up packages of work rather than using an adhesive tape?

[22:18] - Caroline Bendix

Yes. Definitely. That would certainly work. There are tapes, something like masking tape and Scotch tape, stick sort of more the longer they're on. So if it's a short term thing, like a couple of days, you can probably get away with that kind of thing. But if it's longer term than that, you would probably need to use cotton tapes to secure things. Or you just make sure that you cut the materials to a size that enables them to hold themselves. For example, because I'm laying books flat in crates, if I have enough of an overlap underneath, the weight of the book on top will hold those materials in place, and they don't need to be wrapped, or tied up in any shape or form. So I think it slightly depends on the design of the crate. Obviously, if you have something with a plastazote in a format, and you can slot the books into those bits, you wouldn't have to worry about wrapping up. And bubble wrap, obviously, so you could get round that to a certain extent with the size of the packaging material in relation to the object. But I've got nice rectangular objects. If you've got objects that are circular or ceramics or sculptures or whatever, obviously you wouldn't have that.

[23:51] - Daisy Green

So, one benefit I have considered with using adhesive tape is that you can seal something completely air tight. And with cotton tape, you have more limited points of contact. Would you be particularly concerned with a package not being completely airtight because of that?

[24:20] - Caroline Bendix

Not usually for my objects. I suppose if it was a mediaeval manuscript written on abandoned parchment or vellum, you would need to have something that is very environmentally secure, but for something like that, you would probably have an environmentally controlled crate. In 1999, I took a whole load of stuff over to New York for an exhibition of National Trust stuff, and we had one or two things that were acutely sensitive to the environment, and I think we had environmentally control crates for the four objects where the change in environment was going to be crucial. And then we were supposed to have very all singing, all dancing cases, and we didn't get them. And so we got my green woolly tights, and we put silica gel into them underneath the cradles for the books. I just love the idea, all these smart New Yorkers going around not realising there's a pair of green woolly tights shoved full of silica gel. It actually worked. The RH doesn't budge in the cases at all. And they were pretty grotty cases. But anyway, it's amazing what you can do when you have to. I don't need things to be airtight generally, but if it would need to be airtight, I would have to go for an environmental control crate, I think.

[26:01] - Daisy Green

Thank you. And actually, another extension of that question is, do you know of any tests, or any lab, or someone that could test the airflow within a package?

[26:16] - Caroline Bendix

I don't know whether the oddy tests would cover that for off gassing?

[26:24] - Daisy Green

I mean, off gassing, of course, but I would more be thinking about what the airflow would be through the package?

[26:32] - Caroline Bendix

I'm the wrong girl to ask. I don't know one end of a bit of science from another.

Question 8**[26:50] - Daisy Green**

So, going on to our last question, do you have any further comments about changing the ways we package materials for short term use?

[27:02] - Caroline Bendix

Well, I think until we have good research on possible replacements, until we can be certain that they've been tested for conservation, because a lot of things are they might be fine for, I don't know, the food industry or the antiques industry may be fantastic, but for conservation, we have our own concerns. And I think that things need to be tested for us and for what we need, as well as what the exhibitors need and what the museums need, et cetera. And I think it's all pretty much the same thing. But I think that's the key, that things are tested for the use they're going to be put to and the situations they might encounter. Rather than a disclaimer 'oh, this has been tested'. By whom? For what? Questioning testing is important. And if we need a test for airflow through a crate, and there isn't one, then we need to get one of the conservation labs to design the test. There's bound to be an airflow test in some industry or another which we could use in conservation. It's a question of finding it. In the way that we measure dust. One of the ways of measuring dust is through a glossmeter, and that was designed for looking at the shine on cars, but it works extremely well working out how much dust is on the glass slide. So I'm sure these things are available, but we do need to do the testing for our parameters.

[28:48] - Daisy Green

So that's all the questions that I have on the list that I gave you. But before we finish, do you have any other topics to discuss, or anything else that you'd like to mention before we finish the interview?

[28:58] - Caroline Bendix

No, I think it's a really good project. The British Library is looking into this as well. The Image Permanence Institute in America is looking into this, as I'm sure you know. So there's a chance for good collaboration across the world in this, and that means that we'll come up with all sorts of great ideas, and I'm sure your project will be incredibly valuable after that discussion.

[29:26] - Daisy Green

Thank you very much for saying that, and for your time and comments Caroline.

Appendix 2

Appendix 2a: Informed Consent Form of Student Dissertation



Informed Consent Form of Student Dissertation

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Project Details

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

This dissertation will be researching and enquiring into the ways to help reduce the amount of non-reusable and non-recyclable products used in short term packaging, particularly in relation to international loans and travelling exhibitions such as art fairs, in the UK.

- What are the alternatives to sealing packaging materials, which will not cause damage to the materials, and therefore allow for reuse of the materials? For example, reducing damage on bubble wrap from adhesives such as Duct tape.
- Are there some vegetable based packaging options, such as Green Cell Foam, which might be suitable for short-term packaging of art. If so what are these packaging options, and what are suitable artefacts that can be packaged with such materials?
- What are some of the barriers for change within institutions or in independent professional practitioners that are preventing procedures and chosen materials from changing?

Statement of Confirmation

As a voluntary participant you will be asked questions about the topic described above. The purpose of these interviews or conversations is to gauge an understanding of professional practices, new ideas, contemporary methods and statements about current and/or sustainable packaging practices.

Should you are dissatisfied with having your personal data processed, you have the right to complain to the Information Commissioner's Office. For more information please visit www.ico.org.uk

**Please read and tick below**

I have read and understand the purpose of the study



I have been given the chance to ask questions about the study and these have been answered to my satisfaction



I am willing to be interviewed



I am willing for my comments during the interview to be audio or video recorded



I understand that I can withdraw at any time if I change my mind during the interview and this will not affect my treatment/education/care



I am aware that I have the option to remain anonymous, in which case my name and details will be kept confidential and will not appear in any printed or published documents.



I am aware that I have the right to withdraw my contributed information at any point up to 30 days before submission (21st August 2022).



I am aware that my personal data will be stored for 6 months after it is collected, and will subsequently be destroyed.



All the information I give will be true and accurate, to the best of my ability.



I confirm that I am aged 18 or over and can give informed consent to voluntarily participate in this research



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

**Please read and tick one**

I would like to remain anonymous. In this case my name and details will be kept confidential and will not appear in any printed or published documents.



I am happy for my name and institution to be used in any printed and published documents





This information will be held and processed for the following purpose(s):

Article 9(2)(j)

processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

I agree to the University of Northumbria at Newcastle recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in the information sheet supplied to me, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act 2018 which incorporates General Data Protection Regulations (GDPR).

Name

Stijn Speksnijder

Signature

[Signature]

Date

12-07-2022

Appendix 2b: Consent Form Where Personal Data is Collected**CONSENT FORM WHERE PERSONAL DATA IS COLLECTED**

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Please tick or initial where applicable -

I have carefully read and understood the Informed Consent Form.



I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.



I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.



I agree to take part in this study.



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.



Name Shira Spelswiger

Signature [Signature]

Date 12-07-2022

Appendix 2c: Semi-Structured Interview Questions

SEMI-STRUCTURED INTERVIEW QUESTIONS WITH [REDACTED]

Project Working Title: *An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

- 1** Please could you state your name and give a short explanation of your Professional role, and what the company you work for does?
- 2** You mentioned in our earlier correspondence that you have a focus on sustainability. Could you please elaborate on this?
- 3** Do you see any differences between other global institutions versus British art fairs, or galleries and museums in the way they engage with sustainability within the packaging and transportation sector of the industry?
- 4** What do you see as some of the barriers for changing practices within institutions

or your own private practice? E.g. financial, knowledge, research, manpower, or time resources

- 5 In your view, what problem does the company that you work for solve?
- 6 One of [REDACTED] USPs is that the crate is almost completely recyclable. Are you able to expand on what components are not yet recyclable, and why this is?
- 7 Would you consider using sustainable, biodegradable vegetable based packing as an alternative to some of the traditional materials, such as bubble wrap or Plastazote? Please expand.
- 8 Are there any materials that you have found in your own practice or experience that you see as more sustainable?
- 9 Tearing bubble wrap and other materials destroys them, rendering them unusable. Would you use cotton tape to tie up packages of work instead of using an adhesive tape?
- 10 Do you have any further comments about changing the ways we package materials for short-term use?

Appendix 2d: Interview Transcript

Participant 2 requested that no transcript would be produced from our interview. Instead, Participant 2's answers to the semi structured questions will be written as notes.

1 Please could you state your name and give a short explanation of your professional role, and what the company you work for does?

Anonymous participant 2 is a product designer working in sustainable and circular product design for an undisclosed reusable crate company. The company aims to create crates that can not only protect art to the same degree as their competitors, but goes one step further with a design that can be reused multiple times. Upon disposal, the crate can be completely deconstructed and all materials can be separately recycled. To date, none of the company's crates have reached end-of-life, and so no crates have needed to be disposed of. The company strives to create a more sustainable art transportation future, normalising the use of reusable crates.

2 You mentioned in our initial correspondence that you have a focus on sustainability. Could you please elaborate on this?

The participant has worked on product design with a sustainable and circular focus in multiple markets. In these roles, the participant focused on how to make products sustainably from the start, and now they look to improve the existing product for the crate company they currently work for. For the company itself, sustainability is at the heart of what they do, and was born from requests from a museum who wanted to move away from single use wooden crates, and wanted a product that they could use for decades. The crates are also incredibly versatile as they can be resized to suit different artworks. The crates are also designed to be easily mended; internal materials that can be replaced, without the whole crate being disposed of.

3 Do you see any differences between other global institutions versus British art fairs, or galleries and museums in the way they engage with sustainability within the packaging and transportation sector of the industry?

The Participant had only recently started at the company, and so outsourced the answer for this question from a colleague, who saw that the UK can be quite conservative in their approach to changing materials and processes. The acceptance for renting products is also not as popular in the UK. On the subject of sustainability, places in countries around the Netherlands hold sustainability in high regard, and this is often a priority for them.

4 What do you see as some of the barriers for changing practices within institutions or your own private practice? E.g. financial, knowledge, research, manpower, or time resources

Participant 2 agreed that there is a financial constraint, however they also highlighted that the frequently chosen materials are trusted. It would be a challenge to convince organisations to use something new, especially if the alternative is more expensive.

5 In your view, what problem does the company that you work for solve?

The company offers a solution to transport works that other companies cannot offer. It has improved a generic product to such a high quality that it has not had to yet dispose of it.

6 One of [REDACTED] USPs is that the crate is almost completely recyclable. Are you able to expand on what components are not yet recyclable, and why this is?

The company are keeping a margin of 'almost completely recyclable' because since none of their products have reach end-of-life yet, the company has not had to go through the process of actually disposing of their product. However, the original design was made to ensure that this could be achieved.

7 Would you consider using sustainable, biodegradable plant-based packing as an alternative to some of the traditional materials, such as bubble wrap or Plastazote? Please expand.

For the currently existing crates, there is not a need for using plant-based products that will not perform over a long period of time (decades). However in the upcoming crate

designs that are designed for one-time use, the company is looking at using materials that are not traditionally used, and is focusing its efforts on looking at how a product will behave at its end-of-life. These new product considerations include plant-based products. The participant found that it was incredibly hard to match the performance of plant-based materials to synthetic products and so this poses as a challenge for the company to overcome.

8 Are there any materials that you have found in your own practice or experience that you see as more sustainable?

The participant noted that there is a balance here. One could decide to use a product that uses more energy and resources to create, however has the ability to be used over a hugely long period of time; this cuts consumption. Or, one can use a material that uses less energy and resources to create, however it may not be as durable. There is a balance of compromise that should be considered depending on each product that is used.

9 Tearing bubble wrap and other materials destroys them, rendering them unusable. Would you use cotton tape to tie up packages of work instead of using an adhesive tape?

The participant did not have the experience to be able to answer this, however they did mention that the crate company does not favour tapes and chooses other methods of adhesion.

10 Do you have any further comments about changing the ways we package materials for short-term use?

The participant mentioned that there is an issue with the language around materials. A material might be labelled recyclable, which is applicable in its raw state, however once it is combined with another material or product, this is then not possible. The language and practicality around recycling or disposing of products is hugely complex, and it leaves consumers confused. This is an issue that needs huge focus and change.

Appendix 3

Appendix 3a: Informed Consent Form of Student Dissertation



Informed Consent Form of Student Dissertation

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Project Details

Project Working Title: *Project Working Title: An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

This dissertation will be researching and enquiring into the ways to help reduce the amount of non-reusable and non-recyclable products used in short term packaging, particularly in relation to international loans and travelling exhibitions such as art fairs, in the UK.

- What are the alternatives to sealing packaging materials, which will not cause damage to the materials, and therefore allow for reuse of the materials? For example, reducing damage on bubble wrap from adhesive tapes by using cotton tape to tie packaged works.
- Are there some vegetable based packaging options, such as Green Cell Foam, which might be suitable for short-term packaging of art. If so what are these packaging options, and what are suitable artefacts that can be packaged with such materials?
- What are some of the barriers for change within institutions or in independent professional practitioners that are preventing procedures and chosen materials from changing?

Statement of Confirmation

As a voluntary participant you will be asked questions about the topic described above. The purpose of these interviews or conversations is to gauge an understanding of professional practices, new ideas, contemporary methods and statements about current and/or sustainable packaging practices.

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**Please read and tick below**

I have read and understand the purpose of the study



I have been given the chance to ask questions about the study and these have been answered to my satisfaction



I am willing to be interviewed



I am willing for my comments during the interview to be audio or video recorded



I understand that I can withdraw at any time if I change my mind during the interview and this will not affect my treatment/education/care



I am aware that I have the option to remain anonymous, in which case my name and details will be kept confidential and will not appear in any printed or published documents.



I am aware that I have the right to withdraw my contributed information at any point up to 30 days before submission (21st August 2022).



I am aware that my personal data will be stored for 6 months after it is collected, and will subsequently be destroyed.



All the information I give will be true and accurate, to the best of my ability.



I confirm that I am aged 18 or over and can give informed consent to voluntarily participate in this research



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

**Please read and tick one**

I would like to remain anonymous. In this case my name and details will be kept confidential and will not appear in any printed or published documents.



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The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

I agree to the University of Northumbria at Newcastle recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in the information sheet supplied to me, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act 2018 which incorporates General Data Protection Regulations (GDPR).

Name Luke Stowers

Signature [Signature] Date 20/07/22

Appendix 3b: Consent Form Where Personal Data is Collected



CONSENT FORM WHERE PERSONAL DATA IS COLLECTED

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Please tick or initial where applicable -

I have carefully read and understood the Informed Consent Form.



I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.



I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.



I agree to take part in this study.



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.



Name Luke Stoner

Signature [Handwritten Signature]

Date 20/07/22

Appendix 3c: Semi-Structured Interview Questions

SEMI-STRUCTURED INTERVIEW QUESTIONS WITH LUKE STONES

Project Working Title: *An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

1 Please could you state your name and give a short explanation of your professional background and current role, and talk a little about your work with Chatsworth House?

2 Sustainability clearly holds significance at Chatsworth House. In 2010 Lord Burlington founded the Devonshire Group Environmental Committee (DGEC) to promote awareness of sustainability across the estate. In 2013, Chatsworth's sustainability work was recognized with the Green Tourism Gold Award, and made further steps in 2014 to continue to identify areas for improvement in the estate's environmental performance. How much of this environmental work has fed into the Museum?

3 You mentioned in our early correspondence over email that the subject of 'sustainable packaging' has been something that informs your thinking, when putting

together the detail within your exhibitions and loans programmes at Chatsworth House. Could you please explain a little more about the past and present practices surrounding packaging at Chatsworth House, and any further movements towards more sustainable practices within these events?

4 In your professional experience and view, how has the conservation industry moved with the changing times in relation to sustainable packaging? For example, have we made significant changes, or are there still large gaps that need to be filled or recognised?

5 What do you see as some of the barriers for changing practices within institutions or your own practice? For example, financial, knowledge, research, manpower, or time resources.

6 Would you consider using sustainable, plant based packing as an alternative to some of the traditional materials, such as bubble wrap or Plastazote? Please expand.

7 Are there any materials that you have found in your own practice or experience that you see as more sustainable than others? This can include materials that are easily reusable, even if they cannot be recycled.

8 Tearing bubble wrap and other materials destroys them, rendering them unusable. Would you use cotton tape to tie up packages of work instead of using an adhesive tape, and if so, what artwork would you deem suitable for this method? If this is not a method you would use, please explain why.

9 This research is focusing on short term packaging. How would you categorise the time frame of 'short', 'medium' and 'long' term in relation to packaging artworks?

10 Do you have any further comments about this research, changing the ways we package artworks for short-term use, and progress towards a more sustainable industry within preventive conservation?

Appendix 3d: Interview Transcript

[00:02] - Daisy Green

Okay, so this interview number three with Luke Stones from Chatsworth House. Luke, are you happy for me to record the interview?

[00:10] - Luke Stones

I am, yes.

[00:12] - Daisy Green

Okay, so I sent you the interview questions already, but I'll also just read them out and we can kind of expand on a few of them if we want to, or go a little bit off piste if we want to expand on something else, but they can just act as a framework.

[00:25] - Luke Stones

Yeah, sure.

Question 1**[00:26] - Daisy Green**

Great. So I'll start with question one, please. Could you state your name and give a short explanation of your professional background and current role and talk a little about your work with Chatsworth House.

[00:38] - Luke Stones

So my name is Luke Stones. My background, I did a fine art degree at De Montfort University, and then after leaving De Montfort, ran a series of nonprofit museums in Nottingham. After that, I went to Nottingham University's Art Gallery and ran their exhibition programme for gosh, I don't know how many years now. A few years. And then there have been Chatsworth for coming up for eight years now. And my job is sort of over those eight years shifted and evolved and everything over the years originally came in to be the collections technician and overseeing a lot of the work that would mean the handling of objects in the collection. So it's a lot to do with our exhibition programme and setting that up, setting up our preventive conservation programme, facilitating the conservation programme and loans programme as well. My current role

now is preventive conservation manager. So really, it's quite a broad remit the job, but really I'm kind of responsible for the collection. So anything to do with preventive conservation, that's my programme, so I'm in charge of that. I'm also one of the people in charge of the conservation programme that we've got, same with loans and our exhibition programme, but basically anything to do with the collection here at Chatsworth one point or another, like sort of filters through me at various stages. It's a very sort of like, broad brush. It's kind of hard to explain sometimes.

Question 2

[02:51] - Daisy Green

Wow, so broad. That must be fun. So thank you for that. So, just moving on to our second question, question number two. Sustainability clearly holds significance at Chatsworth House. In 2010, Lord Burlington founded the Devonshire Group Environmental Committee to promote awareness of sustainability across the estate. In 2013, chapter of sustainability work was recognised with a Green Tourism Gold Award and made further steps in 2014 to continue to identify areas for improvement within the estate environmental performance. How much of this environmental work has fed into the museum?

[03:29] - Luke Stones

It's interesting because the work that Lord Burlington sort of set up and carried on, there's not direct links through to the collections department, so that's the department that I am within. It's kind of very much up to this point been treated kind of separately. What we're all very aware of is the kind of like the sustainability factor of it we've got a sustainability department which looks at different ways different departments can be sustainable, but on a very kind of global level. When we're looking at sustainability with our own department, we very much kind of carry everything out with that kind of mantra in our mind. We definitely look to adopt whatever kind of sustainability that we can with whatever programming is that we're sort of like doing. As you can imagine, we've got a lot of programmes that run throughout the year. We have an exhibition programme, we have a Christmas programme, we've got a loan programme that's both in and out. Like I said, we've got big conservation programme, preventive conservation programme, so there's a hell of a lot of projects that we've got that give us that scope of thinking green. So yeah, we carry that with us, and there are many ways that we kind of use it, depending on what project that we're carrying out.

[05:12] - Daisy Green

Do you have any examples of some ways that possibly the museum has changed and implemented some of those greener ideas?

[05:25] - Luke Stones

It's mainly around our so within our exhibition programme, for example, as you can imagine, when you're dealing with loans in or loans out, there's a lot of packaging and stuff that goes into like, wrapping objects and getting a bit of transport. A few of the simple things that we do around loans, for example, is we tend to really buy crates for loans. We tend to do like most museums do, we rent them, it saves on cost, but then also you're not buying a crate that then you would not use later down the line, so it gets recycled and reused constantly. And there are a number of companies that basically offer that facility of just loaning crates. I think Paradigm 33 as kind of the main contractor that we use, and that's taken over from Kent services before them. So with crates, we tend to just borrow. With things like T frames, so when we take objects off site for conservation at various conservation studios around the country, we tend to obviously make sure that they're properly packed, fit for transport. So one of the things we do, all of our paintings, we make sure go out in T frames.

[07:00] - Luke Stones

These T frames are made in house, so it's an in house team that make it. And these T frames we get back and we constantly reuse and recycle those. So we store those and whenever the need arises for an object to be transported in a particular T frames that fits. Sorry I'm going to shut this this window. So when these objects need to go off, we can reuse these T frames for whatever the purposes and also recycled packaging materials. So plastic and bubble wrap, Melinex, cotton ties, anything in where we can kind of reuse again, we often do. So we don't have a lot of waste when it comes to kind of crating and packing and transport and things like that. And one of the other things, which is quite a big undertaking, something that nobody really looked at pre-Covid was Zoom courier trips. So before Covid, you would be all over the place, couriating artworks and stuff, to galleries and museums around the world. And obviously, when Covid hit after the lockdown, that first lockdown, we were still lending objects, but obviously we couldn't travel with them because of the restrictions. So we set up Zoom installs. As you can imagine, it was a bit spitting sawdust at first, trying to get used to a process like that. They've never really been done before, and so there's a lot of weird things that come up with that in itself, but it's one of those where it teaches you to kind of, like, take a step back and think, well, actually, this can be done. And it massively saves in terms of the carbon footprint, because you're not taking planes, trading automobiles everywhere to see your object being stalled on the other side of the world.

You could do it over zoom. So we tend to adopt Zoom couriers where we can, but there are a couple of the sort of like, examples where we sort of change things over the last few years.

Question 3

[09:32] - Daisy Green

Okay, great. Thank you. I think that sort of moves into our third question a little bit, actually. So, question number three. You mentioned in our early correspondence over email that the subject of sustainable packaging has been something that informs your thinking when putting together for detail within your exhibitions and loans programmes at Chatsworth House. Would you please explain a little more about the past and present practises surrounding packaging at Chatsworth House and any further movements towards more sustainable Practises within these events? So you just mentioned there not being a huge amount of waste and you really do try to reuse as much packaging as possible. So can you expand a little bit on that and then talk about anything else that comes to mind with that question?

[10:16] - Luke Stones

Yeah, sure. So when I first started, I wouldn't have said that we were massively wasteful because we've never been wasteful. Chatsworth has got a long history of reusing and recycling across all departments, and so it's refreshing actually coming in from a contemporary art gallery, a museum, which is incredibly wasteful part of the art sector I would say, contemporary art galleries and museums, from my experience. Coming into a setting like this and stuff, it was actually quite refreshing that you would literally see people recycling screws and things like that. So you see it happen anyway, and so it's a case of going, well, I can see what other departments and do with such a granular detail in terms of reusing and recycling and the green agenda that you're want to adopt that as well. And why wouldn't you? And so it was one of those that we were identifying year on year, just how much packaging material, including crates and everything, that we were getting through. And we were very conscious that it is really wasteful and that we can we should try and save on that packaging. So what we were doing. As I said with the previous question. We started to just save all the sort of like plastic and Tyvek everything that we could sort of save that could be reused again without presenting any kind of obvious harm to the object for the next time it was needed for. Then we would absolutely adopt that because it was a very simple shift into that kind of like way of thinking. And then over the last couple of years especially. Sort of moving us into a phase where we should look to build in house our own crates and T frames and heavy

duty crates to kind of make sure that not only are we protecting the object because that also has to be the principal factor when we're dealing with a collection like Chatsworth. We have to think about the object and what's best for the object, and then with that is what can we do that actually hits that point of being green and that's just making sure that our crates and T frames are a little bit kind of like more universally fit. So they were just sort of bespoke for one object, but that they took a shape or a size that could be used again and so for multiple objects. So we've got a series of crates and T frames in the house that we reuse and we reuse again. And they're excellent because they provide the best possible protection for the object whilst also being sustainable.

Question 4

[13:37] - Daisy Green

Great. Thank you. So, moving on to question four. In your professional experience and view, how has the conservation industry moved with the changing times in relation to sustainable packaging? For example, have we made significant changes or are there still large gaps that need to be filled or recognised?

[13:57] - Luke Stones

In terms of conservation, I think that we are making huge strides forward. The conservators that we use, which are all external conservatives, we don't have any sort of in house conservatives. All the conservatives that we use, they are always thinking about different ways that they can adapt and adopt new techniques and stuff that sort of like fits with that sustainability factor. And we're always sort of like keen to enter that discussion with them about ways in which we can improve based on their findings and stuff. Almost by osmosis we learn off each other and their connection with the professional industry and other institutes around the country. And sometimes the world is invaluable experience for ourselves because they will tell you about if you, for example, buy this material on the roll rather than just in sheets, something as simple as that, then you can cut down on huge transport costs and obviously material wastage and things like that. So I think that we work closely with our conservators on sustainability and ways in which we can improve and it's a nice relationship that we've kind of got going with our conservators.

[15:34] - Daisy Green

And you said earlier that you see the art industry, or the contemporary art industry, as being massively wasteful in comparison, especially to Chatsworth. Do you see that sort

of comparison, obviously it's a generalisation, but do you see that as a big stark difference between museums versus contemporary art galleries or art fairs?

[16:01] - Luke Stones

Yeah, because it's difficult, isn't it? Because it is a mass generalisation and it's one of those where I can't say that Frieze, or any art fair for example, just what their policy is on sustainability and what they do to kind of like tackle it. I'm sure they do have one and stuff but it's one of those why I can't lend my comment to that in terms of a direct comparison I would say that my experience in contemporary art galleries that I've worked in the past it's one of those where because it's been eight years since I have worked in that arena in that part of the art sector, things have changed beyond comparison to anything else when I was in contemporary art galleries and museums it was a lot more wasteful yes. There were pockets of reuse and recycle where you could, especially with object packaging. For example it's one of those things that it wasn't a principal factor in your thinking or in the company's thinking. It was very much a 'oh it's a nice to do if you can', if you were thinking about it on an individual basis but that would have to be self driven rather than it'd be a company policy. But that was based on eight years ago and I know that in the eight years companies have changed massively with regards sustainability and stuff so I would like to think that these places that I've worked in in the past make more of a conscious effort with regards to sustainability and reusing but yeah. It's always been a pretty thing because the driving factor was never the packaging the artwork come in. The driving factor was that we've got this incredibly important piece of work coming in. Our principal focus was making sure that the object is cared for and handled correctly and that you are having proper condition reports done, and you're applying the right fixtures and putting it hanging in the right place or displaying it in the right place, and so almost the packaging side of things and sustainability just melts away because that kind of ultimate focus on the object was just really key and principal in that moment that you're kind of like dealing with objects.

Question 5

[18:55] - Daisy Green

No. That's an interesting observation so moving on to question five and sort of expanding a little bit more on institutions what do you see as some of the barriers for changing practices within institutions or within your own practice? For example, financial knowledge, research, manpower or time resources?

[19:16] - Luke Stones

Well, they're all really good examples they are all barriers and very real barriers. You know, I think that if you really want to sort of make changes, my own personal view, make changes with regards to sustainability and stuff, you will find that you will come up against a barrier very quickly. A barrier that seems almost impossible to kind of shift because ultimately you're trying to shift a way of thinking almost the art sector and theory processes and something as simple as loans, for example. The process of doing a loan is the process of doing a loan and there's various stages along the way that you have to follow and it never comes up in an official capacity for companies or organisations to think a lot more sustainable about how we address parts of the process. We alluded to doing zoom couriers and zoom installations. That's a very positive step. We very much, in house, look at our own packaging and everything that we send things out in. But you will find that no matter what it is that you're looking at, whether it's a conservation project or preventive conservation project, if it involves equipment or something that would need to be sustainable, you're always kind of going to come up against a major barrier. It's going to be very difficult to kind of like overcome but it then it requires in that moment to think about what you can do in that moment in order to be more sustainable and then whether you think that that is just a moment by moment basis and hope that on a global scale we change these processes to be more sustainable. Or if you think that you do this moment by moment and then you really look to change the process that you can for yourself if it's a programme that you're in charge of. So with my team, it's very much part of my agenda that if we have a project or a programme, how do we be more sustainable with it and what are those barriers? What are the barriers that we come up against within the project that we think, oh we could do something better here, let's think about that. All the sort of barriers that you've kind of put down, we tend to come up against them very quick in our own processes in sector.

[22:11] - Daisy Green

And I suppose it's just about finding where a potential compromise might be or also what's realistic. We can't make everything better all the time, so it's what's within our faculties to be able to tweak and change slightly.

[22:28] - Luke Stones

Yeah, internally, so in Chatsworth, majority of the time we are in charge of our own processes. We don't rely on a lot of kind of external factors. Especially in our department when we're dealing with the collection, we don't tend to rely on too many external forces, if you like, that impact what it is that we're trying to carry out. We work a lot with conservators, we tend to speak to them and consult with them on various projects and stuff, but we think a lot about whether we need to bring conservators to

Chatsworth, whether we can just do it over zoom to assess objects. I know it's difficult in some cases because conservators like to be around or objects to actually assess them. But we kind of internally take it on like a step by step basis, doing what we can in the moment to change the barrier that presents us at the time. And when we're in charge of a project or a programme, it's very much about our forefront of our thinking with if this project requires a particular scaffold tower, rather than hire this scaffold tower in to save on transport costs. And obviously there's a financial element to it with all of this, there is. We buy a scaffold tower and we invest in a scaffold tower that could see us through for multiple projects for years and years. It's kind of little things like that that we keep trying to tweak and change along the way.

Question 6

[24:16] - Daisy Green

Yeah. So just talking a little bit more specifically about packaging, and moving on to question six, would you consider using a sustainable plant based packaging as an alternative to some of the traditional materials, such as bubble wrap or Plastazote? Please expand.

[24:34] - Luke Stones

I really would. Yeah. It's one of those where we tend not to use too much bubble wrap. We use Plastazote, but it's on a very small scale. So we buy bulk sheets rather than kind of just doing it on a project by project basis, because obviously there's transport costs associated with all that. So we'll tend to do a big bulk buy of sheets of Plastazote and they tend to last us for a number of years, so we feel like we've got a decent return on things like that. But in terms of using alternatives, we would absolutely love to use alternatives to any of that because I think it would be amazing. I'm hoping anyway, it's that next big sort of push with regards to the arts sector that we get to see on a global scale. Institutions, just companies, transport companies, all of these kinds of companies getting together to sort of be more sustainable and packaging like with that. All these companies that manufacture the packaging materials that we use, for them to really look at more sustainable options, because we would absolutely be front of the queue for buying that. But obviously, a lot of goes into the research of these materials and whether these materials would really kind of be something that we could use as an alternative in terms of the protection of the object, because one of our principal thoughts will be the object. That kind of connection between the packaging and the object. It's kind of like we have to think about the object. And so we use acid free tissue, for example, and Tyvek and things like that, which you think, well, if those materials have

alternatives, or there's a different type of foam to Plastazote that is more sustainable. And we knew that the research was suggesting that there's no difference in using this to using Plastazote or acid free or anything like that, then we would absolutely jump at the chance.

[27:17] - Daisy Green

Thank you. So in talking about with alternatives to things like bubble wrap and Plastazote, you mentioned that you don't actually use a lot of bubble wrap. Is that because a lot of your pieces are stored within your own storeroom and therefore you don't need to protect it in the same way as if it was being transported? Or do you try to avoid using bubble wrap and transportation as well?

[27:44] - Luke Stones

Well, all of those. Obviously the house and how it looks day to day, everything is just on display, but then there's a lot of the collection that's in store rooms, a lot like what you've got behind you, which doesn't need anything to be wrapped. Obviously reasons for that is like micro climate development within packaging materials. So we tend to not have a lot of objects wrapped and if we did, it would probably be a light covering of Tyvek just to sort of offer that sort of semi permanent, or sort of like membrane to get a bit of passive airflow. So we don't really use a lot for that. And then in our day to day, it doesn't really come up because anything to do with loans and things like that, we don't use bubble wrap. It's one of those where it almost presents more harm than good in a lot of ways. So it tends to be a series of acid free poly and then things go into a Plastazote lined crate, so there's not a lot of bubble wrap that's used. We've had one role that lasted probably five years, very small scale.

[29:04] - Daisy Green

Okay Thank you. Do you have any specific concerns when it comes to how a plant based packaging material might affect our work? Something that you would think 'that definitely needs to be tested, we definitely need to make sure that that's not going to affect our work'?

[29:32] - Luke Stones

Yeah, straight away I want to look at the research and then I'd also want to be looking at who's using it and what they're using it for. I think it's one of those where we don't want to be necessarily pioneers in this field with the regards to testing it, but we're happy to be fast followers because it's one of those where we want to be able to rely on the

research that says to us, oh no, this stuff is all good, whatever it is packaging wise. Yeah, the things that I would be thinking about obviously, if anything's dyed, if there's any dyes related to it and stuff, which I can't imagine there would be, but dyes that would sort of bleed out onto objects. A big one is off gassing. So you know if any of these organic materials will off gas. For example, we have a large collection of old master drawings and we tend to fit, over the years, you've had Balsa wood, sort of strips within frames to kind of like orientate it a little bit or pack up one side than the other. But as you know, wood would always off gases and if you've got something in a closed environment for an extended period of time, it's not particularly good. Which is why for exhibitions you use zero VOC paints and then your Dacro lights and stuff so that it traps any kind of off gassing, so it prevents any sort of damage to the object. So they'd be the sort of like things to be thinking about, especially the off gassing things with any kind of organic package materials that might be available.

Question 7

[31:35] - Daisy Green

Okay, thank you. So just moving on to Question Seven. Are there any materials that you found in your own practise or experience that you see is more sustainable than others? This can include materials that are easily reusable or even if they cannot be recycled.

[31:57] - Luke Stones

Probably not so much things that specifically sustainable. I've not come across anything or not trial or anything in the house yet, but like I say, if we ever sort of catch wind of people using something that is a lot more sustainable, then we'd absolutely jump at it. We tend to sort of reuse what we've got. So like I said, we reuse polythene wrap, we reuse Melinex, we reuse Tyvek, acid free tissue, spider tissue, the cotton tie material. We reuse our crates, which are all timber based crates. And so we tend to use all of that sort of package material that we've got because most of it is quite heavy duty, apart from obviously spider tissue. But normally it can take a bit of rough and tumble and be used again.

Question 8**[33:17] - Daisy Green**

Okay, so we've only got three questions left. So our next question is question tearing bubble wrap and other materials destroys them, rendering them unusable. Would you use cotton tape to tie up packages of work instead of using adhesive tape? And if so, what artwork would you deem suitable for this method? If this is not a method you would use, please explain why.

[33:46] - Luke Stones

Thinking off the top of my head, with regards to loans, those things that we would send the loan, we wouldn't use cotton tape. The reason why we use adhesive tape is because it creates a seal and creates a closed environment. It's obviously very rare, and this is like catastrophizing for the whole thing, but if you have an object that's got a complete seal and completely closed off then any kind of water ingress, and things like that, might not get into the packaging or at least delay it. Whereas if you were trying to tape something up with cotton ties and stuff, you've got those gaps and stuff that, and also environmentally and stuff, it will be more susceptible to quick change in temperature and humidity, which we don't tend to like in terms of quick changes, more change over a slower period of time. So our loans would always kind of go out, like fully sealed with adhesive, sort of like tapes. Internally, we don't tend to move objects around the house or out of the house to other locations. One, because we haven't really got other locations on the estate or anywhere wider that we would take objects, too. It's kind of just in this house. So anything internally that would need to pack, we probably would use poly with securing it with cotton ties if we were moving things around the house, if they needed to be wrapped. But it's very rare. We don't even take them wrapped. So even then, we're kind of cutting down on packaging material because you don't need it in the beginning. I'm not opposed to the idea, but our processes where we are looking at the comparisons between cotton tape and an adhesive tape, they don't suit the process that we would need them for.

[36:07] - Daisy Green

Yeah, yeah.

[36:08] - Luke Stones

Does that make sense?

Question 9**[36:09] - Daisy Green**

Yes, that does, thank you. So just moving on to question nine. This research is focusing on short-term packaging. How would you categorise the time frame for short, medium and long-term in relation to packaging artworks?

[36:25] - Luke Stones

Is this in terms of sort of systematic change?

[36:32] - Daisy Green

So the research that I'm doing is having a look at packaging works for art fairs, which is a relatively short-term packaging time frame, which then affects things like if you were to use a plant based sustainable material to package rather, than something like Plastazote, if you were to use, say, a plant based foam instead then it's of course got off gassing. It's got a degradation period. And so one thing I'm considering is if we can make a compromise because theres a shorter time period, so those long-term risks would possibly not be as dangerous. So, it would just be interesting to hear from someone like yourself how you categorise short-term, medium and then long-term, because that of course then would affect the materials that you would decide to use.

[37:19] - Luke Stones

Well, in terms of our exhibition or loan process, I would probably say short-term is definitely between one and two seasons, which is basically one or two years. Yeah, medium term probably between five and ten. And then long term sort of after that. It's funny because we've got like various sort of projects and processes and things that we do at Chatsworth that kind of has a different time frame attached to it. And so if you were to talk to our registrar, for example, who's in charge of the loans process, she probably say that the short term would probably be three months or something. Whereas it's kind of like, I don't know, I like to look at it kind of like on a more global scale and think we tend to plan our loans quite far in advance, at least for the next few years. And so I would consider short to be the next twelve to 24 months with medium between five and ten and then long term after that.

Question 10**[38:42] - Daisy Green**

Okay, thank you. So we've got our last question, Question Ten. Do you have any further comments about this research changing the way the package art works for short term use and progress towards a more sustainable industry within preventative conservation?

[38:58] - Luke Stones

Oh man. I think it's amazing that people like yourself are looking into it because I think it's really vital because you're almost the catalyst for this change. Doing the work that you do. Start to sort of like shine that light on various parts of the industry and stuff that might be hugely wasteful, but also that areas of the industry that might be real positives. I would say I would absolutely look more at the contemporary art scene and transport especially. And I think that it'd be interesting to hear people's thoughts around getting transport companies and arts institutions and from around the world or represented sit down and say, well, what do you want packaging to look like? Or how do we be more sustainable over the next god knows how many years in terms of short, medium and long term and stuff? I'd be interested to hear other parts of the industry and what their policies are, what their thoughts are and stuff. Because I think what you'll find is without putting words in their mouths, that the transport companies, your Momarts and your Constantines and your Paradigm 33 and everything, they're enormous companies. They ship things all around the world daily. They're constantly de-installing exhibitions, installing exhibitions, installing stalling art fairs. It'd be amazing to see research in terms of the figures, just how much waste and what the footprints are around transport and packaging and things. And I think what you'll find is if you start to get a couple of companies and stuff just to change parts, then you would probably see a lot more follow suit because I do think that you would have companies a lot like ourselves that very much want to take that leap into sustainability within the various projects that we do. We just need to know how. We just need that leader, we need to be pointed in the right direction. We need to know where the research is. We need to know the companies that provide the sustainable material. We need to rely on conservators to sort of back that up and we need to test it and try it. The problem with that is it takes years. It takes a long time. And it's one of those if you dedicate yourself to it and stuff and really drive it and everything and we can absolutely make change and bring in more sustainable materials. I think the best we can hope for in the short, very short term, and stuff is just to reuse a lot more of what we've got. And I think a lot of companies will be fascinating to hear what you end up finding as you do this.

[42:42.] - Daisy Green

Yes, I'm hoping there should be some good results from this.

[42:46] - Luke Stones

So are you, like, reaching out to other companies and organisations with all of this?

[42:53] - Daisy Green

Yeah, I've reached out to a few art handlers, mostly just personal contacts because I've had positions as an art dealer in quite a few art fairs over the years, but unfortunately haven't had anyone willing to do any interviews from the art handling side. And I've contacted quite a few sustainable packaging companies but they haven't got back to me either, which has been a bit disappointing. Because I wanted to promote them, I don't want to reprimand them, because they're the people and the products that we really want to be able to use. So I think it's just big companies, not a priority for them at the moment, possibly, but people from institutions have been really willing to talk to me, like yourself. So I think it's more people really on the forefront that are doing the packaging or seeing the products being used and are really like on the front line, who can kind of see it all in action and therefore want to talk a little bit more about it.

[44:22] - Luke Stones

Yeah, that's good.

[44:30] - Daisy Green

Well, thank you very much, for your time Luke. I'll stop the recording here.

[44:35] - Luke Stones

No, no, it's fine. Thank you.

Appendix 4

Appendix 4a: Informed Consent Form of Student Dissertation



Informed Consent Form of Student Dissertation

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Project Details

Project Working Title: *Project Working Title: An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

This dissertation will be researching and enquiring into the ways to help reduce the amount of non-reusable and non-recyclable products used in short term packaging, particularly in relation to international loans and travelling exhibitions such as art fairs, in the UK.

- What are the alternatives to sealing packaging materials, which will not cause damage to the materials, and therefore allow for reuse of the materials? For example, reducing damage on bubble wrap from adhesive tapes by using cotton tape to tie packaged works.
- Are there some vegetable based packaging options, such as Green Cell Foam, which might be suitable for short-term packaging of art. If so what are these packaging options, and what are suitable artefacts that can be packaged with such materials?
- What are some of the barriers for change within institutions or in independent professional practitioners that are preventing procedures and chosen materials from changing?

Statement of Confirmation

As a voluntary participant you will be asked questions about the topic described above. The purpose of these interviews or conversations is to gauge an understanding of professional practices, new ideas, contemporary methods and statements about current and/or sustainable packaging practices.

Should you are dissatisfied with having your personal data processed, you have the right to complain to the Information Commissioner's Office. For more information please visit www.ico.org.uk

**Please read and tick below**

I have read and understand the purpose of the study



I have been given the chance to ask questions about the study and these have been answered to my satisfaction



I am willing to be interviewed



I am willing for my comments during the interview to be audio or video recorded



I understand that I can withdraw at any time if I change my mind during the interview and this will not affect my treatment/education/care



I am aware that I have the option to remain anonymous, in which case my name and details will be kept confidential and will not appear in any printed or published documents.



I am aware that I have the right to withdraw my contributed information at any point up to 30 days before submission (21st August 2022).



I am aware that my personal data will be stored for 6 months after it is collected, and will subsequently be destroyed.



All the information I give will be true and accurate, to the best of my ability.



I confirm that I am aged 18 or over and can give informed consent to voluntarily participate in this research



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

**Please read and tick one**

I would like to remain anonymous. In this case my name and details will be kept confidential and will not appear in any printed or published documents.



I am happy for my name and institution to be used in any printed and published documents





This information will be held and processed for the following purpose(s):

Article 9(2)(j)

processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

I agree to the University of Northumbria at Newcastle recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in the information sheet supplied to me, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act 2018 which incorporates General Data Protection Regulations (GDPR).

Name Alicia Casilio

Signature [Signature] Date 7/26/22

Appendix 4b: Consent Form Where Personal Data is Collected



CONSENT FORM WHERE PERSONAL DATA IS COLLECTED

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Please tick or initial where applicable -

I have carefully read and understood the Informed Consent Form.



I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.



I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.



I agree to take part in this study.



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.



Name Alicia Casilio

Signature

Date 7/26/22

Appendix 4c: Semi-Structured Interview Questions

SEMI-STRUCTURED INTERVIEW QUESTIONS WITH [REDACTED]

Project Working Title: *An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

- 1 Please could you state your name and give a short explanation of your professional background and current role, and talk a little about your work with [REDACTED]?
- 2 I came across the Green Cell Foam product in the 2021 [REDACTED] company Christmas gift. What packaging product was Green Cell Foam replacing?
- 3 Has sustainable packaging always been something that [REDACTED] has focused on using for these gifts?
- 4 How has Ab Initio's choices surrounding sustainable packaging changed over the years?

- 5 How did Ab Initio come across Green Cell Foam, and why did the company decide to use this, instead of another product?
- 6 Are there any other similar sustainable products that [REDACTED] found as well as Green Cell Foam?
- 7 How long, on average, are the company gifts packaged for?
- 8 Was Green cell Foam used in all the company Christmas gifts to locations such as Singapore? If so, were there concerns about how Green Cell Foam would react in the high humidity? If not, was other product was used instead?
- 9 Are there other areas of concern for [REDACTED] in relation to packaging their company gifts? For example, sustainable replacement for other packaging products, such as adhesive tapes?

Appendix 4d: Interview Transcript**[00:00] - Daisy Green**

This is interview number four with [REDACTED] from [REDACTED]. [REDACTED] are you happy for this to be recorded?

[00:11] - Participant 4

Yes.

[00:12] - Daisy Green

Great. So I've sent you the interview questions already, so I'll just go through those one by one. But if you want to expand on anything or if you've got any other points you want to make, then we can expand around those.

[00:23] - Participant 4

Okay, sounds good.

Question 1**[00:24] - Daisy Green**

Great. So question number. Please could you state your name and give a short explanation of your professional background, current role, and talk a little about your work with [REDACTED].

[00:35] - Participant 4

So I actually started with [REDACTED] assembling gifts soon after graduating from art school, and I quickly became a student and creator of [REDACTED] Arts, and I've been making and designing here for the last 20 years.

[00:51] - Daisy Green

Great, that's super exciting. So what was your background in, just out of interest?

[00:58] - Participant 4

Actually, I studied public art. Okay. And actually this was also with my sisters, and all three of us got the job here at [REDACTED] at the same time.

[01:06] - Participant 4

Oh, really? Wow.

[01:07] - Participant 4

Yeah, we were doing performance art, so you might know that we're identical triplets. Oh, yeah. So we did performance art and public art projects, but also I studied glass and painting and other things as well.

[01:26] - Participant 4

Oh, wow, that's so interesting. So have you done performance art as part of your work with [REDACTED]?

[01:32] - Participant 4

Actually, it's funny, I didn't really think about that, but yes, we've done some trade shows where we were painting the booth as the trade show was going on. I'm trying to think, there must be other events too, where we did something and maybe we started off doing events too for possibly kind of getting people involved in a public way or that may have been kind of instigated from this kind of more performance part of our background.

[02:07] - Daisy Green

That's so interesting. So you and your three sisters still with the company?

[02:12] - Participant 4

Actually, [REDACTED] left two years ago just before the pandemic. She has a young child, so she needs to spend more time with him. And then my sister [REDACTED] is actually just leaving soon. She lives further away and it's just a little bit harder for her.

Question 2**[02:34] - Daisy Green**

Oh, great. Well, thank you for that. I've definitely been more interested to hear about more of your work. Maybe in another conversation. So on to question number two. I came across the Green Cell Foam product in 2021 company Christmas gift. What packaging product was Green Cell Foam replacing?

[02:56] - Participant 4

So we often go to crinkle, like paper crinkle as a go to material for packaging because it's aesthetically pleasing and it also is recyclable and people can reuse it. So we tend to like that. But it just happened that this gift was really delicate. We first tried crinkle and then the volume of space in the box was kind of large. So when we filled it with crinkle, the box got really heavy. So when we would do these toss tests, the stuff on the inside would break, those rings that were holding the contents. So this took us three weeks of development to come up with. We really resist using foam. We didn't want to use foam. We tried to do cardboard and then for a brief moment we were like, well, it needs to be lighter weight, maybe we should try those air pack bags. Even though we hate that too, because it's plastic, and they're also awful looking. So we were trying to figure out how to conceal them, but nothing was really working.

[04:30] - Participant 4

And so we realised that we really did need to use foam for that and because people on our team do care about sustainability, we ended up searching a biodegradable foam and then we ran into this Green Cell Foam. So it was just out of necessity, really. I'm sure we'll touch on this a little bit later, but the Green Cell Foam looks good too, so it just happened to work with the aesthetic of the gift, which really does matter to us too, because the gifts are so much the experience of opening them. So it's hard to disregard when you have big bags of plastic. It's just not the experience that you want to have.

Question 3

[05:09] - Daisy Green

Yeah, of course. Thank you. So just moving on to question number three. Has sustainable packaging always been something that [REDACTED] has focused on in these gifts?

[05:20] - Participant 4

No. When we arrived at [REDACTED], there was an abundance of foam products that we hadn't really used before. It's a foam core gator board, and the stuff is so convenient. It's light, it's rigid, you can paint on some of it, it's easy to cut, it's easy to source, it's really hard to replace. So we just kind of continued to use it for many things and even though it just didn't feel quite right, but it just was so easy to use. I think the next question is how did our choices change over the years? It really came from the people on our team that really mattered to us to try to do better. For me, I'm definitely, probably of all of us, more adamant about using more sustainable materials than other people, even on the team. But it didn't come from the top down. But it's hard to even like this coming year, we just hope that we could still, given the parameters that we start with, hopefully we can still make it sustainable. So the gift that came after, if you got to learn about those, one of them was a loose gift.

[07:03] - Participant 4

They thought it's great because people can enjoy it forever, but there's a handful of us that just don't really like it because of the sustainability issue. So it's not across the board that we're into that. It's just a few of us really thought it was important to try to make it as sustainable as possible.

[07:23] - Daisy Green

Of course. And I guess when you can make those particular choices about things like packaging rather than the gift itself, when there isn't necessarily the same level of compromise with the gift and what that's actually made of, so you can make compromises in the other components like the packaging, it looks good and the whole experience that is very integral to the company's identity as a whole, you've integrate those values to be in line as well.

[07:54] - Participant 4

Yes. The other thing to consider though, too, that's challenging is that time is always a constraint too. So we were really lucky that this Green Cell Foam packaging company had the time right when we called them because they got slammed soon after so that they wouldn't have been able to fulfil the project in the time we had if we had called them a week later. So to do something right, to do something sustainable, time is also important. Sometimes you have to wait a little longer for materials that are harder to get in. And so we just cross our fingers that we have a little more time and that the next project that we get, we can do as well as we can.

Question 4**[08:38] - Daisy Green**

Yeah, definitely. We kind of answered question number four, but going back onto it, when would you say that things started to change with thinking about sustainable packaging? Was it in line with a particular event or within a particular time frame?

[08:59] - Participant 4

I don't think so. Really in the last couple of years, I would say. It's funny because I'm even thinking that my sister, who actually kind of led a lot of the projects before because she was in direct communication with someone but about these projects who didn't really question the sustainability, she just needed to get the job done. There wasn't enough time really to address that even. It's just how do we get this assignment completed? And so since she's left, I guess maybe it is actually since she's left that we have been able to kind of push that a little harder. So it really comes to from the bottom up, and people in the 'kitchen', but it really comes from people who really started doing

things like composting, and it's not being delegated that they do that but it just feels better from people on the team that are trying to push these initiatives.

[10:13] - Daisy Green

I guess it's a bit like almost like a front line concept. If you're faced with a problem or you're faced with a particular topic, you're more likely to then start looking for the solutions rather than if somebody might bring it to you from a team that you're heading or even like the people higher up in the company, they might not really understand where the team is kind of coming from, and what their views are and why they think it's something that needs to be solved.

[10:43] - Daisy Green

Right, yeah.

[10:46] - Participant 4

And also with art projects like these designed gifts, there's so much leeway, you're kind of inventing something from scratch. So you get these concepts and then you just have to start fleshing them out. And that's the point of where you're really churning and trying to develop the thing that is trying to fulfil the assignment or the art project. But also keeping in mind that we don't want it to be wasteful. All those things I feel like in the last gift was probably the most successful. The archival boxes, we tried very much to not put tape on them so that we just tried to make it so that even if it's recyclable, like all the contents are recyclable. But yeah, it's hard in the physical world. You're still making things you're wasting and when you make multiples of anything, also you have waste.

Question 5

[11:49] - Daisy Green

That's interesting. Thank you. So if we just move on to question number five. How did [REDACTED] come across Green Cell Foam and why did the company decide to use this instead of another product? So you kind of spoken about, 'well, we definitely need to use foam, so what's the best kind of product that we can use? But was there another foam product or something else that was kind of in the running as well?

[12:12] - Participant 4

There was not any other biodegradable foam. I mean, I guess there were those packing peanuts there, but biodegradable. But we actually really needed something that was more rigid and didn't slide things around. So there really wasn't another option. I don't think there's any other company, at least in our country, that makes a biodegradable foam that's in a sheet form. I think they even supply like the big supplier, it's called you

line here, you may even have it there. But they get their foam, their biodegradable foam also from Green Cell Foam.

Question 6

[12:50] - Daisy Green

Okay, that's good to know. Thank you. So are there any other question number six, are there any other similar sustainable products that have an issue found as well as Green Cell Foam? So this doesn't necessarily need to be a Foam, but is there similar to the kind of strip paper that you were talking about or another type of product that you like to use in quite a lot of the gifts or other packages?

[13:20] - Participant 4

Well, so I actually want to talk a little bit about our efforts in another gift that we had after this, which was a chocolate gift that we tried to use, a cellophane bag that was biodegradable. Because it's a chocolate, we really needed to be able to see the chocolate through the clear sleeve and then we were sticking the sticker on the front in the back. But it just needs to have a nice aesthetic. And we got this cellophane that was biodegradable and I guess the company that was supplying it. They said, well, that is going to yellow and how long is it going to sit on the shelf? Basically, they didn't know that it wasn't going to degrade the chocolate, but essentially it's meant to biodegrade. So it's off gassing in some form or another. And actually with art and archival stuff, that makes me wonder, is it really possible to have a biodegradable phone next to art that needs to be archival? So that's a real conundrum, I would imagine with what you're looking at, and you'd need some chemists or something that can help to solve that problem. But we've started using a cardboard that's like a honeycomb board instead of foam, like a gator foam or foam core.

[14:51] - Participant 4

And it's a little harder to work with, it's a little harder to cut, but it's even a white surface and it has a white core and it's more expensive, but it feels like the right thing to do whenever we can instead of bringing more foam into the world. I'm not sure this is helpful to you, but there were also these customer signs that we made around the office that are made out of gator foam. Are you familiar with gator foam?

[15:48] - Daisy Green

No, I'm not.

[15:49] - Participant 4

So it's like foam core, but it comes thicker and it's also more rigid on the surfaces. And it's lightweight, but it's also more substantial than foam core, so it's really flat. It's a great product, except it's completely not sustainable. And even off gases formaldehyde. Before we got here, these designs were designed for all the customers at the office. The point of them is to be these totems for these customers, so when they come in, it's like they've been kind of considered or like if you're working with this particular customer, then you get to see this kind of person standing next to you. But they really wanted them to be lightweight so that you could lift them up with one hand and kind of move them around the office so the office environment would change. They, I think, are used for sign materials, but also possibly packing materials. They come in four by eight sheets. But we started trying to make things more sustainable. We're starting to make them out of this balsa wood. That is balsa wood plywood that uses the end grain. And it's really lightweight. It's not as lightweight as the foam.

[17:20] - Participant 4

But for the signs, now, we put a couple of pieces of plywood, a very thin plywood on the front and back. And then we paint them and they look identical to the foam, but it's made out of a very fast growing tree, and so it eventually would biodegrade. They are painted, but they won't crack and break and get damaged as easily, so we won't be replacing them so often. So I don't know whether for art that's a good thing to know about, but it's an interesting product

[17:52] - Daisy Green

Possibly. All of these different materials, even if it's not applicable for something like this particular project, it probably will come up at another time because like I said at the beginning, all of these different industries are completely integrated. Bubble wrap was just highly manufactured material that was useful for shipping, of just general objects, but then it can be used in lots and lots of other different industries. So I'm sure it will be useful.

[18:26] - Participant 4

Yeah. I remember that there was a biodegradable air pack material that you could get a machine to basically put the air into it that we were looking at briefly. But again, they're often like the paper is printed on and it's just like too busy looking. But that potentially for art handling. Could be good.

[18:49] - Daisy Green

Do you remember what that material was called or what the company or the machine was called?

[18:53] - Participant 4

I could look it up and send it to you.

Question 7**[18:56] - Daisy Green**

Sure, yeah. Thank you. That would be good. Thank you. So you mentioned that with these chocolate bars now, but you mentioned with the packaging. The potential that the company said all the material is definitely going to yellow. Like, we don't know how it's going to react with this edible product. Which kind of brings me onto the question number seven. Not necessarily the chocolate bar that you guys have packaged, but going back to the gift with the Green Cell Foam, can you let me know with the timeline of how long these gifts are packaged for, just so I can get an idea of lifetime?

[19:39] - Participant 4

If people open the gift as soon as they get them, it's probably two weeks.

[19:45] - Daisy Green

Okay.

[19:46] - Participant 4

But people don't necessarily open them right away. And actually, after I got your interview request, I went down to see the foam that we've had now sitting around since we ordered it, it's not brittle. It's totally fine. It's not degrading. I guess, the rooms are generally air conditioned, except for on the weekends, the area is completely shut off, so it can get really hot or pretty cold, but it's not brittle. Like, I may have thought that after some time over almost a year, but that it would start to get brittle over time. But it seems to be okay and.

[20:28] - Daisy Green

It's not like sticky or anything. Okay. That's interesting.

[20:33] - Participant 4

Yeah.

Question 8**[20:43] - Daisy Green**

Question eight. Was Green Cell Foam used in all of the company Christmas gifts to locations such as Singapore? If so, were there concerns about how Green Cell Foam would react and how humidity and if not was another product to use instead.

[20:57] - Participant 4

No, it wasn't considered. It seems like the only solution for us at the time and we felt like we did try to put water on it and it didn't seem like unless there's water directly touching it, it really wasn't going to make it a real strong difference, it wasn't going to change that much. And then there's also the barrier of the cardboard box that's taped up that has another level of protection from the humidity. Yeah, I felt like it was going to be fine. Especially that it's not in the box for all that long too.

[21:31] - Daisy Green

Yeah, that's very true. And you didn't have there wasn't any reports of it going to a different consistency or anything like that?

[21:39] - Participant 4

No.

Question 9**[21:39] - Daisy Green**

Okay, that's good to know. Thank you. So on to final question, question number nine. Are there any other areas of concern for the company in relation to packaging their company gifts? For example, sustainable replacement for another packaging products such as an adhesive tape.

[21:57] - Participant 4

Like for the outer box packaging, like the larger packaging tapes. Is that what you're talking about?

[22:02] - Daisy Green

Mostly yeah, just the tape as an example. So one of the things I'm having a look at is replacing adhesive tapes with cotton tape.

[22:16] - Participant 4

Right, so use that on the bubble wrap instead of the tape?

[22:20] - Daisy Green

Yeah, exactly. So then you don't rip it which means you can then reuse it. But of course tape is an example. But there are any other replacements that you found, for example the like cellophane or like a bubble wrap?

[22:42] - Participant 4

For the outer boxes, we tend to use paper tapes if we can because we think they're more recyclable than this plastic tape. And paper bands also, like if we're going to bind things rather than plastic bands, and even for a while there was actually a thought of using a different ribbon to bind the two boxes together. But the ribbons are always a synthetic ribbon. But the whole gift was paper. So we really were like well we really like this whole thing to be paper. But of course it became this real challenge because the paper doesn't give, it breaks and that's why I needed foam.

[23:26] - Participant 4

But I really liked your thought about having reusable materials. I think one thing that is challenging and you'd hope that in a space where they're removing bubble wrap for art that it would be clean. But I think one problem is that like bubble wrap can get a little dirty or that the white cotton tie could get a little dirty. So they need to be taught like that it's better to take your time and then put it in a clean place and reuse it. But when the people are in a rush, then they're not necessarily trying to care for it as much.

[24:08] - Daisy Green

Yeah, exactly. Well, thank you. That's the end of my questions. Is there anything else you'd like to expand on or add or anything else you'd like to mention?

[24:19] - Participant 4

I don't think so.

[24:21] - Daisy Green

Okay, thank you for your time.

Appendix 5

Appendix 5a: Informed Consent Form of Student Dissertation



Informed Consent Form of Student Dissertation

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Project Details

Project Working Title: *Project Working Title: An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

This dissertation will be researching and enquiring into the ways to help reduce the amount of non-reusable and non-recyclable products used in short term packaging, particularly in relation to international loans and travelling exhibitions such as art fairs, in the UK.

- What are the alternatives to sealing packaging materials, which will not cause damage to the materials, and therefore allow for reuse of the materials? For example, reducing damage on bubble wrap from adhesive tapes by using cotton tape to tie packaged works.
- Are there some vegetable based packaging options, such as Green Cell Foam, which might be suitable for short-term packaging of art. If so what are these packaging options, and what are suitable artefacts that can be packaged with such materials?
- What are some of the barriers for change within institutions or in independent professional practitioners that are preventing procedures and chosen materials from changing?

Statement of Confirmation

As a voluntary participant you will be asked questions about the topic described above. The purpose of these interviews or conversations is to gauge an understanding of professional practices, new ideas, contemporary methods and statements about current and/or sustainable packaging practices.

Should you are dissatisfied with having your personal data processed, you have the right to complain to the Information Commissioner's Office. For more information please visit www.ico.org.uk

**Please read and tick below**

I have read and understand the purpose of the study



I have been given the chance to ask questions about the study and these have been answered to my satisfaction



I am willing to be interviewed



I am willing for my comments during the interview to be audio or video recorded



I understand that I can withdraw at any time if I change my mind during the interview and this will not affect my treatment/education/care



I am aware that I have the option to remain anonymous, in which case my name and details will be kept confidential and will not appear in any printed or published documents.



I am aware that I have the right to withdraw my contributed information at any point up to 30 days before submission (21st August 2022).



I am aware that my personal data will be stored for 6 months after it is collected, and will subsequently be destroyed.



All the information I give will be true and accurate, to the best of my ability.



I confirm that I am aged 18 or over and can give informed consent to voluntarily participate in this research



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

**Please read and tick one**

I would like to remain anonymous. In this case my name and details will be kept confidential and will not appear in any printed or published documents.



I am happy for my name and institution to be used in any printed and published documents





This information will be held and processed for the following purpose(s):

Article 9(2)(j)

processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

I agree to the University of Northumbria at Newcastle recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in the information sheet supplied to me, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act 2018 which incorporates General Data Protection Regulations (GDPR).

Name Kim Kraczon

Signature Kimberly Kraczon Date 10.08.2022

Appendix 5b: Consent Form Where Personal Data is Collected



CONSENT FORM WHERE PERSONAL DATA IS COLLECTED

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Please tick or initial where applicable -

I have carefully read and understood the Informed Consent Form.



I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.



I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.



I agree to take part in this study.



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.



Name Kim Kracson

Signature Kimberly Kracson

Date 10.08.2022

Appendix 5c: Semi-Structured Interview Questions

SEMI-STRUCTURED INTERVIEW QUESTIONS WITH KIM KRACZON

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

- 1** Please could you state your name and give a short explanation of your professional background and current role, and talk a little about your work with Gallery Climate Coalition?
- 2** The 'Plastic Alternative Packaging Materials Research' on the GCC website is a fantastic resource with information about alternatives that consumers can use in replacement of non-recyclable packaging products. Could you speak a little about the research process for finding these alternative materials?
- 3** The 'Plastic Alternative Packaging Materials Research' on the GCC website has a column with brief details about conservation properties.

How were these determined? Was each material tested by GCC conservators, and if not, where did the information come from?

- 4 What do you see as some of the biggest barriers for changing the products consumers use when packaging art? E.g. Manpower, knowledge, time, and financial resources etc.
- 5 Are there some ways that you think we can make reusing packaging materials more accessible?
- 6 Tearing bubble wrap and other materials destroys them, rendering them unusable. Would you use cotton tape to tie up packages of work instead of using an adhesive tape, and if so, what artwork would you deem suitable for this method? If this is not a method you would use, please explain why.
- 7 An extension of The 'Plastic Alternative Packaging Materials Research' on the GCC website would be to capture the carbon footprint of each material. Do you have any advice on how this information can be collected?
- 8 Do you have any further comments to make about the Gallery Climate Coalition's work and how they are impacting the industry?
- 9 Do you have any further comments about this research, changing the ways we package artworks for short-term use, and progress towards a more sustainable industry within preventive conservation?

Appendix 5d: Interview Transcript

[00:03] - Daisy Green

Hello, Kim. Do I have your permission to record the interview?

[00:06] - Kim Kraczon

Yes, you do.

Question 1**[00:08] - Daisy Green**

Okay so, question number one. Could you please state your name and give a short or explanation of your professional background and current role and talk a little about your work with the Gallery Climate Coalition?

[00:21] - Kim Kraczon

Sure. So. My name is Kim Kraczon. My education background I have a BA in History from the States and then moved to Berlin, Germany, where I pursued a Bachelor of Arts in the Conservation of Modern Materials and Technical Cultural Heritage during my studies. I think it was my fifth semester, we did an internship semester and I was working at Studio Olafur Eliasson, who is a prominent contemporary artist whose studio is based in Berlin. I carried out like a kind of a large scale project there that involves packaging as well, like the documentation, conservation and packaging of an artwork that comprises of 470 small objects that went on tour to various museums. In any case, I was hired on and I worked at the studio for eight years, where I, in the last four years or so, turn my attention to sustainable production methods and sustainable packaging. And during that research I was looking online for any information on sustainable packaging, especially from the conservation community, and I found nothing. There was nothing out there. This was again like three and a half years ago, pre-pandemic, but I did come across Sustainability and Conservation, who have an online forum. I was very active on this forum and just eager to share information with other conservators. I came into contact with Caitlin Southwick, who is the founder and director of Sic, and at the time she was in the preliminary stages of forming Key Culture. So then I became involved with Ki Culture and Caitlin asked me to be the director and I mostly authored The Waste of Materials Ki Book as well, which was published around two years ago. It's been a while. It's extremely outdated. This is the thing as well. Like a lot of the information in the GPC as well, there's been so many updates and my mode of thinking about this have changed. It changes drastically all the time. So then I was the Director of Materials and Ki Culture and someone reached out to me through the studio [Studio Olafur Eliasson] who was involved with the Gallery Climate Coalition in Berlin. They

were forming a Berlin branch of the Gallery Climate Coalition and I became involved with that, one of the founding members of the Berlin Gallery Climate Coalition. And then through that I was invited to talk at various meetings and was invited to take the lead of the Packaging and Materials Research Committee at the Gallery Climate Coalition. That was about a year ago. So that's a very long winded roundabout explanation of how I became involved. And then, as I mentioned before, then I also over the pandemic, had some introspective realisations of my career path and then go back to school. And so I'm pursuing my masters at University of Amsterdam right now in the conservation of contemporary art.

[04:01] - Daisy Green

Well, it seems like you've got a really nice overview of lots of different sectors within the industry, which is really fantastic.

[04:10] - Kim Kraczon

Yes, sure.

Question 2

[04:17] - Daisy Green

Question two, the Plastic Alternative Packaging Materials research on the GCC website is fantastic resource with information about alternatives that consumers can use in replacement of non-recyclable packaging products. Could you speak a little about the research process of finding these alternative materials?

[04:35] - Kim Kraczon

Sure. A lot of that research came from my work in the studio when I was trying to find sustainable packing system. In the studio, we produce and create the artwork in house, large majority of them. So a lot of my research came through that, but then also research for the Ki book as well. And I have to say, a lot of these materials, I've already sort of like stricken off the list. I need to edit the alternative packaging because some of them just aren't suitable. I'm sort of thinking about these packaging materials. It's like a three tiered system of vetting them. And the first one is it a suitable packaging material? Can it be used? If there's a plastic wrap that tears too readily, we can't use it. So there's no point in looking at the sustainable ranking or the materials compatibility when it doesn't even function as a packaging material. And a lot of them don't. And I didn't even have the chance to have these materials in my hand. It was a lot of speculation. It was a lot of speculation. This is Mycelium foam, for example was purely speculation. The packaging industry in general, they also, of course, are trying to sell their products and they don't really understand the special considerations for artworks and that certain vibration dampening is important, and the dynamic cushioning curves are important,

and of course, material compatibility is important. So I would say a large majority of those materials, anyhow, are just not suitable packaging materials. Everything can find application, but as far as replacing polyethylene foam or replacing cushioning foams, a lot of them just don't have the properties. They just don't function. So that research is just me online looking at products, contacting companies. I'm in contact with a lot of companies. I do get free samples. I ask for samples as well. And I encourage you too. You can also reach out to companies and you can tell also, as a conservative, within 30 seconds whether or not we can use it. That's how that research came about.

[07:09] - Daisy Green

Okay. How long did it take you? What was the time scale?

[07:14] - Kim Kraczon

It was over the course of working at the studio trying to find the better solutions for packaging. And the Ki book took, I don't know, maybe six months, possibly a year. I would say a year. I would say a year, yeah.

Question 3

[07:50] - Daisy Green

Great. So you've obviously got a background in conservation, which now makes a lot more sense looking at the online resource because you've got notes about things like the Green Cell Foam failed the Oddy Test. It brings me onto the third question with the same resource that we were just talking about in question two, has a column with brief details about the conservation properties. How were these determined? Was each material tested by a GCC conservative? And if not, where did the information come from?

[08:24] - Kim Kraczon

That information is through the conservation pipeline. I'm in conversation with so many people. It's not testing that I did personally. It's not testing anyone involved with the GCC did. I know there's a woman here, I forget which university she went to, it was in the UK, she was a conservator who tested the bio viron films and the Oddy Test, and they failed. It was basically speaking to other conservators who did conduct the testing. And then the rest of it is just through research, more or less. But again, I do need to look at it again, the list would be more condensed and I can better understanding of the properties of these materials. Essentially, all of the organic, organically derived alternatives aren't going to pass the Oddy Test. That's just a matter of fact. Which is also why when I speak to conservators, the first thing that anyone mentions is like, 'oh,

we need to Oddy Test this'. And my response is 'we know it's not going to pass the Oddy Test' and we need to think of a different method of testing, and something that I would do if I were to pursue my PhD. I really am keen to come up with a testing system for packaging material to have time frames. And it's not just is like Oddy Test pass fail because that's for storage. Oddy Test is intended for compatibility and storage, and in packaging, as you know, there's short-term transport, longer-term transport, but also these terms haven't been defined, which I'm also struggling to figure out how to define. Short-term versus long-term. Maybe like overnight to up to three weeks and then over three weeks and then storage, long term storage. But I'm really interested in finding these tipping points in internal crate conditions where there's like off gassing or like the build up of gaseous acid. At what point is that posing a risk to certain materials? And that's something that hasn't really been investigated yet.

[10:47] - Daisy Green

Yeah, that's the really tricky thing. To be able to have access to those resources and complete something that would be so helpful to the industry.

[10:59] - Kim Kraczon

Yeah. PhD if you want to. That's a great time. It was a struggle to even go back to the Master's programme. I really am just more like hands on practical. I want to find solutions. I want to be on the front lines and working with people, but I don't know if I have the bandwidth to do it. But that's kind of the way that I'm approaching it. We need to define a different testing parameters based on the time frames.

[11:43] - Daisy Green

Just going back to the outside conservatives that were helping with the research, how are you finding the conservatives that had already researched those topics or in the process of?

[11:56] - Kim Kraczon

In Ki Culture as well, Caitlin, who was the director and founder of Ki Culture, is also a conservator, she went to University of Amsterdam as well, for stone conservation, and through, SIC, there's conservators that are involved in this discussion. And the GCC, and same as you, people reach out with questions and I speak, I meet with everyone. It's important to, also disseminate information and share information and then get feedback as well. So just people reaching out for the most part. I didn't seek anyone out in particular, except for the woman who did the Oddy Testing on the films, I heard about her just through the GCC and contacted her.

[12:48] - Daisy Green

Just as an extension of what we were just talking about with organic based packaging and failing the Oddy Test. One of the things I had started to consider was using plant

based materials, so things like Green Cell Foam was one that I had come into contact with. It's really tricky balance of, as you were saying, the tipping point. Where does it become harmful? Is it that compromise of, 'well, it's not ideal, but it's better than what we've been using'. What would your thoughts beyond using something like Green Cell Foam, which could replace something like Plastazote or bubble wrap, potentially, if it was just lining a box rather than being wrapped around a piece, and then buffering the actual object with something like acid free tissue paper or Tyvek, or something like that, that would then create a bit of a barrier?

[13:56] - Kim Kraczon

Yeah, I mean, I thought about that as well. First of all, have you had Green Cell Foam in your hands yet?

[14:02] - Daisy Green

Yes.

[14:02] - Kim Kraczon

Okay, because here's my take on it. First of all, it's produced in the United States. So that's an issue because to introduce something in the UK that's produced in the US. I speak to people from the US, most people from the US, UK and Europe, right? And I have different products that I introduce and speak about based on those countries and regions, because you need to look at where these materials are being produced. And that's also why the GCC has individual pages for different regions. I just updated the Berlin materials page, and it has a list of alternatives like the recycled content, bubble wrap, and there's different paper and cardboard products that I researched and are produced in Germany. And the London GCC page has the same, like, they did research and all of their products are, like at least they try to have them produce as locally as possible. So that was interesting. Previously I contacted Green Cell Foam and had them ship over a sample, and it actually costs so much money. And then I felt so guilty that I was basically shipping air in a truck. But it was also important, though, to have it in my hands, because I don't think it can actually provide the impact resistance. Like the shock resistance in crates, because once it's compressed, it stays compressed. When you push down on it, it stays compressed and you need something that has a bit of resiliency. But then also the issue is, when it's exposed to moisture, it can mould. And then also there's, like, pests. I could see it being used for very lightweight objects, like lightweight framed artworks, to make corners out of it. I can see that. But then the question is, what is the weight limit? We need to do these tasks. Studio Olafur Eliasson decided not to use it to package an artwork because of the compression. So if a crate fell 15 centimetres, and the weight of whatever is in the crate smashes the foam, and then the foam just stays compressed, the object would just be moving around inside the crate. Again, you can find applications for anything. It's just a matter of, standardising. I give presentations and talks on sustainable packaging and in the beginning there wasn't much feedback, and then the more recent ones, the feedback like 'you can use this film, but only for this amount of time and only with these materials', and it's just too

complicated. It's just too complicated. So I'm really trying to reel it in and I'm working on a project right now an aim to streamline it. In a lot of cases, we still have to use the traditional packaging foam. That's also the fact of the matter and it's about reducing the amount and of course, then using more durable materials that can stay in use. That's one camp, like the circularity, the technical circularity model. And then the other one, I just want it to be curbside recyclable paper.

[18:55] - Daisy Green

Yeah. So making the information, and the application very attainable, and easy as well. Otherwise people are just going to use what they've been using because it's what we're familiar with. And lots of new information can be really overwhelming.

[19:09] - Kim Kraczon

Yeah, super overwhelming. And even with all these films, the PLA films and the cellular space films, again, they have shelf lives as well so you have to label things with dates and make sure that they're replaced. It just becomes immensely complicated. And I don't want to introduce that because also then when you receive it, there's just too many factors involved. There's a foam I can send you in the chat at the end from Sweden that isn't on the market yet. I'm trying to get it on the market that is completely cellulose based and 100% curbside recyclable. And it has a little bit more resistance than the cornstarch foams. Yeah, I just think it has a better chance of finding application increase. I'm really excited about it and I'm working with Christies right now and overhauling their packaging. And I'm trying to get Christies to support this company to get their product on the market for general use. And I can share that with you, because that also is produced closer to you, and I think it's a better product than the Green Cell Foam.

[20:38] - Daisy Green

Okay great.

[20:41] - Kim Kraczon

And then they also have one that has a bit of polymer in it and it's like recyclable most places. But essentially in places where milk cartons are recyclable, this foam is also recyclable. There's a tiny bit of polymer mixed into the paper. Again, this is just like paper. Another concern is what happens at the end of a products life if it's one way packaging, and you're using like a PLA. Those aren't to actually compostable all these compostable plastics. Like they require an industrial compost facility which isn't available in most places. In the end, it's just very complicated. And I just wanted to be like, okay, we all know where paper recycling goes.

[21:52] - Daisy Green

Yeah, exactly. Phrases like 'biodegradable' or 'from recycled materials', I feel has great intentions, but it is a little bit green washy.

[22:03] - Kim Kraczon

Absolutely. It's absolutely green washing. As part of my presentation, I make sure to inform everyone that the certified 'Din EN compostable', whenever you see a product that has this, means industrial. It needs to be industrially composted. It's not home composting that they're referring to. The little logo is like a plant routing, like absolute green washing.

Question 4

[22:50] - Daisy Green

So we did kind of start talking about it with all the overwhelming information that some consumers might be kind of hit with and therefore a little bit reluctant to then change their practises. So, question four what do you see as some of the biggest barriers for changing the products consumers use when packaging art? For example, manpower, knowledge, time and financial resources, et cetera?

[23:17] - Kim Kraczon

I guess time kind of like encapsulates everything, right? Because you need time to inform people. You need time like the systems change takes time. Takes time to educate people. It takes time to kind of figure out as well for your own needs in your institution or gallery or art studio, what would work best for you, what's available. Again, we try to provide these resources through GCC and Ki Culture, but yeah, time to and also as far as reducing the amount of packaging materials, like you need time to build customise the spoke crate, that takes time. It takes planning. And then latching on top of the shipping discussion of using speed freight or using train or truck as opposed to air freight, it also requires more time and planning. So I would say time and then time is also money. I guess it is all of them.

[24:26] - Daisy Green

They kind of interlink together as well.

[24:28] - Kim Kraczon

Yeah.

Question 6**[24:30] - Daisy Green**

So my 6th question. Tearing bubble wrap and other materials destroys them, rendering them unusable. Would you use cotton tape, to tie up packages of work instead of using an adhesive tape? And if so, what artworks would you deem suitable for this method? If this is not a method you would use, please explain why.

[24:48] - Kim Kraczon

And by cotton taking you just like cotton ties?

[24:52] - Daisy Green

Yes, like the kind of cotton ribbon that comes on a roll.

[24:55] - Kim Kraczon

Yeah, I would use it. I feel like there are certain cases where a humidity and temperature buffer are necessary, and that also depends on the mode of transport and length of transport, then you need to have a seal, you also can use Tyvek for that. But if you're using strictly bubble wrap, there is an element of temperature, humidity buffering that you would want to have a sealed internal climate. So I think that would be a major issue. You could also roll down the sides. You could use techniques to try to trap and create a microclimate. I would not use that method if there was no external sort of packaging, if it was just an artwork wrapped in bubble wrap that was being moved around, and then the ties could potentially get caught on something. Like if there was an exterior, encased, packing system.

[26:06] - Daisy Green

Okay. Is that just a crate or do you want something that was physically on each package?

[26:15] - Kim Kraczon

Like inside of a crate, yeah. If it were inside of the crate or inside of a larger packing system, completely fine. But if people are handling it and it also depends on fascinating if you're using a metal clasp, like with the tension belts. But of course, there's different ways of fastening that it would be essentially caught on something during handling.

[26:57] - Daisy Green

Yeah, that's a good point. Thank you.

Question 7**[27:03] - Daisy Green**

Question number seven. An extension of the plastic alternative packaging materials research on the GCC website would be to capture the carbon footprint of each material. Do you have any advice on how this information could be collected?

[27:17] - Kim Kraczon

Yeah, sure. Material LCAs are tricky. They're tricky because it's very much location specific, because you're taking transport into account as well. But there are some resources out there like STiCH. This was created by Conservators.

[27:56] - Daisy Green

Okay.

[27:57] - Kim Kraczon

And it basically is like an online database of materials and their carbon footprint. It's for conservation treatments as well. So you can choose different solvents that you're using, the amount, like coatings, materials, and then it gives you the carbon footprint of that.

[28:23] - Daisy Green

Okay, great.

[28:30] - Kim Kraczon

And then there's also an app called ItemMap, and it's supposed to be for designers. It's an app on your phone, and you can basically just look at the carbon footprint of various woods and plastics. It's also important to take into consideration as well, like, when you're looking at materials, it's not just the carbon footprint, but also the ecotoxicity of the production. This is something as well with the starch foam and the PLAs that are from renewable resources. However, there is concern from a sustainability aspect of introducing them a product that requires a specific type of crop that then will be pushed as a mono crop in areas of the world, like increased increase like potato or corn or sugar cane production. And it has potential to adversely affect indigenous communities as well. Which is also why another reason why I'm super into just paper products from certified companies like PEFC. I think like the certified wood from fast growing forests from Scandinavia that can be replaced very easily. That's kind of why I also am trying to just, like, focus on the paper product.

[28:59] - Daisy Green

So we were just talking about you're talking about using the preferring to use paper products rather than fees. Aren't based products because of the potential humanitarian impact that they could have?

[29:12] - Kim Kraczon

Yes. And also the difficulty in finding means of their disposal. Again, they aren't recyclable and the companies will say, yes, it's recyclable, theoretically. Right, but they actually like PLA. There is no recycling plans for PLA. And most people confuse it with normal plastics, it gets tossed in, it contaminates the waste streams, or it's just incinerated. However, it does have a lower carbon footprint and this is something I don't want to dissuade people from using necessarily. I always say I think this as well compostable plastics. You throw it in the trash bin and it just magically dissolves within a couple of weeks somewhere. And it's not the case. These plastics actually do not break down faster than other plastics in landfill.

[29:59] - Daisy Green

Yeah, I remember learning that and I felt like I just taken this massive step back in the way I viewed sustainability in plastic waste.

[30:07] - Kim Kraczon

Yeah.

Question 5

[30:10] - Daisy Green

I realised I actually missed out question five. So we'll just pop back for that.

[30:14] - Kim Kraczon

Sure.

[30:15] - Daisy Green

So question number five, are there some ways that you think we can make reusing passing materials more accessible? More particularly like reusing? Even if they're not recyclable, how can we reuse them?

[30:31] - Kim Kraczon

Yeah, again, like linking up with local networks. That's kind of what we're trying to do with Ki Culture and the GCC and some cities also have material reuse platforms. Ideally, it's like finding storage is always an issue.

[30:49] - Daisy Green

Right.

[30:49] - Kim Kraczon

Storage. It costs money, like storage for materials, but maybe even finding a larger institution that has a section where people could potentially drop off materials or pick up materials or shared storage for the other synthetic packing materials. I'm trying to think of some other like I know that there's also a Barter Art. It's only available right now in the States, but they're hoping to move to Europe and it's specifically for the art sector. But they post crates and packaging materials well and people are trying to get rid of it.

[31:36] - Daisy Green

Yeah.

[31:37] - Kim Kraczon

So then I guess just having local material reuse sharing platforms, I think that's the best way to go about doing it.

[31:47] - Daisy Green

Okay. Yeah. Okay. Interesting. Thank you. So we've gone through question seven about collecting carbon footprint data. So you mentioned STiCH, and another resource in there. Are there any other resources that come to mind?

[32:15] - Kim Kraczon

Not that I know of, but I do have to look into this again over the next few months. I'll let you know if I come across anything. I know that GCC is also trying to work in a materials carbon calculator into their online carbon calculator.

Question 8

[32:32] - Daisy Green

Okay great. So question number eight. Do you have any further comments to make about the Gallery Climate Coalitions work or how they're impacting the industry?

[32:42] - Kim Kraczon

Oh, my gosh. Yes. I have to speak equally about Ki Culture and GCC. I work for both of them. Ki Culture is more like education based. I'm a key coach in their key futures programme. And that is more about just providing trainings and webinars and linking up people in networks and getting people together in communities. And the GCC, I mean, the GCC is contemporary art backed, there's more funding for the programmes. The symposiums are amazing. There was a symposium at Hauser and Wirth. I don't know if you saw that there's an online recording of it if you wanted to check it out. Yeah, it was really great. And the various campaigns of the GCC, there's a shipping campaign right now that they launched in June and it's basically trying to shift the sector towards sea freight.

[33:55] - Daisy Green

Okay.

[33:55] - Kim Kraczon

And that is then requires them calling in shippers, obviously, shipping companies and the insurance companies and the galleries basically having sort of have these conversations that everyone kind of avoided and finger pointed before, but finding insurance companies that are willing to insure art on sea freight, and various step by step guidelines on how to go about using sea freight. So I think that's monumental. It's hugely important. And then part of that is the packaging aspect. And that's where I'm working with Christie's right now. In this working group that just started yesterday. It's really exciting because they are determined to overhaul their packaging systems. They want to create an industry standard.

[34:51] - Daisy Green

Nice.

[34:52] - Kim Kraczon

Which then can be like through the GCC website. With the conclusion that we come to in this Christie Packaging Working Group, we can share with the rest of the arts sector.

[35:33] - Daisy Green

It sounds like they're really motivated.

[35:39] - Kim Kraczon

Yes.

[35:42] - Daisy Green

It sounds like Christies is obviously really motivated to make a big change, which is quite nice to see in such a large company as well. Sometimes feel like some of these things, they kind of get swept under the rug a little bit, especially when it's large and you might not be faced with everything.

[36:02] - Kim Kraczon

Yes, it's wonderful. They also have the money to put into this and to look into the product development. Again, I'm just waiting, really hoping, like linking up the companies, that again, can't produce this product unless there's someone who's willing to purchase a certain amount to get it sort of up and running. And I'm like, I'm really hoping that I can sort of push it through. I have a very specific agenda. It's getting this product on the market. But then also as a conservator, and I said this right off the bat in the meeting yesterday, that we have to make sure that the conservation community is vetting these materials before. I don't think they really understand that it's going to take a little bit of time and they're really eager. They want to wrap up this packaging. They want to us have the solution in a month and a half. That's not going to happen. It's not going to happen. We can go through the first steps. As I said before, like the suitability of packing materials and such material compatibility. I have people in University of Amsterdam who are willing to test materials. They just need the money to do it. Like there's research scientists. I can get that kind of underway when I go back in September. Because I'm also working with English Heritage right now and I wanted to talk about an upcoming workshop. But English Heritage is also just recently through ICON as well. It's like ICON, English Heritage, and so it's obviously group of conservatives who are looking at this and they're starting sort of from ground zero. So I'm trying to catch them up to speed with the research I've been doing for the past three years. I was really excited about the bio plastics and the compostable plastics as well. I was like, oh, this is great, you just need to find how to use these. And now I'm like, no.

[38:17] - Daisy Green

Yeah.

[38:18] - Kim Kraczon

And they also are trying to get money and funding to like Professor David Thickett, I guess, is like offered to Oddy Test things, which I also was in a meeting with him and I was like, why are we Oddy testing these? It felt weird. David Thickett, this is the wrong way about this is approach to this.

[38:46] - Daisy Green

I guess you need to tick it off the list and say, 'yes, we've done an Oddy test'.

[38:49] - Kim Kraczon

Yeah, exactly.

[38:53] - Daisy Green

Might show up slightly different results. What does that failure actually look like?

[39:00] - Kim Kraczon

Yeah, I know that you're in a preventative conservation masters correct. Yeah. And I'm kind of envious. I feel like I wish I would have maybe gone into that. It's so important right now. I think it's so much more important. But I think it's become increasingly important as we also are looking at lowering the climate controls and environmental controls and the next ten years would be really exciting for preventive conservation.

[39:37] - Daisy Green

Yeah, I think so. I think there's going to be a lot of research into it. I mean, so many people seems to be moving into that. Obviously you need specialist to be able to look at specific pieces of work, but all areas will have value to inform each other.

[40:01] - Kim Kraczon

For sure. Yeah. And even our master, our last block was preventative conservation. Each day it was just like one day focusing on one aspect of it. That's not enough. That's not enough, really. And I obviously do my own research, obviously involved in these discussions, but I always find it so important. And I'm really happy that you're looking into this.

Question 9**[40:37] - Daisy Green**

This kind of brings us onto question number nine. Do you have any further comments to make about this research changing the way we package our work, the short term needs and progress towards more sustainable industry within preventative conservation, or I guess conservation as a whole?

[40:57] - Kim Kraczon

I think I touched upon this earlier as well. I mean, just basically like narrowing it down to, okay, it's okay to use paper based products and crates in this time frame with these materials. I think that is just like streamlining simplifying. I think that's sort of the low hanging fruit right now. That's the way forward as I see it. But then also reusable crates. Right? And reusable sort of like modular packaging systems, I think are going to be more of those on the market as well. So it's like basically those two approaches. It's like one way single use, but everything's curb, side recyclable and then or durable plastics

that are kept in circulation indefinitely. And there's also a crate that came out called Earth Crate, and it's completely made out of cardboard, but heat compressed. It's out of the States, so it's not available in Europe. But it's also really interesting. But then it's a question of like, is it ok to have an object in a cardboard crate for two months.

[42:21] - Daisy Green

Exactly.

[42:22] - Kim Kraczon

I mean, depending on the material. But I guess there's, you know, there's the factors of, again, like the off gassing of the crate materials themselves inside, the protection from the external elements, thermal humidity, buffering systems, and then also just the stability of the crates. So, yes, like finding a balance between all of those or finding something that hits the point of all of those. It's a challenge. But again, I think as soon as we define these, again with the parameters of short term and also I've spoken to people at University of Amsterdam who think I'm overthinking things too.

[43:09] - Daisy Green

I feel like when you're looking after these pieces of work where they could be damaged, which could be potentially irreversible, you have to ask as many questions as possible. Not every question is necessary, but it might bring something up is actually really quite important.

[43:31] - Kim Kraczon

Yeah, absolutely. But also something that I also tend to come back to. People are packing artworks, not museums, obviously, but like commercial galleries. And I know the studio was using non archival materials for a long time. Like, our crates were just like packed full of polyurethane foams and yeah, the majority of the art packaging materials in the non museum realm, vetted by conservators. They were recommended by conservators anyhow. And there's so much damage that is incurred in transport that no one knows about because it's just like brushed under the rug and fixed or considered a total loss. Or the insurance companies don't want people to know that our bricks are damaged. We don't really have a database of case studies of this happened in transport and this sort of damage occurred because no one wants to admit that they made a mistake in their packaging as well. So I often think that it's considered that we dot our I's and cross our T's. But in the large majority of cases, people are just like crumpling a paper and throwing it into crates. In a lot of cases, the artworks do arrive safely.

[45:08] - Daisy Green

It's not a question on the form, but you mentioned something about the English Heritage doing a seminar. Is that something upcoming?

[45:17] - Kim Kraczon

Yes, it's upcoming. I can send you a link or I can put the link in the chat. It is in September.

[45:26] - Daisy Green

Okay.

[45:27] - Kim Kraczon

And this is on September 7.

[45:35] - Daisy Green

Ok great.

[45:35] - Kim Kraczon

I'm really interested. I have a tonne of questions for this guy. I hope he's ready. So it's talking about various bioplastics and he thinks he has the solution with the bioplastics. I'm pretty sure that's how it's going to be framed. Or maybe not, I don't know. So that's on the 7th and then on the 8th, it's a packaging workshop which is taking place. I think it's taking place in London. It's also not just online. This is Hybrid, I believe. I can check the location, but if you also want to participate online, I'm running the online workshop. And what we're going to do is if you give me your address, and I can't promise because I'm not in charge of this aspect, they will send you a package of various materials, like new packaging materials.

[46:37] - Daisy Green

Okay great.

[46:37] - Kim Kraczon

And then we're going to unbox them and go through them together in a zoom call. And this is happening also, like in person somewhere, I don't know where. Again, I'm not involved in the planning. I'm also presenting that day I'm going to present on sustainable packaging leading up to the workshop. And then I'm running the online workshop and we're going to unbox the materials, go through them and fill out a questionnaire that's kind of centred around their tactile qualities and just like, how we feel about so this is on the 7 September and then the workshop on the 8th?.

[47:17] - Daisy Green

Okay, I'll have a look at that. I'll have a look at the link. The workshop, that'd be great..

[47:23] - Kim Kraczon

Yeah. And again, if you give me your address, I can have a try to get a box sent to you.

[47:31] - Daisy Green

That would be really interesting.

[47:35] - Kim Kraczon

Amazing. And then the other thing I wanted to ask you is that you're familiar with the Ki Books, the Waste of Materials?

[47:44] - Daisy Green

Ki Books?

[47:46] - Kim Kraczon

Yeah. It's severely outdated. Again, I wrote it two and a half years ago when I was just entering into my sort of journey of knowledge in this topic. But I'm updating it and then also Ki Culture kind of forming a materials working group, and I want to know if you want to be a part of it.

[48:08] - Daisy Green

Yes, definitely.

[48:11] - Kim Kraczon

Yeah. Cool. And I can look you into that. There's also the woman who did the audio testing on the bio via PLA film is involved as well. And if you know of anyone else in your programme who's interested in just materials, essentially not just packaging, but also for art production or expedition production, alternative materials in that sense, we're going to revamp the Ki Book. As I said before, the lot of those materials I can actually take out or just extend and be like, okay, this maybe isn't suitable for a replacement for this, but we can find out. Yeah, we can discuss it.

[48:59] - Daisy Green

It's be an interesting development to see what things need to be taken out because they're not suitable. Their function just won't work when you try to use it. That would be important to put in as well.

[49:12] - Kim Kraczon

And also something again, I wasn't doing a thorough investigation like the sustainability ranking, to tell you the truth. And what's it called? What's products? Moldable, cellulose

pulp. It's very energy intensive, apparently high carbon footprint. And then also it's very expensive. I don't really see it entering into the architecture for packaging. Again, this is all up for discussion and we'll just kind of form a little group and then I guess in September or beginning of October, Ki Culture, we're going to have just a call for anyone interested in materials and try to get a larger working group in place and share our research and things we come across. Great to have you on board.

[50:13] - Daisy Green

Oh, I'd love to be on board. That would be really super.

[50:40] - Kim Kraczon

So tell me, how has your research been going?

[50:48] - Daisy Green

So I'm almost there on all of the research. I think it's just tricky trying to come up with something that's really useful with practically no resources. So at the moment I've just compiled information from other people's interviews and other ideas and theories and almost come up with a bit of a hypothesis and say, I don't have the resources for this research, but this is what you need to do. These are the checklists you need to tick off some ideas compiled into one paper rather than having to go and search through online data.

[51:30] - Kim Kraczon

Yeah. I know it's a bit late in the game to change it up. But even just something like the limitations of audio testing and packaging research.

[51:43] - Daisy Green

I found a lot of really good information in your resource on the GCC. I was thinking, oh, well, maybe Green Cell Foam would be only because it was the only one I had actually come into contact with. But I knew others or maybe a part of the packaging material would be really suitable. But actually after seeing those results, then going, oh, actually, no it won't. Like I was saying earlier, I wonder what those Oddy Test failures look like? And kind of what you said about what's the tipping point. And if something's going to be stored for, let's say, a month, would that be okay for the users? Because you need to think about timeline. There are lots of different factors involved.

[52:32] - Kim Kraczon

Yeah. And are you familiar with Memorie? Do you know Memorie?

[52:36] - Daisy Green

Memorie?

[52:37] - Kim Kraczon

It's something that David Thickett sent my way and I was asking him if it could be used potentially for this purpose in looking at the internal climate. And he never got back to me because he's a busy man. Yeah, I'll send it right now and then. I work closely with the Image Permanence Institute in Rochester, New York. And they've been so immensely helpful and kind and generous with their time. But their preventative conservator said that it's not really quite there yet. It's basically just like a monitor that you use for various pollutants. You can see the real time, sort of.

[53:34] - Daisy Green

Okay. Yeah.

[53:38] - Kim Kraczon

I'm sure it's really expensive, but I was thinking about potentially using that then as means of testing, like the tipping and the tipping point. There's also passive loggers too, that you can get to this purpose. Yeah. I'm not there yet, because who's going to pay for all of this?

[54:01] - Daisy Green

Exactly.

[54:02] - Kim Kraczon

And I don't think Christie is going to get on board. I'm really trying. I don't know. Well, maybe after this first sense of research with them, maybe it's something we can show them to show the success of what they're doing at the moment, and then it's something to think of the next step.

[54:19] - Daisy Green

Yeah, exactly.

[54:20] - Kim Kraczon

Or try to get ICON. I was talking to is Alice Tate-Heart. She's a conservator. Also, everyone involved in ICON, they're doing these working groups in addition to their regular everyday jobs. It's hard to find the time to commit to actually pushing it forward and moving forward. And I'm kind of like I am a free agent. I'll do it. I'll totally do it. I'm thinking of doing this like a PhD research outside of academia, under ICON, I don't want to be at the university anymore.

[55:15] - Daisy Green

Yeah.

[55:16] - Kim Kraczon

It's just the truth of the matter. I don't think Christie's have the time to invest in the area as much, but I can do it through ICON. And we'll figure it out. We'll get the new testing parameters in place.

[55:32] - Daisy Green

Yeah, I think I was definitely needed. Yeah. Well, thank you so much for your time. This is really interesting, and it's nice to talk to you about all of your research and come up with these new ideas, so it's been really helpful.

[55:51] - Kim Kraczon

Yeah, I'm glad you find it helpful, and I hope it wasn't too meandering.

[55:56] - Daisy Green

No, not at all. It's been really interesting.

[55:59] - Kim Kraczon

And I'll have a look at the symposium and I'll email you my address to do that. Really interesting.

[56:06] - Daisy Green

Yeah, absolutely.

[56:07] - Kim Kraczon

I would love you to be there. And also, they're already aware, I told Alice in our last meeting that I'm meeting with you, and she's like, oh great!

[56:17] - Daisy Green

Thank you so much. I'll keep you updated with the research, and then when it's done, it's all been marked.

[56:28] - Kim Kraczon

Yeah. And please feel free to reach out if you need any second pair of eyes on something or have any questions or if I can help you with any other resources, please do not hesitate to reach out.

[56:39] – Daisy Green

Thank you so much, Kim. I'll stop the recording there.

Appendix 6

Appendix 6a: Informed Consent Form of Student Dissertation



Informed Consent Form of Student Dissertation

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Project Details

Project Working Title: *An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

This dissertation will be researching and enquiring into the ways to help reduce the amount of non-reusable and non-recyclable products used in short term packaging, particularly in relation to international loans and travelling exhibitions such as art fairs, in the UK.

- What are the alternatives to sealing packaging materials, which will not cause damage to the materials, and therefore allow for reuse of the materials? For example, reducing damage on bubble wrap from adhesive tapes by using cotton tape to tie packaged works.
- Are there some vegetable based packaging options, such as Green Cell Foam, which might be suitable for short-term packaging of art. If so what are these packaging options, and what are suitable artefacts that can be packaged with such materials?
- What are some of the barriers for change within institutions or in independent professional practitioners that are preventing procedures and chosen materials from changing?

Statement of Confirmation

As a voluntary participant you will be asked questions about the topic described above. The purpose of these interviews or conversations is to gauge an understanding of professional practices, new ideas, contemporary methods and statements about current and/or sustainable packaging practices.

Should you be dissatisfied with having your personal data processed, you have the right to complain to the Information Commissioner's Office. For more information please visit www.ico.org.uk

**Please read and tick below**

I have read and understand the purpose of the study



I have been given the chance to ask questions about the study and these have been answered to my satisfaction



I am willing to be interviewed



I am willing for my comments during the interview to be audio or video recorded



I understand that I can withdraw at any time if I change my mind during the interview and this will not affect my treatment/education/care



I am aware that I have the option to remain anonymous, in which case my name and details will be kept confidential and will not appear in any printed or published documents.



I am aware that I have the right to withdraw my contributed information at any point up to 30 days before submission (21st August 2022).



I am aware that my personal data will be stored for 6 months after it is collected, and will subsequently be destroyed.



All the information I give will be true and accurate, to the best of my ability.



I confirm that I am aged 18 or over and can give informed consent to voluntarily participate in this research



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.

**Please read and tick one**

I would like to remain anonymous. In this case my name and details will be kept confidential and will not appear in any printed or published documents.



I am happy for my name and institution to be used in any printed and published documents





This information will be held and processed for the following purpose(s):

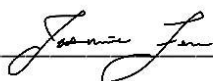
Article 9(2)(j)

processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

I agree to the University of Northumbria at Newcastle recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in the information sheet supplied to me, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act 2018 which incorporates General Data Protection Regulations (GDPR).

Name Jasmine Fenn

Signature 

Date August 11th, 2022

Appendix 6b: Consent Form Where Personal Data is Collected



CONSENT FORM WHERE PERSONAL DATA IS COLLECTED

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Please tick or initial where applicable -

I have carefully read and understood the Informed Consent Form.



I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers.



I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice.



I agree to take part in this study.



I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University.



Name Jasmine Fenn

Signature

Date August 11th, 2022

Appendix 6c: Semi-Structured Interview Questions

SEMI-STRUCTURED INTERVIEW QUESTIONS WITH JASMINE FENN

Project Working Title: *An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

- 1** Please could you state your name and give a short explanation of your professional background and current role, and talk a little about your work?
- 2** Your paper titled 'Eco-Exhibiting: A Study to Reduce the Carbon Footprint of Museums and Galleries through Environmentally Sustainable Practices and Procedures' (2010) is an in depth investigation into eco-exhibiting and the contrast between Canadian and UK museums in their environmentally sustainable practices. Were there any specific comparisons that you found to be particularly significant or insightful?
- 3** In your professional experience and view, how has the museum and gallery industry moved with the changing times, specifically within the 10 years since you wrote your paper, in relation to packaging? For example,

have we made significant changes, or are there still large gaps that need to be filled or recognized?

- 4** What do you see as some of the barriers for changing practices within institutions or your own practice? For example, financial, knowledge, research, manpower, or time resources.
- 5** In our correspondence you mentioned that you used to be a Curatorial Assistant in the Exhibitions Department at the Royal Academy of Arts in London. Could you please share some of your insights into the, as you described, 'blockbuster exhibits' with a focus on the packaging and art handling practices? For example, did the RA recycle or reuse their packaging? Or did you have any other observations you feel are significant to discuss?
- 6** Removing adhesive tape from bubble wrap tears them, rendering them unusable. Have you ever seen package works tied up with cotton tape instead of an adhesive tape?
- 7** This research is focusing on short term packaging. How would you categorise the time frame of 'short', 'medium' and 'long' term in relation to packaging artworks?
- 8** Do you have any further comments about this research, changing the ways we package artworks for short-term use, and progress towards a more sustainable artistic industry?

Appendix 6d: Interview Transcript

[00:03] - Daisy Green

This is interview number six with Jasmine Fenn. Jasmine, are you happy for me to record this interview?

[00:13] - Jasmine Fenn

Yes

Question 1**[00:14] - Daisy Green**

Super. We'll start with question one. Please could you state your name and give a short explanation of your professional background and current role, and talk a little about your work?

[00:24] - Jasmine Fenn

Sure. So I'm Jasmine. My professional background is a bit mixed, especially in the arts, but I moved into more cultural institutions and digital engagement over time. I have a Bachelor of Fine Arts degree as well as a Masters in Art History, and then I worked for a number of years in the cultural sector in different museums, notably in the Royal Academy of Arts in London, as a curatorial assistant in the exhibitions department. And then I moved back home to Ottawa and worked for a number of for the Library of Parliament and I now work for the Federal Government in managing social media. Its been kind of an interesting route, but I guess the theme is engagement and outreach.

Question 2**[01:18] - Daisy Green**

Great, thank you. So as we have previously talked about, I have read your paper titled 'Eco-Exhibiting: A Study to Reduce the Carbon Footprint of Museums and Galleries through Environmentally Sustainable Practices and Procedures', written in 2010, which is an in depth investigation into eco-exhibiting and the contrast between Canadian and UK museums in their environmentally sustainable practices. Were there any specific comparisons that you found to be particularly significant or insightful?

[01:39] - Jasmine Fenn

Yes. So when I was doing my research and researching for my paper, my main takeaway was that it's a huge benefit for having the funding and support coming from the government. So I know how in the UK there was a goal to reduce more funding to reduce carbon emissions by I forget the percentage now, but by 2050. So then they were investing a lot more in institutions to meet those goals versus in Canada, it was not really actively being done, it wasn't active funding. So what I observed is, by having that funding, then you're able to create these policies, programmes and opportunities to green institutions, because no matter what, it will cost more money. And museums are always very strapped for cash, and I can only imagine it's worse now post pandemic. So, post-ish but, yeah, that was one of my primary takeaways, is having support from government level in order to provide that extra level of funding was key to even have the opportunities to create those policies.

[02:54] - Daisy Green

Okay, interesting. Thank you. So it's really important that you've got that government backing. And did you find that with the new carbon emissions changes that the UK institutions are trying to make, was that a European policy or did you really just look at the UK?

[03:17] - Jasmine Fenn

Just at the UK, because with the scope of the paper being about like, 80 pages, I think one could do a larger study if it was like PhD level, but I had to keep it a little bit more specific. So I just focused on the UK and Canada and more predominantly larger cultural institutions, like in Ottawa and in London, to try to narrow the focus a little bit more. So, using a few key examples yeah.

[03:44] - Daisy Green

And you would specifically at the past 20 years, when you were writing the paper. So were there big changes, particularly in UK institutions, in that 20 year timeline that you're having a look at?

[04:04] - Jasmine Fenn

To an extent, one of the main ones that I was quite impressed by was with the National Gallery. So one of my interviewees, Steve Van Dyke, he was managing operations or with building operations. And so they changed out a huge upgrade to their air conditioning into their lighting systems. So by switching, I think in most of their gallery, I think all their galleries are LED lighting now. So that makes a huge difference for energy costs, but also for air conditioning, because then if you have halogen light, the spaces get hotter quicker. You need to pump the AC more to reduce the heat and everything just cost more essentially on both fronts. So I thought from my research, they were one of the bigger institutions to take on a major, like, green retrofit.

[04:35] - Daisy Green

Okay, interesting. And I guess also it's beneficial for those institutions to make those changes because then it just becomes cheaper as well. Maybe a little bit at the beginning, but the whole running cost would significantly change. I can imagine.

[04:54] - Jasmine Fenn

Exactly. And then even, like, the maintenance for the air conditioners that are then running more to reduce the temperatures in the galleries. And also the LED lights are more like the colour of the light is more like daylight, which is more accurate for the light that many of the paintings would have been painted under. So if anything, it's becoming even more authentic lighting for the original light of the paintings.

Question 3**[05:39] - Daisy Green**

Yeah, interesting. Okay, thank you. So, moving on to question three. In your professional experience and view, how does the museum and gallery industry move for the changing times, specifically in the ten years since you wrote the paper, in relation to packaging, for example, have we made significant changes or are there still large gaps that need to be filled or recognised?

[05:59] - Jasmine Fenn

Well, I can speak to it to a certain level because I haven't been as active in the museum field, unfortunately. It's a very tricky field to be successful in. It's a different conversation. My main experience, that would be with the Royal Academy and then I worked on exhibits at the Library of Parliament one or two before the Post Building. But yeah, I can't say that they've made significant improvements necessarily because museums and temporary exhibits, they run so quickly. And you very much rely on the tried and true materials that have been used time and time again, mostly because of the speed of the changeover of the exhibits and also the lender requirements. They have tried and true materials that have been used time and time again for these multi million dollar artworks. And so I think there's an interest in being more eco friendly, but also a resistance because they're not necessarily tried and true over time to be reliable for these very valuable artworks. I don't think it moves as fast as we would hope.

[07:16.] - Daisy Green

Yeah. And can you remind me what was the time period that you were working at the Royal Academy for?

[07:22] - Jasmine Fenn

Yeah, it was 2015 and 2016.

[07:25] - Daisy Green

Okay. And then you worked at the Parliament Library. Was that British Parliament?

[07:31] - Jasmine Fenn

No. Back in Canada. In Ottawa. Our Canadian parliament. And we had a small exhibit and worked on different kind of digital exhibits and stuff, too.

[07:42] - Daisy Green

Okay, thank you. And what years were you working there?

[07:45] - Jasmine Fenn

At the library, part of 2017 to just last summer, 2021.

Question 4

[07:52] - Daisy Green

Okay. Thank you. So, question number four, what do you see as some of the barriers for changing practices within institutions or within your own practice? For example, financial knowledge, research, manpower or time resources?

[08:06] - Jasmine Fenn

Probably all of those things yeah, so I would say I made a few notes, I'll circle back at the end to see if I found anything. But yeah, I think number one would be cost because every little bit of this is based on especially my experience with the RA. Every little detail of budget planning is accounted for, of course. And often these can be healthy budgets, but they're also tight budgets for the scope of what other things cost. So if it's like you can have tried and true oil paint versus a water based oil paint that's double cost and we don't know will it flake off the wall or not, the cheaper reliable material will more likely be the one to go with. Then it circles and goes into time. So you basically need time to test new materials and also to have them be vetted by other institutions. I think what is key is to get some of the larger institutions on board starting to use these materials and then they become more of the status quo. So if biodegradable peanuts in the packing boxes become the norm that somewhere like the MET are using, then that's more likely to be acceptable to other institutions rather than a one off of a mid sized one going a bit

rogue. And then if something goes wrong, then they would be more at fault. So I think it's time to time to test the material. Yeah, but also some lenders also have their own packing materials already. Like private lenders, they might be using the same crates or the same packing materials since the 70s. So it would be challenging to get these loans if you want to kind of change what the private lenders do, it's like a package deal. Like you must use this specific box with this specific packaging if you want to agree to this loan. So there might be restrictions from that perspective that it's like a set package deal that you can't really change. And yes, also just with temporary materials, it's common for museums to not have a lot of temporary storage space, for flex space. Space is always tight. So even if you wanted to reuse materials and not have so much go to waste at the end of the exhibit, there's not even storage space in these institutions to store, like, movable walls, which I always thought would be a smart idea because even walls usually get pitched, so plinths, and there's a lot of waste that happens. So yeah, the challenge being that the exhibits are often getting switched over so quickly that there's no way to store them. There's not the human resources to move said items to the storage or you need them like a tracking inventory, bar codes, and they like to actually keep track of what you're preserving and reusing. So there's multiple, I'd say, levels of challenge that could be ahead for the materials.

[11:23] - Daisy Green

Yeah, definitely. They will definitely feed into each other.

[11:28] – Jasmine Fenn

Yeah, they do. I always thought, like, it'd be interesting. I'm glad you're working on this project with materials and one idea that if I would have pursued this as a PhD, I always thought an interesting angle would be a system of carbon offsetting for shipping of artworks and for when you're shipping different artworks for various exhibits around the world because the carbon load is so high. Especially, like shipping a marble from New Zealanders, or who knows what. So if there's some sort of website calculator contribute to your museum, helped offset the carbon load of getting these artworks to the institution, I think that's kind of an interesting way around it, because the materials can be updated so far, but I think maybe a programme of carbon offsetting is also a possibility.

[12:23] - Daisy Green

Definitely. I think there are also so many sectors to improve as well. Where do we start and then where do you start? I guess you'd never really stop, but yeah, I know that would be a really interesting project to undergo.

[12:38] - Jasmine Fenn

Yeah. I mean, if I had more time, money and energy, I could do it. But the challenge, I think, especially with eco exhibiting, is almost like I think my thesis was the first one to even be on this topic, and I did, like, a big hunt around the world. Did anyone do this

before? I don't think anyone had. So I feel like it's almost like a grassroots movement and it's like people who are protesting challenging the status quo. And it's such noble work. I think it's just challenges, especially financial, that there's such cost cutting that often a more expensive, like, LEDs for the National Gallery. Like, you should invest in this because it will save you money later on, but then it's getting enough funding for that upfront purchase.

Question 5

[13:27] - Daisy Green

Yes absolutely. So moving on to question five. In our correspondence, you mentioned that you used to be a curatorial assistant in the exhibitions department at the Royal Academy of Arts in London. Could you please share some of your insights into that? As you described blockbuster exhibits with the focus on the packaging and art handling practises, for example. Did the RA recycle or reuse their packaging, or do you have any other observations that you feel is significant to discuss?

[13:57] - Jasmine Fenn

Yes, I guess I said I mentioned a few of those in the previous question, too. But yeah, the challenge is that we try to recycle some pieces when I was there getting reusing some prints or surfaces or there were some opportunities, but the challenge would be more the coordination, because there's multiple exhibits obviously being planned at once, multiple years in advance. So the challenge is because you have another team who's working with their exhibit designers and they have a whole plan going for different objects, heights, etc, and they're all customised plinths, for example, of different heights, for different looks and feels for each exhibit. So since each exhibit was completely custom, it would just be such a challenging additional step to then coordinate with the exhibit designer of another show to figure out, can we reuse this for this show? Unless if it's something like really big and obvious. But yeah, it's a complicated issue because it's customised for each one you would need almost a whole staff, two or three staff to be the eco coordinators basically to keep track of what could be reused, the inventory, working with the different teams. You'd need almost a separate team to do this. It would be above and beyond the it wouldn't be possible with the team, the small team to coordinate. And then you would need, like I said, the storage aspect. And often exhibits are getting switched over very quickly. Like one is out and then two days later the next one is coming in. So you have maybe like 12 hours, 15 hours of overlap. You couldn't really put it out to the public either because then it would look like you're giving things away. There's something about taxes, or I don't know what. There's something that you can't just give away assets like that. And so there's the challenge of who would then come to pick up these leftover plinths or walls or reusable items. Where would they go if you do just want to outright donate them and who is paying for them to come to take

them away? Because then would that be in the museum's budget to then have to pay to have the removal of them where it's a lot cheaper to have it just go to landfill or something like that because yours is smaller for art fairs and stuff. So that's like my experience with the biggest running shows that I've worked on. I worked on Ai Wei Wei in 2015 and David Met through the Hackney, and Joseph Cornell, and then Matisse. So like the big world shows. It's certainly a complicated issue. It basically needs a whole industry onto itself with its own staff members. Maybe it's like a consulting firm out of London and you have coordinators who manage the removal and storage of objects and you have a staff member who's hired internally in museums who is your coordinator for, oh hey, you need this big bookshelf or whatever, or couches for the exhibit. Then you have a coordinator who works with like an outsourced company for coordinating that role. I think something like that would work. I think it needs just basically more money, more people, more coordination because it's above and beyond what a lot of museums can basically handle on their own.

[17:42] - Daisy Green

Yeah, that's really interesting, the large scope and also, I guess being able to understand exactly what you need to do at the moment. There isn't that system out there to be able to streamline it very easily and input it into a large institution that's perhaps not used to those procedures.

[18:01] - Jasmine Fenn

Exactly. It really comes down to my thesis like policies and procedures, because you need the buy in by CEO senior management. It has to really come from the top and have that funding, because money will be the number one question. How much will this cost? So that if you get that government funding coming in and they're like, okay, so we have this special programme, and then if there's an outreach part to it, it also looks good from a marketing perspective, too. So it has to have multiple levels of benefit to the institution. Basically, a whole new industry needs to grow. And I did not have the power to create a whole industry. But when I was in London, I was a member of, I don't know if you've heard of it might be not a thing now, but the Sustainable Exhibitions for Museums group CSM. It was like a whole thing when I was in London, led by Nadine Loach. I forget where she's working now, but so it was a group of professionals from all the leading institutions across London and in the surrounding area. And we'd have quarterly meetings about what's happening in our institutions for greening them. So there'd be a representative from like V&A, from Tate, from all the leading institutions. There's a group of at least 30 that would join. So I was representing the RA and we'd see what we're thinking of, what we're brainstorming. The RA is certainly open to new things. It's just the pace of it that was the challenge in particular. But yeah, they are very supportive of looking into what they could do. But it's just time to spend researching and creating these changes. It might still be online and they even did a promo of my thesis once and sent it to all the members, because then you can also sign up, like, their newsletter and they would have updates to the museum community.

Question 6

[12:31] - Daisy Green

Interesting thank you. So, moving on to question six. Removing adhesive tape from bubble wrap tears them, rendering them unusable. Have you ever seen package works tied up with cotton tape instead of an adhesive tape?

[20:46] - Jasmine Fenn

I have not personally, no. Because it would be more the technicians who would be unwrapping items. So it's a small yeah, that's obviously from the big institution perspective. From a legal standpoint, I'm not allowed to touch the artwork. It's like not allowed. So I did not notice or see cotton tape. But there could have been.

Question 7

[21:15] – Daisy Green

Okay, thank you. Question seven. This research is focusing on short term packaging. How would you categorise the frame of short, medium and long term in relationship in relation to packaging artworks?

[21:27] - Jasmine Fenn

That's a good question. Yeah, I guess it's like how easily can it be reused for shipping? And can it survive the length of time, like having a thin archival tissue paper over a drawing? I wouldn't see that as being a long term item, like maybe that qualifies as medium or heavy wood crates, I would say would be long term. But yeah, I guess the shorter term the material, the less likely it will survive the span of time of shipping and moisture and et cetera. So, yeah, I guess the more durable it can be, obviously, the more sustainable and the easier it is through catalogue and to keep. I don't know how we would envision the cotton ties to be preserved once they actually arrived there. Is it going in like a Ziploc bag or how is it being transported? Because it all can happen very quick once things get somewhere. So I think it's a matter of how are things kept together if they are intending to be reused.

Question 8**[22:36] - Daisy Green**

Yes, thank you. And our final question, do you have any further comments about this research changing the ways we package artworks for short term use and the progress towards more sustainable artistic industry?

[22:50] - Jasmine Fenn

Yes, great question. Yeah, well, main thing is my idea of the carbon offsetting programme. If you ever champion that, power too, I would certainly support you. Let's see, I'll see in my notes here if there's anything else to mention. Yeah, I think just needing time to test these new materials, like we were saying, because I'd say there's obviously resistance in the art world, they want to embrace new materials, but does it have that archival quality? Is the paint going to start flaking mid exhibit? What's necessarily possible when you're trying to plan an exhibit that you don't want, let's say you're having a plinth made of sugar cane or something like that, and it's like, how will it be affected by increased moisture in the gallery space? Will it get sticky? Who knows what? So it's like it needs kind of time to be tested, to have these tried and true reliable materials. Yeah, it just basically needs more funding as being like a professional section of museums, because it's really needing just more people to do these jobs, because museum employees are often very run down and they're wearing many hats and the prospect of giving them another hat, I think is a huge challenge. So actually creating sustainable, like the eco curator role, a few museums have done that. I know the ROM has a climate curator and Serpentine galleries, they're doing some good things there for creating museums. So there's a lot it's becoming more mainstream of like an actual profession as the eco curator, which is encouraging to see. And it needs collaboration, not just in curatorial, but also in especially operations and then outreach as well. So that role needs to really touch on every section and department within the museum. And what else? Yeah, I think that's the main thing, and especially getting government funding would be key if they want to meet these 2050 goals. As I say my thesis, like museums, as public institutions, they have obligations to support the public and so museums should be part of getting that funding from the government if they want to reduce their carbon emissions.

[25:30] - Daisy Green

Yeah, definitely. Thank you so much for your time. I will stop recording here.

[25:38] - Jasmine Fenn

Sure. Sounds good.

Appendix 7

Appendix 7a: Informed Consent Form of Student Dissertation



Informed Consent Form of Student Dissertation

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Project Details

Project Working Title: *Project Working Title: An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

This dissertation will be researching and enquiring into the ways to help reduce the amount of non-reusable and non-recyclable products used in short term packaging, particularly in relation to international loans and travelling exhibitions such as art fairs, in the UK.

- What are the alternatives to sealing packaging materials, which will not cause damage to the materials, and therefore allow for reuse of the materials? For example, reducing damage on bubble wrap from adhesive tapes by using cotton tape to tie packaged works.
- Are there some vegetable based packaging options, such as Green Cell Foam, which might be suitable for short-term packaging of art. If so what are these packaging options, and what are suitable artefacts that can be packaged with such materials?
- What are some of the barriers for change within institutions or in independent professional practitioners that are preventing procedures and chosen materials from changing?

Statement of Confirmation

As a voluntary participant you will be asked questions about the topic described above. The purpose of these interviews or conversations is to gauge an understanding of professional practices, new ideas, contemporary methods and statements about current and/or sustainable packaging practices.

Should you are dissatisfied with having your personal data processed, you have the right to complain to the Information Commissioner's Office. For more information please visit www.ico.org.uk

**Please read and tick below**

I have read and understand the purpose of the study ☒

I have been given the chance to ask questions about the study and these have been answered to my satisfaction ☒

I am willing to be interviewed ☒

I am willing for my comments during the interview to be audio or video recorded ☒

I understand that I can withdraw at any time if I change my mind during the interview and this will not affect my treatment/education/care ☒

I am aware that I have the option to remain anonymous, in which case my name and details will be kept confidential and will not appear in any printed or published documents. ☒

I am aware that I have the right to withdraw my contributed information at any point up to 30 days before submission (21st August 2022). ☒

I am aware that my personal data will be stored for 6 months after it is collected, and will subsequently be destroyed. ☒

All the information I give will be true and accurate, to the best of my ability. ☒

I confirm that I am aged 18 or over and can give informed consent to voluntarily participate in this research ☒

I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University. ☒

Please read and tick one

I would like to remain anonymous. In this case my name and details will be kept confidential and will not appear in any printed or published documents. ☒

I am happy for my name and institution to be used in any printed and published documents ☐



This information will be held and processed for the following purpose(s):

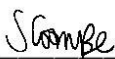
Article 9(2)(j)

processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

I agree to the University of Northumbria at Newcastle recording and processing this information about me. I understand that this information will be used only for the purpose(s) set out in the information sheet supplied to me, and my consent is conditional upon the University complying with its duties and obligations under the Data Protection Act 2018 which incorporates General Data Protection Regulations (GDPR).

Name Sofia Coombe

Signature 

Date 09.09.2022

Appendix 7b: Consent Form Where Personal Data is Collected



CONSENT FORM WHERE PERSONAL DATA IS COLLECTED

Project Working Title: *An investigation into eco-conscious short term packaging practices and procedures for art fairs in the UK, and international loans.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

Please tick or initial where applicable -

I have carefully read and understood the Informed Consent Form. ☒

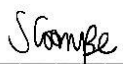
I have had an opportunity to ask questions and discuss this study and I have received satisfactory answers. ☒

I understand I am free to withdraw from the study at any time, without having to give a reason for withdrawing, and without prejudice. ☒

I agree to take part in this study. ☒

I also consent to the retention of this data under the condition that any subsequent use also be restricted to research projects that have gained ethical approval from Northumbria University. ☒

Name Sofia Coombe

Signature 

Date 09.09.2022

Appendix 7c: Semi-Structured Interview Questions

SEMI-STRUCTURED INTERVIEW QUESTIONS WITH SOFIA COOMBE

Project Working Title: *An investigation into eco-conscious preventive art conservation methods in short term packaging practices for art fairs in the UK.*

Principal Investigator Daisy Green

Student Name Daisy Green

University Northumbria University,

Course MA Preventive Conservation

Student ID 21002981

- 1** Please could you state your name and give a short explanation of your professional background, and what you are doing now?
- 2** Could you please talk through the process overseeing art handlers' unpacking art works at art fairs that you have worked at? Please go into as much detail as possible. For example, what materials do they use, how do they treat the wrapping materials, how do they unpack the pieces, and what do they do with the different packaging materials once they are removed from the works?
- 3** If not answered in Question 2: What do art handlers do with bubble wrap specifically? Do they remove the adhesive tape by hand, or cut the bubble wrap away from the work? And what will happen to the bubble wrap after? Is it reused or disposed of?

- 4 Do you have any knowledge of how the soft plastic based packaging materials are disposed of? Are they recycled, or put into general waste, or are other disposal methods used?
- 5 Are there any other packaging materials or products that you have found in your experiences at galleries and art fairs that you see as more sustainable?
- 6 Removing adhesive tape from bubble wrap tears it, which can render it unusable. What would your thoughts be if you were to receive work from a packaging or art handling company that had been tied with cotton tape to secure the package, rather than an adhesive tape, with the intention if then reusing the materials to repackage the work post exhibition of art fair?
- 7 In your professional opinion, do you see movements being made within galleries or independent art dealers to pursue more sustainable methods of packaging?
- 8 Do you have any further comments about changing the ways we package materials for short-term transportation purposes?

Appendix 7d: Interview Transcript

[00:03] - Daisy Green

This is dissertation interview 7 with [REDACTED]. [REDACTED] do I have your permission to record this interview?

[00:09] - Participant 7

Yes, you do.

Question 1**[00:10] - Daisy Green**

Super. So we'll start with question one, please. Could you state your your name and give a short explanation of your professional background and what you're doing now?

[00:19] - Participant 7

Okay, my name is [REDACTED] and I am currently one of the directors of [REDACTED], which is a boutique advisory art initiative that focuses on curatorial projects, an online database and also collaborations with artists and other third parties.

[00:39] - Daisy Green

Great, thank you. And you've had a background with other galleries. Can you talk a little bit about that as well and what you've done with them and any events that you've been to?

[00:48] - Participant 7

Yeah, so I've been working in the the realm of the art since 2005 and I started off with artist representation in London and then when I eventually moved to Asia, I worked initially for the Singapore Art Museum within the student programming division and worked quite closely with the curators on various shows, trying to bring in a younger audience and catering to them as well. Then from there I moved to STPI Print Institute where I did all their press PR and also generated a lot of the written content, not only for exhibitions but also for catalogues. And that was probably one of my first experiences working with the big art fairs, because in London only did the small art fairs. We did Art Basel, we did Art Paris and then after that I set up my own consultancy and at that point I worked with Affordable Art Fair and some of the local art fairs in the region.

Question 2 (Question 3 was also answered in this Question)**[01:58] - Daisy Green**

Super. Thank you. So moving promptly on to question two, could you please talk through the process of overseeing art handlers unpacking art fairs that you've worked at? Please go into as much detail as possible. For example, what materials do they use, how do they treat the wrapping materials, how do they unpack the pieces and what do they do with the different packaging materials once they've removed from the work?

[02:23] - Participant 7

You may have to prompt me on this. I'm not going to remember all the points.

[02:27] - Daisy Green

You can just go through Step by step

[02:32] - Participant 7

I think if we go back to the packaging, one thing which I think is quite interesting is there are all these international art fairs. Like you can go Affordable Art Fair, but you can then look at things like Art Basel or you can look at even talked about Armoury or you can talk about our Paris and FIAC and all these guys. They all have very different packaging requirements, needs or methods. There's no consistency throughout. And it's very interesting when you're going into an art fair. I thought it would be like a cookie cutter thing where everybody would be using similar packaging even just for economies of scale. But no, it's all very different and very disparate. What I would say generally what I've seen used across the majority of the fairs is bubble wrap with the really thick tape, and then depending on the size and the weight of the artwork they would either have them shipped in cardboard boxes and then put in a crate. Or we'd have specific crates that would be created for the heavier, more fragile pieces. But those would then still be wrapped in normally acid free paper if it's something more sensitive.

[03:49] - Participant 7

And then bubble wrap and then tape on top of that. I think the only fair that I worked out where things were slightly different. Maybe Affordable Art Fair. I don't know if that was because I was working with the different galleries as well. But they used Jiffy Bags. The advantage of those, is that despite the fact they're probably made of not very environmentally friendly material to start off with, at least you can reuse them. And the great thing about that is it's like an envelope and it looks incredibly professional and at the end of the fair, time wise, you save so much time because you just slip it straight back into the envelope. Again, it's all very clearly labelled, it's stacks very easily and again, you could reuse it over and over again. I think delivering it to a client was great because we said, look, if you don't want to put it up, or if you're one of those people who likes to circulate your artwork, the great thing is you can take it down, put it in the envelope and store it.

[04:51] - Participant 7

That was a bit of an exception. Although they do say they reuse a lot of their packing, like the bubble wrap, I find that so much of it gets damaged when they're unpacking because obviously when you're dealing at big art fairs, you're not doing any of the unpacking yourself. They've got their own art handlers. There's so much damage done to the materials that I don't think they can reuse a lot of them. And then I always got a bit suspicious because if they're reusing them, how come every time we ship to somewhere different, it all looks brand new? So it's like, hmm, doesn't look like it's been reused. I think the only thing that they were quite blatant about reusing was visible was the boxes themselves. So the cardboard boxes were being reused, but certainly not the packing materials inside.

[05:46] - Daisy Green

Yes, so the soft packaging materials.

[05:47] - Participant 7

The soft packaging materials, exactly. Yeah.

[05:50] - Daisy Green

So when you talk about the bubble wrap specifically getting damaged, how is that damaged? Is it damaged because of handling and the bubbles pop or is it cut to take the tape off or is it ripped to take the tape off or is there something else?

[06:04] - Participant 7

I think there's always a concern a lot of the time to cut it open because people always worried about going through to the artwork. So the majority of the time, it tends to get ripped off rather than cut. And it's inevitable if you're using a really strong tape, or even if you're using the packer's own branded tape, which most of these guys have by the way, or the fragile tape, it just rips half of the bubble wrap with it. It's inevitable. The only place I saw them using different tape would be when you have acid free paper, then they use acid free tape and that is reusable. It almost looks like something you'd use on your skin, that kind of effect. But otherwise it's predominantly ripping. And I think that's where a lot of the damage takes place.

Question 4 (Answer to question 3 is tied into question 2 above)**[06:57] - Daisy Green**

Okay, thank you. So with that kind of has answered question three as well. So we'll move on to question four. Do you have any knowledge of how soft plastic based

packaging materials are disposed of? For example, are they recycled or put into general waste, or are there other disposed methods used?

[07:15] - Participant 7

So my experience with big art fairs is that they have big recycling bins specifically for bubble wrap, and they always say you should put your bubble wrap in one and your tape in another one, but good luck trying to remove all the tape of the bubble wrap. Right? So they do encourage all the people who participate in these fairs to recycle it or put it in a bin that is allegedly recycled. To be fair, that's probably where the owners should be a little bit more in the galleries. We don't really think about it. I think for me, I just assumed if it's been in the big recycling bin, it's being recycled, but I don't know what its next life is after that. And again, I'll go back to the idea of having something more permanent like a Jiffy Bag, because there is no wastage at all. As I said, the fairs will have recycling bins and they do have specific bins for specific packing materials. I remember that because there's also this other material that almost feels spongy, a spongy kind of packaging. and it's white.

[08:35] - Daisy Green

Like a sheet that you would wrap around a work?

[08:38] – Participant 7

Yeah, they match like a marshmallow texture. It's much thicker than paper. It's like a foam, I guess, but very flat.

[08:53] - Daisy Green

Okay, interesting.

[08:57] – Participant 7

It's white. It's like a flat, flat foam. And normally it's for, again, heavier pieces or really fragile pieces where maybe just the acid free paper isn't enough. But with those, I also remember that they tend to recycle those separately from the bubble wrap and the card. So normally you have those three, you have bubble wrap cards and this other foamy material, whatever it is. But again, the problem with that one is if you use the really thick tape, that gets ruined as well.

Question 5

[09:29] - Daisy Green

Okay, so you've mentioned Jiffy Bag a couple of times which ties into question five. Are there any other packaging materials or products that you found in your experiences at galleries and art fairs that you see is more sustainable than others?

[09:47] – Participant 7

I'm trying to think, because there's different elements of play here, because obviously smaller items versus bigger items, 3D pieces versus 2D pieces, I'm sure they all have different requirements. I've worked for predominantly with artworks that can be hung as opposed to sculptural pieces. I still think the Jiffy Bag has been the best packing solution. And you know what's really interesting is that all the packers and shippers that we've worked with, there doesn't seem to be a big onus on coming up with alternatives. And I don't know if that's cost related because obviously a gallery is always pushing to keep the price down and it could be the reason that it's much cheaper to use the bubble wrap on the premise that they're recycling it. But again, as I said, I've never ever seen it be reused completely. But also equally, if you're selling an artwork for £150,000 to a client, I don't really want to show up with the remnants of patchwork of 50 other bits of bubble wrap. And that's the thing that frustrates me about it, right, is that once it's ruined, it's very hard to put together again. But no, there doesn't seem to be a concern.

[11:11] - Participant 7

And again, I think this goes back to the gallery also having to have an initiative and go 'we'd like some more sustainable packaging'. I don't know why there isn't an interest. I still think it's economy, money driven, it's a financial thing, we want to keep it as cheap as possible, safe but economical. And sometimes that doesn't normally go hand in hand with being environmentally friendly or sustainable. I also think in Asia, more than here, this is my experience, because there isn't such a conscientiousness towards recycling things and there's a real stick around associated with reusing things, actually. So if you buy an artwork, everything has to be new about it. So if you're then reusing something, there's an issue. I guess one way that you could circumvent that is if you could recycle old things and turn them into something new. That's another thought. But it just not the priority. The priority of the gallery is cost and artwork being safe and protected. I think they come at it from a different perspective. Yeah.

[12:32] - Daisy Green

Okay. So in terms of Jiffy Bags, do you have any indication of how many times those might be used or over what period of time the same bag might be used for the same piece?

[12:43] - Participant 7

As long as you're careful with it, which you will be, right, I still have Jiffy Bags now from 2005.

[2:53] - Daisy Green

Okay.

[12:55] - Participant 7

Which is a bit worrying as well. Maybe they just will probably outlive the cockroaches. But I haven't had to repair them. And also the great thing with the Jiffy Bag is on the outside of the bag, you have a little sliding window where you put the artwork information. So it's very easy to access. The labelling is always in the same place. It's almost like a roller decks, and you're going through your work. But my understanding is as long as it's being handled carefully, it should last for a very, very long time.

[13:33] - Daisy Green

That sounds great.

[13:33] - Participant 7

Yes, a very long time.

[13:34] - Daisy Green

And do you think there's a reason that we don't see those used by more galleries or art handlers?

[13:40] – Participant 7

Expense. It's expensive

[13:43] - Daisy Green

Even you then don't have to replace them, which means you cut your future costs.

[13:49] - Participant 7

Yeah, but I'm wondering whether from the gallery's perspective, especially if you're talking from the context of a fair, the whole idea is you're trying to get things out. So you don't really care about strength and longevity, because your goal is not to have to store anything. So again, if you are a museum, for example, it's very different because if you're showing something you then need to store it afterwards. But if you're just a commercial gallery and your goal is to go to a fair and move as much stock as possible, then again, that is one area that you're going to try and cut back on, because once they

go out the door, that's it. You just need to make sure they arrive safely. And after that, it's off your hands.

Question 6

[14:35] - Daisy Green

Yes, a very interesting point, thank you. So, going on to question six. Removing adhesive tape from bubble wrap tears it, which can render it unusable. What would your thoughts be if you were to receive work from a packaging or art handling company that had been tied with cotton tape to secure the package rather than an adhesive tape with the intention of them reusing the materials to repackage the work post exhibition or art fair?

[15:01] - Participant 7

Well, I think 100%. But firstly you have to convince your Helu Trans, or Constantine, or other shippers in the world to be in bed with that. But I think it would work if you have a demonstration, if you show them how it works. And also there's a time thing. Will it take more time to wrap, or use whatever materials you're suggesting? Because there's a premium attached to that as well. But 100%. Yes.

[15:36] - Daisy Green

So you wouldn't be concerned or put off as essentially an art dealer or on the sales side, if you were to arrive at your booth, the art handler unpacks everything from the crates and everything was tied with cotton tape and there wasn't any adhesive tape, would that raise any concerns in your mind. 'That this is a bit different? I'm not sure if this would be as protected'.

[15:57] - Participant 7

No. As long as you say to me it's just as protected, it's just being held in a different way, then great. And also if that meant you could reuse whatever it came wrapped in, that's amazing.

[16:09] - Daisy Green

Okay.

[16:46] - Participant 7

But if you think back before tape came about, that's how you tie things together. So you just have to make sure that whatever you're tying with is also environmentally friendly, can be reused, and will not in any way, obviously, going to damage the artwork. And the other thing you've got to think about is that a lot of the works that are not sold at the

fairs, that go back to the galleries, won't necessarily be stored in the galleries, or in the storage room. They will come out for exhibitions. They may hang in different places and whatnot. So it's about the ability for the gallery to also be able to repackage it at some point if they need to. There has to be an ease there. It has to be an easy process. It doesn't put off the gallery either.

Question 7

[16:48] - Daisy Green

Yeah, definitely. So, moving on to question seven, in your professional opinion, do you see any movements being made within galleries or independent art dealers to pursue more sustainable methods of packaging?

[17:56] - Participant 7

No. I was going to say, I'd like to think it was different in the United Kingdom, but having experience Frieze and then experiencing FIAC in Paris less than a year ago, there was the same wastage. And it's not like, oh, my gosh, they're using this new sustainable material no one has seen yet. No one was doing that. Everyone seemed to be doing the same thing. I don't know if a lot of that is driven by the fact that a lot of these fairs have deals in place with packers, these big packing companies, especially if you're dealing with a big international fair. Right. It might be different on a local scale. But I wonder if that's what drives the uniformity of how things are packaged. But I don't really see a big movement at all, actually.

[19:18] - Daisy Green

Okay, interesting. Thank you. So just before our final question, there's another question that I'd like to ask, and we kind of touched on it previously when you were talking about cost of galleries and what their priorities are. But what do you think are some of the biggest barriers to change within the industry? So it could be cost or knowledge or time resources or other physical resources, but barriers to change in terms of implementing more sustainable packaging.

[19:52] - Participant 7

I think the cost is definitely an issue, but it's also having that on the agenda that's not really something that's discussed. So for example, be great to be in a meeting, preparing to go to the gallery and preparing to go to a fair, and say 'right, what are we going to do about packaging'. That doesn't get discussed. Packaging gets done by the third party, the packers, shippers, whatever, and it's not even an item of discussion. So I think the question here is how do you make that an item of discussion? You have to somehow make it attractive to galleries, whether it's instilling a sense of global responsibility which we're all going to have to at some point come to terms with, and not be afraid to experiment as well. And I don't know if it's one of those cases where if there

are alternative methods, whoever is creating them needs to get them in front of the gallery first, start there because they're going to drive it. Because if they then go to their shippers and they go, great, yes, we want to use you, but we don't want that packaging and we want this packaging instead because they're calling shots at the end of the day. The shippers might turn back to them and say, 'yeah, but that's going to cost us X amount more', but we'll save over the next ten years.

[21:09] - Participant 7

So again, there has to be a social responsibility and accountability. But until you get in front of the gallery, I don't think the shipping is going to necessarily make a move. Maybe I'm cynical.

[21:18] - Daisy Green

Okay, thank you.

[21:22] - Participant 7

Well, I mean, it's kind of realistic, isn't it? Rather than cynical, rather than being unnecessarily optimistic in some ways. But the question is, why aren't galleries thinking about that? If you think about the footprint, I mean, all these art fairs think about forget the packaging, think about all the travelling that everybody's doing, all that is so bad. And we do feel bad about it. I hope people feel bad about that to some extent, but maybe the angle is you can't come back, cut back on the traveling because you need to get yourself from A to B, but you can think of other ways to reduce your footprint, right?

Question 8

[22:06] - Daisy Green

So our final question, do you have any further comments about changing the ways we package materials for short-term transportation purposes?

[22:15] - Participant 7

Short term?

[22:17] - Daisy Green

Yes. So specifically, going to an art fair, and going from A to B, rather than something being stored in a store room for over two years.

[22:28] - Participant 7

Yeah. I think for me, there must be a more environmentally friendly way of recreating the Jiffy Bag module. There must be. You're not going to tell me that the only material on the planet that can protect the painting is bubble wrap. Because ultimately, with the Jiffy Bags, if you see, it's almost like two bits of bubble wrap merged together, so super chunky, and then they're smooth on both the inside and the outside. But ultimately, I think that if we can revisit that model with more sustainable materials, I think that would be really good because it sort of ticks to the boxes in terms of speed, in terms of being reused. You're not storing it, you're just getting it from one client to another or from one place to another. And it also stacks really well. I just don't understand. I think it's a cost thing. I think it's a cost thing. And in fact, I found that when we were using them back in 2005 to 2010, it tended to be the galleries that didn't have massive volume of work that used them. So imagine you have a stand, you'll go to some fairs where some galleries will have 40 works on a stand, right?

[23:48] - Participant 7

But they're literally cramming them all in. We didn't have that many, we'd maybe have ten. So it was so easy. And then it also meant the handling part of it was so much more linear. And also you created one crate to put everything in. Not 50,000 crates.

[24:14] - Daisy Green

Thank you so much. I will stop the recording there.

Appendix 8: University Research Ethics Online; Approved Proposal

My Documents

Amendments						
Create New Amendment Refresh						
SUBMISSION ID	CREATED DATE TIME	CREATED BY	STATUS	DESCRIPTION	UPDATED DATE TIME	COORDIN...
No items to display.						

Submission

Submission Ref

45495

Status

Approved

Submission Coordinator

Charis Theodorakopoulos
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Faculty

Arts, Design and Social Sciences

Department

Arts

Submitting As

PGT - Postgraduate Taught student

Externally Approved

☐ Note: ONLY tick this box if your project has already received full ethical approval from an external organisation

Module Level Approval

☐ Tick this box if staff and this submission refers to an entire module.
**** Only to be used for low or medium risk projects as categorised by the diagnostic risk question set ****

Module Code

VA7021

Help

Module Tutor

Richard Mulholland

Find

Help

Clear

Titl...

Assistant Professor

Dep...

Arts Design and Social Sciences

Em...

richard.mulholland@northumbria.ac.uk

Research Supervisor

Maria Kostoglou

Find

Help

Clear

Titl... Associate Lecturer
Dep... Arts Design and Social Sciences
Em... maria.kostoglou@northumbria.ac.uk

Named Submission Coordinator (PGT/UGT only)

charis.theodorakopoulos@northumbria.ac.uk

Find

Help

Clear

If you are an undergraduate or postgraduate taught student please select a Named Submission Coordinator. If you are not sure who this is please contact your Module tutor or Supervisor as appropriate.

Ethical Risk Level

High

▼

Click here to answer the ethical risk questions

Ethical Risk Diagnostic Questions and Responses

 Refresh

ID	QUESTION	ANSWER
1	Gathering data or information from human participants (e.g. via questionnaire / interview/survey/experiment/ social media/ VR)?	YES
2	Collecting personal data, i.e. name, email, home address, computer IP address, phone number etc?	YES
3	Analysis of secondary data NOT in the public domain (e.g. archive material that require organisational membership)?	NO
4	The collection or use of information which is 'commercially sensitive'?	NO
5	Financial inducements other than expenses and compensation for time?	NO
6	Gathering data/information at a physical location external to Northumbria University campuses, franchised locations, and not your normal place of work?	YES
7	Collection of samples such as plants, soils etc, that might disturb the environment or archaeological remains?	NO
8	Research involving animals or materials derived from animals?	NO
9	Anything else which means that the research poses greater than minimal ethical risk?	NO
10	Discussion of highly sensitive topics, including, but not exclusively: bereavement; sexual behaviour, drug use; abuse or exploitation; trauma; pornography; bullying?	NO
11	Potentially vulnerable people or groups, for example children and young people (under 18s), or those who might lack capacity to consent, for example, a learning disability, dementia, or cognitive impairment? This may require external review by the Health Research Authority.	NO

12	Intrusive interventions: the use of drugs or other substances (e.g. food, drink, placebos or drugs); procedures involving physical distress (e.g. prolonged or repetitive testing, or ionising radiation); emotional distress (e.g. stress or anxiety). This may require external review by the Health Research Authority.	NO
13	Funding from a source that may be controversial (e.g. due to the nature of the funder, or a conflict of interest)?	NO
14	Covert methods of investigation or deception?	NO
15	International partners, or research undertaken outside of the UK where there may be issues of local practice and political sensitivities? (In these instances it will be necessary to act in accordance with the legal and ethics review requirements in the countries included in the research and demonstrate awareness of these.)	NO
16	Access to records of personal or sensitive confidential information, including genetic or other biological information concerning identifiable individuals?	NO
17	Individuals or groups where permission of a gatekeeper is normally required for initial or continued access to participants (e.g. NGOs, community leaders)?	NO
18	Recruitment or collection of data from patients, staff or volunteers via the NHS, or social care settings (e.g., home, or residential care). This may require external review by the Health Research Authority.	NO
19	The collection of bodily tissue e.g. blood, saliva, urine samples from living or deceased persons. This may require external review or additional licenses.	NO
20	A health-related study or clinical trial of an investigational medicinal product or a medical device. This may require external review by the Health Research Authority.	NO
21	Direct testing on animals or materials derived from animals. This may require external review or additional licenses	NO
22	Work that involves direct observation of, or participation in, activities during which it is anticipated that illegal activity, or regulatory breach is likely to occur (e.g. hunting, drug dealing, accessing the dark web, hacking)?	NO
23	Access to or collection of data, information, materials (e.g. magazines, publications, websites, and social media) relating to extremism, radicalisation or terrorism (including extreme or terror groups). This may require external review.	NO
24	Funding/ sponsorship from, or the involvement of, the UK Ministry of Defence, Military (UK and International), and or, EU Security funding call. This may require external review.	NO
25	The collection of data/information that might be confidential or classified (e.g. protected by the Official Secrets Act)?	NO
26	Face to face in person research activity with human participants? Note this does NOT include Face to face virtual activity.	YES
27	The prison service, offenders or participants on probation. This may require external review.	NO
28	Other considerations that mean that this research should be treated as 'high risk'?	NO

Co-investigators

 Add
  Edit
  Delete
  Save
  Refresh

NAME OF CO-INVESTIGATORS

No items to display.

G1: General Aims and Research Design (Mandatory)

Title

Title of your research project

An investigation into eco-conscious preventive art conservation methods in packaging practices pertaining to short term art packaging for traveling exhibitions and international loans or short term packaging.

Outline General Aims and Research Objectives

State your research aims/questions (maximum 500 words). This should provide the theoretical context within which the work is placed, and should include an evidence-based background, justification for the research, clearly stated hypotheses (if appropriate) and creative enquiry.

While there is a vast amount of research and conservation surrounding eco-conscious practices in packaging at a preventive conservation standard, I am yet to discover a paper summarising and reflecting on current short term art packaging practices, while advising new methods of eco-conscious practices that institutions, especially those with limited resources (whether this be financial, manpower, time or knowledge), with information pertaining to short term packaging that is suitable for transporting works to events such as art fairs or national/ international loans.

The aim of this dissertation's research will be to concisely and clearly present the current practices, and their environmental impacts, and propose suggestions for alternative eco-conscious practices, investigate and present the preventive conservation requirements for alternative materials, and investigate the reasons that some institutions are held back from making realistic alterations to their packaging practices (such as lack of a multitude of resources).

The ultimate aim of this dissertation is to provide useful research to the industry, and to act as a resource for institutions with limited resources or no resources to collections care to adapt and improve some of their short term packaging practices to aid to move towards a more sustainable arts industry.

G2: Research Activities (Mandatory)

Please give a detailed description of your research activities

Please provide a description of the study design, methodology (e.g. quantitative, qualitative, practice based), the sampling strategy, methods of data collection (e.g. survey, interview, experiment, observation, participatory), and analysis. Do sensitive topics such as trauma, bereavement, drug use, child abuse, pornography, extremism or radicalisation inform the research? If so have these been fully addressed?

The subject of the research is not sensitive; it is a realistic and true observation and understanding of the particular, and reasons for, current short term packaging practices. The aim of my dissertation is to conduct a practical investigation into sustainable packaging that is upstanding to preventive conservation standards, and the issues and potential solutions to moving towards a more sustainable and eco-conscious arts industry.

My research will be mostly be exploratory in nature, however it may also be confirmatory, and also my research will be based around a mixed-method methodology.

Qualitative Research- All semi-structured interviews

A large proportion of my research activities will involve interviewing to individuals from a range of institutions, such as The Museum of Croydon (UK), the British Museum (UK), British Library (UK), Victoria & Albert Museum (UK), Ab Initio Software (USA, Singapore, and UK); interviewing independent conservators included, but not limited to, paper conservator Louise Drover, and book and library conservator Caroline Bendix ACR (both UK); interviewing individual art handlers from companies including, but not limited to, Constantine Ltd (UK), Momart (UK), and Helutrans (Singapore); interviewing packaging companies including, but not limited to, Green Cell Foam (USA).

I will also look to conduct focus groups/group interviews (semi-structured) within the same group of people listed above.

Case studies will also be a key component of the research. These will either be researched through primary or secondary research methods. Primary methods will include semi-structured interviews with new participants who have not been previously interviewed in this project, or possibly with pre-interviews participants if the interview enlightens a particularly relatable and interesting possible case study. If an individual had been previously interviewed they will complete new documentation to record consent and data protection information for the interview relating only to the case-study.

All interviews and focus groups with participants outside of the UK, and some UK based individuals, will be interviews via a secure video conference call software (such as Zoom). Where possible UK interviews and focus groups will be held in person, particularly with those based in and around London. More about security and safety procedures in Section M1: People and/or Personal Data; Researcher and Participant Safety Issues.

Quantitative Research

Probability-sampling: I will be using a sample group of art handlers who have been directly involved in handling and packaging works in art fairs and/ or international loans. It is important for the project to be informed by generalised data to gain an understanding of the general practices pertaining to the research topic and so, if possible, my quantitative research, in the form of questionnaires/ surveys (through Bristol Online System), will use a random sample group. This will be achieved by contacting art handling and art storage companies (as listed above), and leasing with the appropriate team to distribute the questionnaires privately among the appropriate team. If accessing this random group is not possible I will look to contact personal contacts within the art handling industry to voluntarily and consensually distribute the questionnaire to their own contacts.

All research involving participants through the primary research methods listed above will always be provided with a Participant Information Sheet containing detailed information, and terms and conditions of the research project. This will include the working title, how information from their contributions will be used, and a summary of what the research and dissertation aims are to ensure complete transparency.

Once participants are aware of the research and the terms of the interviews or conservations, such as the option of anonymity, all participants will be asked to sign an informed consent form. Participants will be informed that they may withdraw their contributed information at any point up to 30 days before submission (21st August 2022).

Any audio or visual recording will be agreed upon before recording and the participant will be required to provide verbal content at the beginning of the recording.

Other primary research

While interviews and reading will provide a significant volume to my research, I will also be producing primary research of my own by sampling and experimenting with both conservation approved and alternative packaging materials to experiment with new packaging methods which allow more reuse of the materials and follow more sustainable and eco-conscious methods or chosen materials. This will be personally funded. I will be using a space in the store and archive room at The Museum of Croydon, as a volunteer, from the 20th June 2022.

The Museum of Croydon will not be involved other than as an advisory role in this research and no use of the museum's resources will be used. However, the Museum of Croydon is an institution who would benefit from research into reusing packaging, due to tight financial parameters, and as such, the Museum of Croydon would therefore be an appropriate host to this research.

M1: People and/or Personal Data

☒ Tick if your work involves people and/or personal data?

Sample Groups

Provide details of the sample groups that will be involved in the study and include details of their location (whether recruited in the UK or from abroad) and any organisational affiliation. For most research studies, this will cover: the number of sample groups; the size of each sample group; the criteria that will be used to select the sample group(s) (e.g. gender, age, sexuality, health conditions). If the sample will include NHS staff or patients please state this clearly. If this is a pilot study and the composition of the sample has not yet been confirmed, please provide as many details as possible.

Note: The sample group and composition of the sample has not yet been approved or confirmed.

As this dissertation will be looking at practical replacements and alternative proposals for a more eco-conscious practice in preventive conservation, it is integral to the research to gather as much data of current practices from industry professionals. I will be using a sample group of art handlers who have been directly involved in handling and packaging works in art fairs and/ or international loans. It is important for the project to be informed by generalised data to gain an understanding of the general practices pertaining to the research topic and so, if possible, my quantitative research, in the form of questionnaires/ surveys (through Bristol Online System), will use a random sample group. This will be achieved by contacting art handling and art storage companies (as listed above), and leasing with the appropriate team to distribute the questionnaires privately among the appropriate team. If accessing this random group is not possible I will look to contact personal contacts within the art handling industry to voluntarily and consensually distribute the questionnaire to their own contacts.

All research involving participants through the primary research methods listed above will always be provided with a Participant Information Sheet containing detailed information, and terms and conditions of the research project. This will include the working title, how information from their contributions will be used, and a summary of what the research and dissertation aims are to ensure complete transparency.

Once participants are aware of the research and the terms of the interviews or conservations, such as the option of anonymity, all participants will be asked to sign an informed consent form. Participants will be informed that they may withdraw their contributed information at any point up to 30 days before submission (21st August 2022).

Any audio or visual recording will be agreed upon before recording and the participant will be required to provide verbal content at the beginning of the recording.

All interviews and focus groups with participants outside of the UK, and some UK based individuals, will be interviews via a secure video conference call software (such as Zoom). Where possible UK interviews and focus groups will be held in person, particularly with those based in and around London. More about security and safety procedures in Section M1: People and/or Personal Data; Researcher and Participant Safety Issues.

Nature of data pertaining to Living Individuals

If you will be including personal data of living individuals, including still or moving images, please specify the nature of this data, and (if appropriate) include details of the relevant individuals who have provided permission to utilise this data, upload evidence of these permissions in the supporting documentation section.

Details of any Special Category Data - If you will be collecting data revealing racial or ethnic origin, political opinions, religious or philosophical beliefs, trade union membership, data concerning health or data concerning a natural person's sex life or sexual orientation, please specify which categories you will be using.

Participation and anonymity

I plan to conduct semi-structured interviews with multiple industry experts. Personal data of living individuals will include name, related institutions worked at, written notes and audio recording of semi-structured interviews, and possibly images.

To confirm, personal data is "any information relating to an identified or identifiable natural person ('data subject'); an identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person" (UK GDPR Article 4)

No Special Category Data being collected. No participants contacted at this stage because this ethics submission is not submitted. approved..

Data protection information in G3: Research Data Management Plan

Legal Basis for Processing: [Further guidance can be found here](#)

If you require further information, please contact the Data Protection Officer by emailing dp.officer@northumbria.ac.uk

Article 9(2)(j)

processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject.

The project will provide research that aims to improve environmental sustainability around packaging practices in the arts industry, which would benefit society as a whole, other than my own personal interests.

Recruitment

Describe the step by step process of how you will contact and recruit your research sample and name any organisations or groups that will be approached. Your recruitment strategy must be appropriate to the research study and the sensitivity of the subject area. You must have received written permission from any organisations or groups before you begin recruiting participants. Copies of draft requests for organisational consent must be included in the 'Supporting Documentary Evidence'. You must also provide copies of any recruitment emails/posters that will be used in your study.

I will be reaching out to British art handling companies such as Mtech, Constantine, Tuplin Fine Art, Momart, and Singapore based companies Helutrans, and Lotus Fine Art. These companies have been chosen due to their high profiles in the industry. Helutrans in Singapore has been chosen to give a contrasting view in art handling, as concerns relating the collections care will be high varied from the UK due to the extreme difference in environmental climate.

I will also be reaching out to organisations and individuals such as the Ab Initio Software (USA), Asian Civilizations Museum Singapore, Image Permanence Institute, Victoria & Albert Museum, British Library, Louise Drover, and Caroline Bendix ACR. This list is sure to evolve as the research develops, new links are formed.

☐ Remuneration

Details of remuneration

Will you make any payment or remuneration to participants or their carers/consultees? If yes: Please provide details/justifications. Note that your Faculty may have specific guidelines on participant payments/payment rates etc and you should consult these where appropriate.

Type a value

Type of Consent

Informed Consent

Type of Consent Details

Please include copies of information sheets and consent forms in the 'G6: File Attachments' section. If the study involves participants who lack capacity to consent, procedures in line with sections 30-33 of the Mental Capacity Act will need to be put in place. If you are using alternative formats to provide information and /or record consent (e.g. images, video or audio recording), provide brief details and outline the justification for this approach and the uses to which it will be put:

A large basis of my research will be semi-structured interviews with individuals and in a focus group setting. Therefore it will be essential to record the process through either visual or audio methods. Recording will be taken on my personal device (smartphone). The device follows all of the procedures outlined in the NU Ethics and Integrity Handbook 'Device Security' Page 45.

The audio recordings will always be uploaded to the secure Google Drive being used to collect all research materials and will be permanently deleted from my personal device. Any handwritten notes taken during interviews/ focus groups will be scanned and uploaded or typed up digitally and uploaded to the secure Google Drive and the original document will be securely disposed.

As well as signing an informed consent form, all participants being recorded will be asked to provide verbal consent to be recorded (both for audio and visual recording) at the beginning of the recording.

Researcher and Participant Safety Issues

If there are any risks the research could cause any discomfort or distress to participants (physical, psychological or emotional) describe the measures that will be put in place to alleviate or minimise them. Please give detail of the support that will be available for any participants who become distressed during their involvement with the research.

In person interviews will always be held in a public space, such as, but not limited to, a cafe, museum, library or office. I will always travel to the participant, via public transport, and will never conduct any in person interviews in my own home, or in the participants home. Interviews will be conducted at the convenience of the participant, and while I aim to keep interviews scheduled during the working day, I understand that individuals are busy and so may only be available outside of typical working hours. However I am comfortable to work to their schedule.

The research will be based around practices related to packaging and sustainability in packaging collections. The questions in the interviews will revolve around experts professional practices and ideas. It is unlikely that the interactions with participants will result in discomfort or distress.

Data Gathering Materials Used

Provide a detailed description of what the participants will be asked to do for the research study, including details about the process of data collection (e.g. completing how many interviews / assessments, when, for how long, with whom). Add any relevant documentation to the 'Supporting Documentary Evidence' section of this form.

Interview participants will be asked a series of questions, and will be usually required to only complete one interview. If further questions are needed subsequently, the participant will be asked to complete a new consent form and will be informed of the further questions. These however, may not always be asked in an in-person interview set up, but could extend to written responses.

If a participant discusses a topic in which further investigation could be useful to the project, the participant could be asked to participate in a subsequent interview in which their topic could be treated as a case study for the project. In this case, the participant will be asked to complete a new consent form and will be informed of the further questions and topic of discussion.

The semi-structured interview will include, but is not limited to, questions about what packaging they use in their practice/ institutions, how they view non-recyclable packaging and what changes they feel could be made in practice, what realistic alternative materials they would consider using, what some of the barriers for change are within institutions, and how they view the waste from art fairs.

Potential Ethical Issues

Please describe any potential ethical issues the project may have which are not covered above, and how you have sought to minimise these.

There will always be the option for participants to remain anonymous. They will always be given the option to name their institution, however remain anonymous themselves.

H1: Children (i.e. under 18s) and Vulnerable Adults

☐ Tick if your work involves children or vulnerable adults?

M2: DBS Clearances Required

 Add  Edit  Delete  Save  Refresh

Do not upload your DBS certificate to this system as this would be contravening General Data Protection Regulations.

Further information relating to DBS Clearance can be found in the Ethics and Governance Handbook using the link below

[Ethics and Governance Handbook](#)

***** All fields below relating to DBS certificates must be completed *****

NAME OF PERSON ON CERTIFICATE	TYPE OF DBS CLEARANCE	CERTIFICATE REFERENCE	ADULTS/CHILDREN	DATE OF DBS CERTIFICATE
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(Add new row)

M3: Secondary Data

☐ Tick if you will be using secondary data NOT in the public domain?

M4: Commercial Data



☐ Tick if your work involves commercially sensitive data?

M5: Environmental Data



☒ Tick if your work involves the collection of environmental data?

Site Information

The dissertation will research more environmentally sustainable materials, and so collecting environmental data is highly likely. The data I will collect will be in the public domain.

The site I will mainly use is <https://environment.data.gov.uk/>

☐ Do you need permission to include the location(s) or gain access?

Permission Details

Type a value

Type of Samples

Type a value

Justification for Samples

Type a value

Collection of Samples

Type a value

Impact of Sampling

Type a value

H2: Human Tissue



☐ Tick if your work involves use of human tissue?

H3: Animal Subjects ☐

Tick if your work involves the use of animal subjects (excluding abattoir derived material and commercially sourced fur)?

H4: Security Sensitive Information (including Prevent-related material) ☐

Do you require access to material that is prohibited/restricted (e.g. under Government security classifications or the Official Secrets Act)?

H5: Cultural Sensitivity ☐

Tick if your work involves Art or Artefacts (including culturally sensitive items?)

H6: Reason for resuming face to face research with human participants during Covid-19

Please outline the justification for commencing the research, balancing the risk with the potential benefits of the research, and with reference to the principles that underpin considerations around re-starting research?

- Research should only restart/ start when safe to do so. The safety of research participants and personnel is of paramount importance. If it is possible to undertake the research remotely, this is the preferred option.
- The research must be able to be conducted in a way that aligns with local government guidance as a minimum. The robustness of these requirements in promoting safeguarding should also be considered and exceeded if needed.
- The research will not require that the researcher or participants puts themselves at any greater risk than they would otherwise pertain as they conduct their daily lives within guidelines set out by the government at the time.

Type a value

H7: Research Viability and Capacity during Covid-19

Is this research project feasible from a scientific, financial, or practical point of view during the Covid-19 pandemic?

- For sponsored studies within NHS/ Social care there is an expectation that Sponsors, and sites will work together to conduct a preliminary assessment of all paused studies.
- Delivery of research might be dependent on collaborator, their local arrangements and policies and capacity to undertake the study within the necessary timescales. e.g., health and care services affected by COVID-19 in different ways. It is important for researchers to understand and

agree readiness of collaborators and sites where this is essential to the delivery of the research activity.

- Delivery of research must be possible considering the study's population size, proposed locati...

Type a value

G3: Research Data Management Plan (Mandatory)

Anonymising Data (mandatory)

Describe the arrangements for anonymising data and if not appropriate explain why this is and how it is covered in the informed consent obtained.

Before any research interactions begin, all participants will receive a Participant Information Sheet containing detailed information, and terms and conditions of the research project. This will include the working title, how information from their contributions will be used, and a summary of what the research and dissertation aims are to ensure complete transparency. Once participants are aware of the research and the terms of the interviews or conservations, such as the option of anonymity, all participants will be asked to sign an informed consent form. Participants will be informed that they may withdraw their contributed information at any point up to 30 days before submission (21st August 2022). Any audio or visual recording will be agreed upon before recording and the participant will be required to provide verbal content at the beginning of the recording.

Furthermore, all research will follow the Northumbria University legal agreements for research, the standards listed in the Northumbria University Research Ethics and Governance Handbook, and I will be referring to the 'UKRIO Recommended Checklist for Researchers' checklist to ensure that I am complying with a good research practice.

Further data protection practices

- Only myself (the primary investigator) will access the data.
- No personal data will be disclosed to third party individuals without the participants content.
- Using password protected system (Google Drive) linked to university email to store all research data/ personal data.
- Written consent/ hard copies of notes during interviews/ focus groups: Scanned and uploaded/ typed up digitally to the secure documentation system. Original hard copy document securely disposed.
- Data will be kept following the timeline of the university's Data Retention Schedule
- No Special Category Data will be collected or used.

Storage Details (mandatory)

Describe the arrangements for the secure transport and storage of data collected and used during the study. You should explain what kind of storage you intend to use, e.g. cloud-based, portable hard drive, USB stick, and the protocols in place to keep the data secure.

If you have identified the requirement to collect 'Special category data', please specify any additional security arrangements you will use to keep this data secure.

Data will be stored on a secure online server at Northumbria University and on a password-protected portable storage device / personal computer. All personal data will be destroyed within 6 months of completion of the research project.

Personal data will never be shared beyond the use of the research, and will always follow the requirements for the UK General Data Protection Regulation

No Special Category Data will be collected or used.

Retention and Disposal (mandatory)

- ☒ I confirm that I will comply with the University's data retention schedule and guidance.

[Research Data Management link](#)

[General Data Protection Regulations including Data Protection link](#)
[Records Retention Schedule link](#)

G4: Research Project Timescale (Mandatory)

Proposed Start Date

21/06/2022



Proposed End Date

22/09/2022



G5: Additional Information

☐ Externally Funded

External Funder



Please give details of your 'other' funder

Agresso Reference

☐ Franchise Programme Organisation

Please give details of your franchise organisation

Type a value

☐ NHS Involvement

Please give details of any NHS involvement

Type a value

☐ Clinical Trial(s)

Please give details of any Clinical Trial(s)

Type a value

☐ Medicinal Products

Please give details of any Medicinal Product(s)

G6: File Attachments



Additional files can be uploaded e.g. consent documentation, participant information sheet, etc.

Please note: It is best practice to combine all documents into one PDF (This avoids the reviewer having to op...

[Go To Attachments](#)

G7: Health and Safety (Mandatory)



☒ I confirm that I have read and understood the University's Health and Safety Policy.

☒ I confirm that I have read and understood the University's requirements for the mandatory completion of risk assessments in advance of any activity involving potential physical risk.

The University Health and Safety Policy can be accessed [here](#)

The University Risk Assessment Code of Practice can be accessed [here](#)

Please confirm either:

☐ There are PHYSICAL risks associated with the research project work and I confirm that a risk assessment has been approved and attached to this ethics submission.

OR

☒ I can confirm that there are no physical risks associated with this project and so no risk assessments are required.

Students requiring assistance with completing their risk assessment should get in touch with their supervisor or module tutor as the first point of contact. If further assistance is needed, the Faculty Technician can provide further guidance.

For more specific risk assessments (e.g. lab work), especially where the project is Medium or High risk, you are required to consult the Faculty Technical Manager; your Supervisor/Module Tutor will be able to put you in touch.

If you have any questions or concerns, please contact the University Health and Safety Team by emailing

CRHealthandSafety@northumbria.ac.uk

G8: Insurance (Mandatory)

- ☒ I have read and understood the University Insurance guidance document (link below):

[Insurance Guidance link](#)

If you think your activity may involve a High Risk rating or are unsure how to answer the statements - contact fi.insurance@northumbria.ac.uk with a copy of your research proposal for advice.

I confirm my work is covered by University Insurance. I confirm an insurance risk level of:

Medium 

If your insurance risk level is HIGH please attach details of exceptional insurance coverage:

[Click here to attach a file](#)

G9: Electronic Signature (Mandatory)

- ☒ I confirm my supervisor has reviewed the contents of this document
- ☒ I confirm I have assessed the ethical risk level of my work correctly and answered the above sections as fully and accurately as possible.

Full Name

daisy.green

Date

19 April 2022 10:27:48

PDF Version

Create PDF

No items to display.

Log of any Ethical Incidents

Log New Incident

INCIDENT...	CREATED DATE TIME	CREATOR NAME	COMPLAINANT DETAILS
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No items to display.

Title and Objectives (see G1)

 Add
  Save

Reviewer A: Approve
 Reviewer B: Approve

e.g. Are the research question and/or study aims clear?

DATE	ROLE	COMMENT
No items to display.		

Proposed Methodology and Analysis (see G2) 

 Add
  Save

Reviewer A: Approve
 Reviewer B: Approve

e.g. Is the design appropriate to the research question?
Are the methods of data analysis appropriate to the research question?

DATE	ROLE	COMMENT
No items to display.		

Sample and Recruitment (see M1) 

 Add
  Save

Reviewer A: Approve
 Reviewer B: Approve

e.g. Is the sampling approach appropriate to the design?
Is the sample sufficient and achievable?
Is the process of recruitment clearly explained?
Are participants receiving payments for taking part, and if so is the payment appropriate?
If the DBS is ticked, has the appropriate information been included?

DATE	ROLE	COMMENT
29/04/2022	Reviewer B	Sample to be confirmed but the researcher has reflected on this process.
02/05/2022	Reviewer A	The researcher has not filled in "Legal Basis for Processing"
03/05/2022	Reviewer A	Check page 38 of the Handbook - Legal Basis is expressed as Article 9(2)(j) processing is necessary for archiving purposes in the public interest, scientific or historical research purposes or statistical purposes in accordance with Article 89(1) based on Union or Member State law which shall be proportionate to the aim pursued, respect the essence of the right to data protection and provide for suitable and specific measures to safeguard the fundamental rights and the interests of the data subject. OR SOMETIMES: Article 6(1) (e) processing is necessary for the performance of a task carried out in the public interest or in the exercise of official authority vested the controller;

Consent (see M1) 

 Add
  Save

Reviewer A:	Approve	Reviewer B:	Approve
-------------	---------	-------------	---------

e.g. Is the approach to consent seeking clear?
Is consent from parents/ carers/ guardians required?
Are all necessary recruitment and informed consent documentation included (e.g. letters of permission, letters of invitation)
Is the information sheet adequate to ensure informed consent?
Are the consent form(s) appropriate?

DATE	ROLE	COMMENT
No items to display.		

Researcher and Participant Safety (see M1)

+ Add Save

Reviewer A:	Approve	Reviewer B:	Approve
-------------	---------	-------------	---------

e.g. Is there any risk of physical harm for the researcher(s) or the participants and if so what attempts have been made to alleviate or minimise them?
Have Risk Assessments been referred to where appropriate?

DATE	ROLE	COMMENT
No items to display.		

Research Activities (see G2-G8, M1-M5, H1-H5)

+ Add Save

Reviewer A:	Approve	Reviewer B:	Approve
-------------	---------	-------------	---------

e.g. Are the research tasks described clearly?
Do sensitive topics such as trauma, bereavement, drug use, child abuse, pornography or extremism/ radicalism inform the research? If so have these been fully addressed? (and we can use this to amend the information on risk levels on the form)
Is there any risk that the tasks may cause psychological harm and if so what attempts have been made to alleviate or minimise them?

DATE	ROLE	COMMENT
No items to display.		

Data Management Plan (see G3)

+ Add Save

Reviewer A:	Approve	Reviewer B:	Approve
-------------	---------	-------------	---------

e.g. Have sufficient steps been taken to ensure participant anonymity/confidentiality of data?
Are the arrangements for data storage and disposal clearly outlined?
Are these arrangements in line with University and/or the funding body requirements?

DATE	ROLE	COMMENT
No items to display.		

File Attachments (see G6)

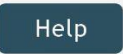
+ Add Save

Reviewer A:	Approve	Reviewer B:	Approve
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Please note: where file attachments have not been added because they are not required, please select Approve.

COMMENT BY	DATE	ROLE	COMMENT
No items to display.			

General Comments (see Help) 

 Add  Save 

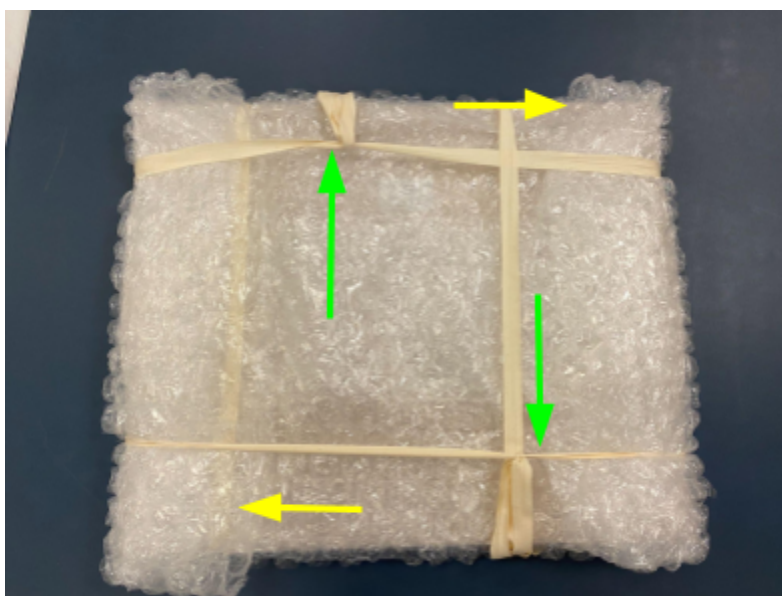
DATE	ROLE	COMMENT
28/04/2022	DEL	This is a PGT application - not PGR

Appendix 9

Full images of the Alternative Packaging Proposal



Appendix Fig 1; Starting off with wrapping the framed work in acid free tissue paper to create a protective layer between the artwork and the bubble wrap.

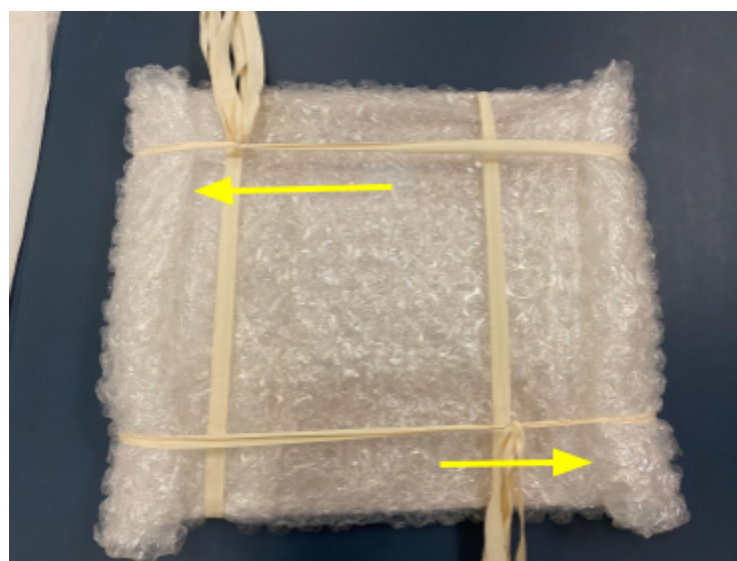


Appendix Fig 2; Artwork is wrapped in bubble wrap, with the bubbled surface facing outwards, away from the surface of the artwork, following the guidance by Affordable Arts Fair (Affordable arts Fair, n.d.). Yellow arrows: Bubble wrap is folded over at the

ends, however the cut edge is still open. Green arrows; 2 pieces of cotton tape tied around the work, to increase the points of contact, improving the air tightness and security of the design



Appendix Fig 3: Open end of folded bubble wrap can also be seen here (yellow arrow).



Appendix Fig 4: Following the advice of Kim Kraczon (Appendix 5, time stamp 24:55) A

solution to the open edge was to roll the bubble wrap (yellow arrows) and ensure that there was no open edge on either side of the package.

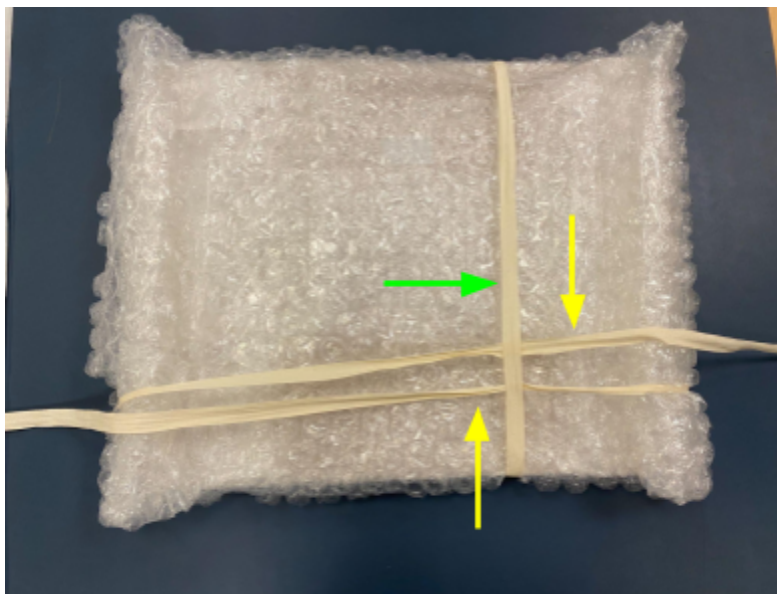


Appendix Fig 5: Yellow arrows: A closer view of the rolled edge of the bubblewrap layer.

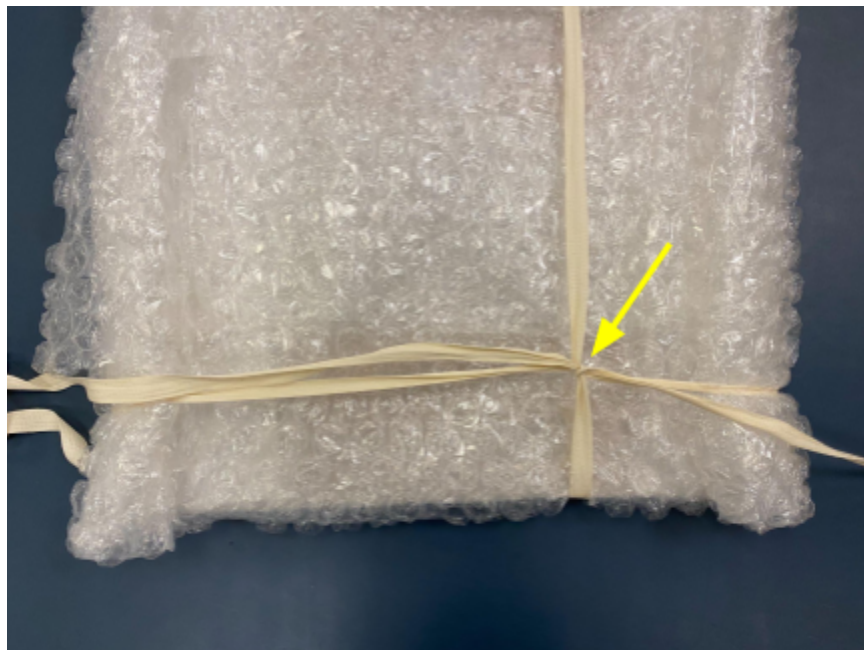


Appendix Fig 6: A consequence of rolling the ends of the bubble wrap was an increased

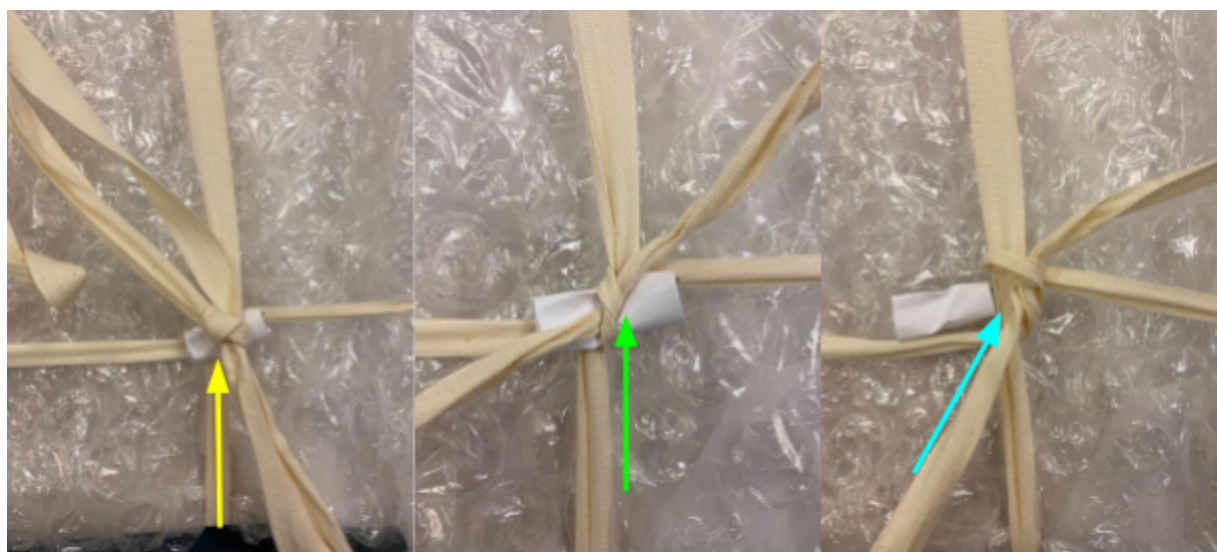
height of the ends, causing a large gap between the layers of cotton tape. This could cause the rolled bubble wrap to unwarp, and therefore loosen the cotton tape, causing risk of damage to the packaged artwork.



Appendix Fig 7: A solution to the gap between the layers of cotton tape seen in Fig 9 is to secure the cotton tape around the underneath layer. This was done by feeding the loose lengths of cotton tape (yellow arrow) underneath the vertical section of cotton tape (green arrow).



Appendix Fig 8: A knot can be tied around the vertical section of cotton tape (yellow arrow). However, this causes a tight knot that could be difficult to untie when unpacking. This could result in the handler cutting the cotton tape to unpack the work. Cutting the tape would damage the cotton tape and reduce the usefulness of the material, defeating the purpose of designing a method to reuse the packaging materials.



Appendix Fig 9: A series of 3 images showing the solution to the tight knot seen above in Fig 9. Yellow arrow: The cotton tape is tied around a rolled piece of acid free paper.

The paper is malleable, and will compress under the pressure of the knot, ensuring that the knot can be securely tied. The Green and Blue arrows show how the paper is released when the cotton tape is untied.



Appendix Fig 10: An image of the package's verso with the tied cotton tape and rolled bubble wrap edges.



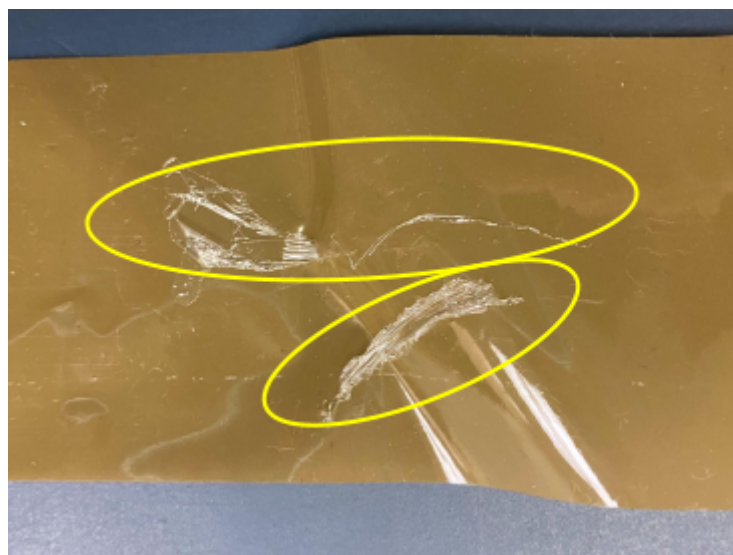
Appendix Fig 11: The packaged piece of work, using adhesive packing tape to secure the bubble wrap.



Appendix Fig 12: Removing the adhesive packing tape physically pulls on the delicate surface of the bubble wrap, causing mechanical damage. Risks a shorter reuse of the material.



Appendix Fig 13: Remnants of torn bubble wrap surface on attached to the adhesive packaging tape after removal of the tape.



Appendix Fig 14: Remnants of torn bubble wrap surface on attached to the adhesive packaging tape after removal of the tape.