An Eco-Fabulous Drawing Method

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To Max, Family, Friends, and the Natural World

“The entire cosmos is a cooperative. The sun, moon, and stars live together as a cooperative. The same is true for humans and animals, trees, and the earth. When we realise that the world is a mutual, interdependent, cooperative enterprise…then we can build a noble environment”, Buddhadãsa Bhikkhu

Declaration

This thesis has not been submitted to support an application for another degree at this or any other university. It is the result of my work and includes nothing that is the outcome of work done in collaboration except where expressly indicated. To the best of my knowledge, it does not contain any materials previously published or written by another person except where due reference is made in the text. Many of the ideas in this thesis were the product of discussion with my supervisors, Sarah Casey and Gerald Davies.

The practice-based research is 50 % practice and 50% written thesis.

Unless otherwise indicated, all photographs, images, tables, and diagrams credits are my own. Diagrams are hand-drawn or made with programmes.

Lalinthorn Phencharoen

Abstract

Factual communication alone is insufficient to raise awareness of marine microplastic pollution. An innovative drawing method called 'eco-fabulous drawing' has been developed through two groups of conceptual narrative drawing practices using eco-friendly techniques in a mixed-media installation: *RADALAB 5: Is it Gold?* and *RADALAB 6: Are They Organisms?* This cross-disciplinary practice integrates art, science, anthropology, ecocriticism, and storytelling. The research originates from empirical knowledge and experience gathered during fieldwork and studio practice at specific locations in Thailand and the United Kingdom between 2021 and 2024: Chao Phraya River, Bo Thong Lang Bay, Lune Estuary, and Rossall Beach. The method combines reliable scientific information, aesthetics, imagination, mythic elements, ecocentric perspectives, and philosophical insights to create attractive and accessible drawings that motivate and inspire audiences to think critically about the ecological crisis. The research demonstrates that drawing can serve as a multi-tool for addressing environmental problems and can be applied across disciplines, including noticing, communication, critical thinking, sympoiesis, storytelling, and ecological activity. Drawing expands its role as a bridge connecting various fields to communicate the issue of marine microplastic pollution. The findings also add evidence that land-based waste is a significant contributor to this pollution, supporting scientific research and environmental organisations concerned with this issue.

Keywords: cross-disciplinary drawing, microplastics, art and science, sympoiesis, fable

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Thank you, the natural world, for healing my health and soul and making our world pleasing to stay alive.

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1. Introduction

Prologue

The research project mainly arises from my environmental concerns. In Thailand, the visible pollution is waste from domestic products such as plastic bags, food packages, water bottles, and straws. Approximately 1.03 tons of trash are dumped into Thai seas yearly (Thai government, 2023). My first-hand experience is mirrored in news reports and campaigns about plastic and microplastic pollution. To make matters worse, we also import trash from wealthy countries like the United States and the United Kingdom to dump in my homeland (Bennett, 2022).

In the Gulf of Thailand in Samut Prakan Province, Bryde's whales can be found hunting for their food each year, close to Bangkok, the bustling capital city (see Figure 29). I am deeply concerned about the potential impact of human waste on these magnificent creatures. The Gulf is connected to the Chao Phraya River, a crucial river that runs through urban areas from the northern region to Bangkok with inadequate waste management, resulting in pollution in canals and ultimately reaching the Gulf (Bennett, 2022). Reports of marine animals ingesting and becoming entangled in plastic waste are alarming – at least 100,000 marine animals die from this pollution yearly (Darrah, 2023).

There are efforts to combat this issue in Thailand. For example, in 2019, Thammasat University and partner organisations organised a rowing project for the Chao Phraya to collect garbage from Pak Nam Pho to the Gulf of Thailand (Thammasat University, 2019). In the same year, Phra Maha Pranom Dhammalangkaro, a Buddhist monk and deputy abbot of the Wat Chak Daeng Temple in Samut Prakan, has been turning plastic bottles into saffron robes in collaboration (Karnjanatawe, 2019). However, these efforts are just small solutions.

As a concerned advocate for nature and its inhabitants, I feel responsible for raising awareness and encouraging action. I believe cross-disciplinary drawing practices can serve as more than just a communication tool for addressing the issue of marine microplastic pollution.

Research Questions

The main research question is how to link approaches and concepts of disciplines: art, science, interdisciplinary fieldwork, ecocriticism, and storytelling (fable-making) into drawing practice to raise environmental awareness of marine microplastic pollution. The research and practice explore the following research questions:

1. What qualities from different disciplines can be integrated into drawing practice to address environmental problems, particularly in marine microplastic pollution?
2. How does eco-fabulous drawing, a cross-disciplinary drawing, serve as a multi-tool for marine microplastic pollution?
3. What does an artist learn from marine microplastic pollution and cross-disciplinary practice—using interdisciplinary fieldwork, recent ecological writing, ecocriticism, and storytelling?

Overview

Marine microplastic pollution is a pressing global environmental issue that remains unresolved. The situation is particularly concerning as microplastics can become nanoplastics, which are challenging to prevent. However, if we work collaboratively and assume greater responsibility across all sectors, we can still make a positive impact and reduce biodiversity loss by our waste. As an artist who has experienced this pollution, I am committed to raising awareness about ecological issues and encouraging others to do the same. Regarding my artistic experience, I wish to create artwork to promote environmental consciousness and share knowledge with others.

This research project aims to propose a distinctive cross-disciplinary drawing method for marine microplastic pollution through a combination of academic research and creative practice by focusing on integrating approaches and concepts from various fields to create artwork and a method that can raise awareness of marine microplastic pollution, including recent scientific work on microplastic pollution, interdisciplinary fieldwork, current ecological writing, ecocriticism, and storytelling. This integration can create a distinctive drawing method and empower the environmental message to the public. The goal is to synthesise objective empirical knowledge with creative and imaginative approaches to establish a robust and effective approach capable of producing new knowledge. It is the ‘eco-fabulous drawing method’, a new scientific and imaginative drawing. The approaches involve analysis, synthesis, interpretation, and communication, relying on logic and imaginative thinking within drawing practice.

The focus is on drawing because it epitomises analysis, interpretation, and communication. It involves a personal experience of observation and scrutiny, relying on understating the visual and translating it into the graphic language. As a rudimentary art form everyone has drawn, drawing is a means of direct communication that can be widely understood. Additionally, drawing nowadays

is well adapted to interdisciplinarity. Contemporary drawing is no longer two-dimensional on paper. It is performative, spatial, and has a track record of collaboration outside the arts. For example, in health and medicine in Booby Baker's *Diary Drawings Mental Illness and Me* (2010) or with natural sciences as seen in the work of Emma Stibbon, *Broken Ground* (2017). Therefore, this project also aims to develop drawing as a research multi-tool to promote the expanded abilities of drawing practice in parallel with other artists and researchers.

To follow the research aims, I begin the study with a contextual review to understand and get an overview of updated related knowledge and situations in contemporary fields. I decided to place the research project in specific contexts in an emerging broader culture of art-science[1], cross-disciplinary drawing interaction around ecology. My contextual review revealed knowledge gaps, some of which I address in my research; others will form part of my post-doctoral work.

Throughout my thesis and creative work, I conduct academic research and create and present drawing works based on fieldwork and scientific investigation. It can be referred to as a place-based creative project. The selected locations for study are in Thailand and the UK. The sites in Thailand are the Chao Phraya River in Bangkok and Bo Thong Lang Bay in Prachuap Khiri Khan Province, Southern Thailand. In the UK, in the Fylde Coast areas, Lancashire, Lune Estuary is in Lancaster, and Rossall Beach is in Cleveleys. According to initial surveys, I found these sites have factors of the research scope: source of microplastics, accessibility, geographical and historical background, and local story.

I then gather material for research with interdisciplinary fieldwork and studio practice. I examine the locations with various investigative approaches and tools, including collecting microplastic particles, using drawing to observe plastics in situ, video recording locations, and photography to capture images of specific

[1]Note: The movement 'art and science' is referred to with different terms, such as 'Art-science,' 'art/science,'' science,' 'artsci,' 'sciart,' and 'art-sci,' but the researcher will use 'art-science' in this writing.

specimens. Alongside this, I observe the unique histories and contexts of the sites. Later, I rigorously and carefully gathered and indexed the identity of microplastics in the studio. The results of examinations are treated as primary data to be assessed and manipulated in drawing practice.

In parallel, I have participated, exchanged, and gathered research activities on environments, contexts, and information in various forms, including exhibitions, surveys, panels, ecological activities, and workshops. A deep engagement that has been continuous and extensive which are the following: discussion with Trash Hero Thailand (THT), in 2021; the panel discussions: *Plastic Sea* by FAAMAI Digital Arts Hub, on 3 July 2021, *UN Climate Change Conference (COP26)* between 31 October – 12 November 2021; visiting related exhibitions: *Plastic Sea* by Witaya Junma, virtual vernissage of exhibition *SWARM, ROBOTS AND POSTNATURE*, on 30 April 2021, at Art Laboratory Berlin, *Rachel Goodyear: Stirrings*, 26 March – 11 June 2022, *Rock UP!,* 17 September 2022, *Earth Spells: Witches of the Anthropocene*, at Royal Albert memorial Museum in Exeter, 11 February - 7 May 2023; visiting museums and historical places: the Lancaster City Museum, Lancaster Castle, Fleetwood Museum, Pendle Hill, Mother Shipton's Cave, The Ruskin Museum; workshops for contextual and proper drawing techniques in 2022-2023: *the DRN Temporal Drawing*, *Toyin Ojih Odutola: Drawing and Slow-Looking* by London Drawing Group, *The Art of Poetry: Creative Writing and Drawing* by London Drawing Group, *The Art of Myth: Creative Writing and Drawing* by London Drawing Group, *The Art of Myth: Creative Writing and Drawing* by London Drawing Group, *Ecologies of Drawing* by Loughborough University, *Eco Feminist Art and Science Fiction* by London Drawing Group. I have participated in eco-activities in the UK in 2024, such as *Rockpooling* with the Fylde Sand Dunes Project and *Nurdle Hunt* with The Bay: A Blueprint for Discovery.

In practice, the eco-fabulous drawing method becomes the primary tool for investigation, communication, critical thinking and ecological action. I use the method to create two groups of drawings: *RADALAB 5: Is It Gold?* and *RADALAB 6: Are They Organisms?* Both are a mixed-media drawing installation, which I later

called ‘eco-fabulous drawing installations’, in the total art form, comprising drawings, objects, and texts to engage audiences with critical images and information from local to global. Within drawing works are mainly created from the examination and interpretation of the subject samples of microplastics, with the gold-point technique having many reasons and advantages I will explain in later chapters. The installations result from integrating and synthesising context, primary sources, empirical knowledge and approaches from disciplines to communicate directly with individuals, audiences and the public.

The research outcomes include individual drawing works and the eco-fabulous drawing method. This method can serve as a multi-tool for investigation, sympoietic discovery, storytelling, and critical thinking for environmental problems. These results are from the analysis and synthesis of key ideas and methods from other disciplines, as well as my experience and knowledge, in parallel with the development of practice, which provides new scientific imaginative drawings that inspire audiences about marine microplastic pollution. I have also performed on-site, an act of public intervention and communication. The results are reflected in the public presentation (exhibition) and written-text thesis as a digital archive, supported by an illustrated document (paper-based, multimedia, website) and other complementary materials.

The project serves the academic community and the interested public, especially in contemporary art, drawing, and ecocriticism. Its cross-disciplinary nature offers eco-fabulous drawings and new research methods and practices for art academics. The drawing method creates an argument for cross-disciplinary drawing that is adequate to the topic and contextualised within contemporary art practices that address ecology, environment, and waste management issues. It also adds evidence for sympoietic practice and extending of ecocriticism in art. For communities, the eco-fabulous drawing may serve as an eco-art activity model to raise environmental awareness, which meets the objectives and activities of The Bay: A Blueprint for Recovery (no date) and Lancashire Wildlife Trust (no date), for instance.

Thesis Structure

This thesis comprises an academic written thesis alongside a body of practical work. It explains how the researcher has used various ideas and methods from other disciplines to inform their practice. The chapters provide a theoretical and contextual framework for practice and contain details of the related literature. They follow a general research paper format, with an introduction, literature review, materials and methods, analysis, interpretation of results, and conclusion.

Chapter 1 introduces this thesis, followed by a contextual review in Chapter 2. The review focuses on contemporary practices related to plastic and microplastic pollution, including fieldwork, ecological writing, ecocriticism, and storytelling. It aims to identify gaps in previous literature and artistic practices and contextualise the eco-fabulous drawing. The chapter also provides background information for the established research method.

Chapter 3 outlines the drawing practice used as a research methodology, which I call the ‘eco-fabulous drawing method’. It describes the seven-step drawing process, divided into two main phases: fieldwork and studio practice. It also explains how the method integrates concepts and approaches from various disciplines, making it a distinctive drawing method for others to apply.

Chapter 4 describes the two drawing groups that compose the practice. Each group depicts the concept, subject matter, art form, technique, and final drawing works to raise awareness of marine microplastic pollution. The chapter also reflects on these practices, including the artwork's meaning, expression, presentation, and comparison between the two practice groups. This chapter provides research materials for the reader.

Chapter 5 analyses the research results and drawing practices within their context, alongside previous literature, and discusses the social impact in response to the research questions. This chapter highlights the contributions and

significance of the research project. Subsequently, I summarise my responses to the research questions, as well as the limitations and implications of the project, in the final chapter.

2. Contextual Review

This chapter establishes the context for the research project, building on existing research in contemporary art, anthropology, science, ecocriticism, and fable-making. It focuses specifically on works related to marine plastic and microplastic pollution. The chapter also aims to identify knowledge gaps in previous literature and art practices, demonstrating the potential for new hybrid research methodologies combining art, science, anthropology, ecocriticism, and storytelling to raise environmental awareness by synthesising concepts from different research fields to bridge these gaps. Furthermore, the contextual review will show the importance and purposes of this research project.

Since this thesis covers several fields, the literature is vast. Therefore, this contextual review will focus on answering the core questions:

1. What is the current situation of marine microplastic pollution?
2. How and why do disciplines collaborate to respond to environmental problems in theories and practices?
3. What is the function and significance of storytelling, fable and myth in current ecological writings?
4. What former artists respond to this pollution?

The chapter will begin by reviewing previous literature in theories and follow by exploring the examples of contemporary artists who work with a combination of art, science anthropology, ecocriticism and storytelling. Then, the chapter will be divided into three main sections:

Section 1: Marine Microplastic Pollution, a Crisis

Section 2: Ecological Literature's Response

Section 3: Contemporary Artists' Response

Marine Microplastic Pollution, a Crisis

Nowadays, marine microplastic pollution is still unsolved and requires more attention. Various sectors are attempting to understand this problem, including the research project *Marine Plastic Debris and Microplastics—Global Lessons and Research to Inspire Action and Guide Policy Change* by the United Nations Environment Programme (UNEP, 2016) and the powerful documentary *A Plastic Ocean,* directed by Australian filmmaker Craig Leeson (2016).

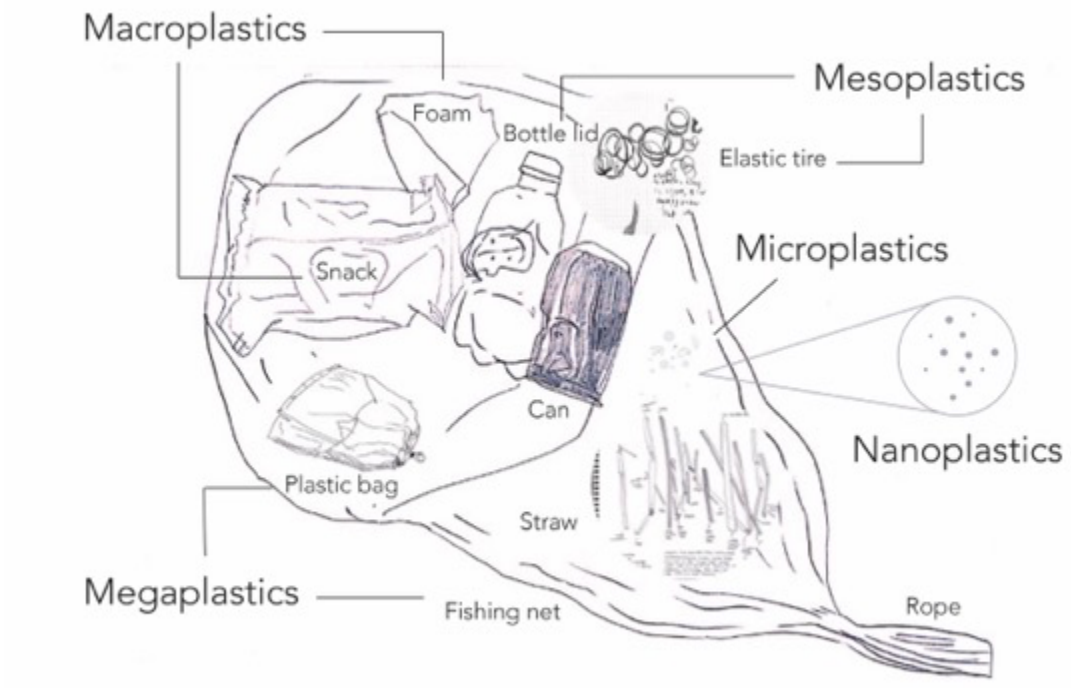


Figure 1: Type of plastic debris in ocean and river.

Table 1: Categories Used to Describe Microplastics by Valeria Hidalgo-Ruz *et al*.

Categories	
sources	consumer product fragments (e.g. fishing net) and raw industrial pellets
type	plastic fragments, pellets, filaments, plastic films, foamed plastic, granules and styrofoam
shape	*for pellets*: cylindrical, disks, flat, ovoid, spheruloids *for fragments*: rounded, subrounded, subangular, angular *general*: irregular, elongated, degraded, rough, and broken edges
erosion	fresh, unweathered, incipient alteration, and level of crazing (conchoidal fractures), weathered, grooves, irregular surface, jagged fragments, linear fractures, subparallel ridges, and very degraded
colour	transparent, crystalline, white, clear-white-cream, red, orange, blue, opaque, black, grey, brown, green, pink, tan, yellow, and pigmentation

Before addressing the environmental damage caused by plastics, it is essential to define microplastics. Microplastics are small plastic debris, typically less than 5 millimetres in size[2], found in natural habitats (Figure 1). Other classifications of plastic debris include megaplastic, which refers to plastic larger than one meter, and macroplastic, which includes larger particles no more than 25 millimetres in size. Mesoplastic consists of particles or fragments ranging from 5 to 25 millimetres, such as bottle lids. The definition of nanoplastic is still debated, with

[2]Valeria Hidalgo-Ruz *et al*. (2012, cited in Marine Environmental Research Institute (MERI), (no date), p. 3) define microplastic characteristics in detail '(1) Small size (largest dimension £ 5mm); (2) No cellular or organic structures visible; (3) Fibers should be equally thick throughout their entire length; (4) Particles should exhibit clear and homogeneous colour throughout.'

sizes ranging from less than one millimetre to as small as 0.001 millimetre (Kunz, no date).

Scientists divide microplastics into two types: primary and secondary. Primary microplastics originate from micro-sized plastic particles, such as plastic resin pellets or nurdles, that enter the ocean. Secondary microplastics are formed as larger plastic debris degrades due to exposure to waves and sunlight. Microplastics are characterised by six main types: fragments, fibres, foam, films, pellets, and microbeads. Hidalgo-Ruz *et al.* (2012, p. 3064, Table 1) identify them in detail by their source, type, shape, erosion, and colour, which can be used to identify specimens for my research project.

Microplastics in the ocean come from two primary sources: land-based and sea-based. They are transported through natural phenomena and human activities. Most microplastics are carried through waterways, especially rivers (Schmidt, Krauth and Wagner, 2017, p. 12246). Plastic debris in wastewater flows into the river, and wind can blow plastic waste onto beaches, eventually reaching the sea. Other human activities contribute to the problem, such as fishermen discarding old fishing lines and nets at sea, while merchant shipwrecks[3] can accidentally dump plastics. Over time, these plastics degrade in the ocean to become micro-sized plastic particles.

Microplastics have become ubiquitous and can now be found even in the air. Microplastics have contaminated the oceans across the globe, from the Arctic to the Antarctic, due to the interconnectedness of ocean currents.[4] Lightweight and durable microplastics can float on the surface or sink to the seabed. While the total quantity of microplastics in the sea is difficult to estimate, scientists have

[3]In the Fylde coast alone, there were shipwrecks from the year 1643-2008. The last tragedy is the Riverdance Ferry shipwreck in 2008, beaching at Anchorsholme next to Cleveleys Beach and Rossall Beach (VFC, 2022).
[4]see plastic tracker on The Ocean Clean Up's website: https://theoceancleanup.com/plastic-tracker/

found that these particles have infiltrated oceanic species at every sea level. The recent discovery of plastic debris at the Marina Trench has caused much concern among scientists (Amon and Glickson, 2016), as it indicates the severity of the crisis. Unfortunately, it will become increasingly difficult to prevent this pollution if the microplastics become nano-sized since it will be difficult to detect, especially in the deepest parts of the ocean. The term 'plastic soup' is not an exaggeration in light of the current situation. The issue of marine microplastic pollution is a global responsibility (UNEP, 2016, p. xviii) that we all share. The more we ignore it, the more extensive and far-reaching the pollution will become.

Marine microplastic pollution is threatening environments, ecologies and lives at all levels. For example, the Great Pacific Garbage Patch (GPGP), a collection of marine debris in the North Pacific Ocean, harms marine creatures and prevents light from reaching coral reefs. Sea mammals can get stuck in fishing ghost nets. Turtles can die by digesting plastic bags. Shockingly, over 1 million oceanic creatures ingest or get entangled in plastic waste yearly (Ocean Blue Project, 2021, p. 11). Microplastics have already invaded the ocean food chain. Much scientific research has shown these particles in the stomachs of zooplankton (Cole *et al*., 2013) and krill. In Thailand, a local mackerel, a pla thu (*Rastrellinger brachysoma*), a short-bodied mackerel and a staple food for citizens, had 78 pieces of microplastic (Muangkaew, 2019). Other Thai scientists have discovered microplastics in other local seafood, such as shellfish (Wisespongpand, Chataweesuk and Jaingam, 2020, p. 397). Through the consumption of food containing microplastics and using chemical products, such as paints, cosmetics, and personal care products (Ragusa *et al*., 2021), microplastics have been found in the human body, even in the blood (Leslie *et al*., 2022, p. 1). Academic research is beginning to bridge into public campaigning.

Figure 2: *#Save Mariam: donate essential equipment to save "Mariam" at Koh Libong* [Facebook] 19 June 2019. Available at: https://www.facebook.com/photo/?fbid=2548521401825044&set=a.142464909097384&locale=eu_ES (Accessed: 17 March 2024).

There are many examples of activism in Thailand and the UK. Thai people called for Mariam, a young dugong who died due to ingesting plastic pieces in 2019. This appeal for her safety went viral on social media, for example, the campaign *Save Mariam* on the VPN Magazine Facebook Page (Figure 2), and sparked conversations about pollution. Another example is a young Thai writer and documentary producer named Wannasingh Prasertkul, who is taking a stand against plastic pollution and advocating for better waste management through his widely shared documentaries on this topic, such as *Waste Journey EP.2: Yâek kà-yà pìt chee-wít bplìian* (Wannasingh, 2021).

Figure 3: Paul Goswell (2021) Microplastics on Cleveleys Beach. [Facebook] 22 January 2021. Available at: https:// www.facebook. com/photo/?fbid=1713205062192651&set=g.801593643293890 (Accessed: 19 March 2024).

Figure 4: Kevin Cockshott (2023) Dead Porpoise on Cleveleys Beach. [Facebook] 16 July 2023. Available at: https://www.facebook.com/photo/?fbid=667688715377860&set=g.801593643293890 (Accessed: 19 March 2024).

UK coastal residents cannot ignore the microplastic pollution on their beaches. Local groups such as the Cleveleys Beach Cleaners and Rossall Beach Buddies Group work to keep the beaches clean and promote environmental concerns each year. They often find plastic debris (Figure 3) and dead creatures like birds, fish, porpoises (Figure 4), and rays on the beach.

Although we have abundant, reliable information on this pollution, turning research data into public awareness and action remains a priority. Therefore, the project is conducted to help people digest scientific materials, spread the word, and encourage audiences with a distinctive artistic method by starting with studying in specific locations, but looking forward to a wider context. This attention corresponds to Emma Stibbon, a British artist and Royal Academician interested in fragile environments, who demonstrates how artistic practices can unite with scientific data collection to address crucial environmental problems. Stibbon's work is an example of how creative communication stimulates emotions, leading to the ecological awareness of audiences. Stibbon stated in an interview with Matilda Barratt:

> Drawing has magic powers; it can take you to other places. Increasingly drawing has an important role to play in the urgent debates of our time. The currency of drawing has never been so critical, it is a language that is shared and understood across different disciplines and cultures. Whilst scientific data clearly demonstrates the impact of dramatic increases in global warming on the Polar Regions, it has been shown that there is a growing gap between our understanding and our willingness to take action. Creative methods of communication can really engage our emotions and that has been shown to be far more effective in galvanising us to change our behavi[u]or. I believe it is only through dialogue between science and creativity that we will tackle the big challenges that we face today. (Stibbon, 2020)

Ecological Literature' Response

Existing scholarship has not overlooked these issues. To support my interdisciplinary research methodologies and practices, this section explores the concepts and methods of ecocriticism, contemporary ecological literature, interdisciplinary fieldwork, scientific approach and storytelling, which respond to environmental problems.

Ecological Writings and Ecocriticism

Many pieces of literature partly shape our perspective of nature. Over the years, ecological literature has grown in popularity. New sub-genres have emerged, including ecological writing, nature writing, and green literature. Accordingly, ecocriticism, an interdisciplinary study that explores the relationship between literature and environmental studies, has emerged. Ecocriticism encompasses a range of topics, such as ecofeminism, eco(post)colonialism, posthumanism, and animal studies. This discipline studies literature in collaboration with natural scientists, writers, historians, literary critics, and art historians, with a particular focus on the examination of nature and cultural interaction (Gladwin, 2017). Hence, some of their theories draw from concepts in ecological writings, including the works of Rachel Carson, Elizabeth Kolbert, Donna Haraway, Anna Tsing, and Eben Kirksey (Christie, 2020; Kayal, Scrolling, 2017) and others.[5]

Authors use their writings to increase environmental awareness by highlighting the connection between humans and nature. This approach could help us solve environmental issues by changing our perspective. The kindship or close relationship between humans and other life forms makes us reconsider the value

[5]Some notable works in this field include *Silent Spring* by Rachel Carson (1962); *Gaia: A New Look at Live on Earth* by James Lovelock (1979); *Bodily Natures: Science, Environment, and the Material Self* by Stacy Alaimo (2010); *The Sixth Extinction: An Unnatural History* by Elizabeth Kolbert (2014); and *Staying with the Trouble: Making Kin in the Chthulucene* by Donna Haraway (2016).

of non-human entities, often portrayed in impactful literature.[6] Anthropologists and folklorists also emphasise the importance of nature in human history (Gupta, no date). They discuss our origins and the significance of nature in our lives.

Anna Tsing, a Chinese-American anthropologist, provides a strong example supporting the idea of considering different species and their interactions with humans. Tsing's research on matsutake mushrooms, in *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (2015), shows that animals and plants are not merely human resources but play an essential role in human life and history. This perspective is similar to a cross-disciplinary study called the blue humanities, which focuses on water-related problems in the Anthropocene. Blue humanities refers to the origin of humans from the ocean and the fact that water is an essential component of our bodies, for instance, Stacy Alaimo's book *Exposed: Environmental Politics and Pleasures in Posthuman Times* (2016). Whether interconnectedness between humans and the oceanic sphere will be a crucial aspect of reducing marine microplastic pollution, this is the research project will explore.

Arts of Noticing from Fieldwork

Ecological writers discuss the natural world across a wide range of forms and genres, from theoretical to fictional works (see footnotes 5 and 6), for example, the nature writing of Anna Tsing, Peter Wohlleben, Sharon Blackie, and Shelby Van Pelt. Some authors write stories based on their field experience. Their works

[6] *When Species Meet* by Donna Haraway (2007); *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* by Anna Tsing (2015); *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene* (Tsing *et al.,* 2017*)*; *Storytelling for Nature Connection: Environment, Community and Story-Based Learning (Sustainability)* by Alida Gersi, Anthony Nanson, and Edward Schiefflin (2021); *Entangled Life: How Fungi Make Our Worlds, Change Our Minds and Shape Our Futures* by Merlin Sheldrake (2021); *The Enchanted Life: Reclaiming the Magic and Wisdom of the Natural World* by Sharon Blackie (2021); *Becoming Kin: An Indigenous Call to Unforgetting the Past and Reimagining Our Future* by Patty Krawec and Nick Estes (2022); *The Green Sketching Handbook: Relax, Unwind, and Reconnect with Nature* by Ali Foxon (2022); and *Slow Seasons: A Creative Guide to Reconnecting with Nature the Celtic Way* by Rosie Steer (2023).

encourage readers to observe and connect with nature. This writing movement reflects an increasing interest among audiences in reconnecting with the natural world. Why are field studies commonly used in many areas, including literature, scientific research, anthropology, ethnology, art, et cetera? This section suggests potential reasons for this.

Fieldwork has now expanded roles beyond its traditional definition, meaning a way to collect data and gain experience in an actual situation (Collins, 2021). For example, fieldwork becomes a part of the creative process and a place of intersection of disciplines. According to Anna Tsing, interdisciplinary fieldwork is adaptable to study multispecies, studying both humans and non-humans, which becomes a space for sharing knowledge and methods among disciplines (Lassila and Tsing, 2017, p. 28), and she calls this practice the 'arts of noticing.' Furthermore, observation and participation with other people through fieldwork provide a better understanding of the subject of study (Nelson, 2020, p. 59). Therefore, the fieldwork of Tsing is an extended way to achieve both connections between species and the integration of disciplines.

Fieldwork offers numerous benefits for researchers and artists. Firstly, it provides direct experience of their study subjects by gathering evidence from specific locations and contexts. This fieldwork experience enriches research projects, including those in the arts, by providing unique insights from the researchers themselves. This phenomenon is known as 'situated knowledge', a term coined by Donna Haraway (1988), an American scholar in science and technology studies, posthumanism, feminism, and ecofeminism.

Secondly, fieldwork allows researchers to reflect on the connection between humans and other species. When we take a closer look at natural specimens, it prompts a human reaction to nature. Fieldwork for Tsing can alter her perspective on the forest and make her aware of the many layered aspects of industrial logging (Lassila and Tsing, 2017, p. 24) and the nuances of human and non-human interaction. An example closer to home is the British artist Ali Foxon, who

established a new way of drawing 'green sketching' (Figure 5) in her book *The Green Sketching Handbook: Relax, Unwind, and Reconnect with Nature*. She explains green sketching serves as a method to pause and appreciate the beauty of nature. It combines the benefits of mindfulness, a connection to nature and creativity into a simple and affordable activity. The quality of drawing is not essential; what truly counts is the act of observing, which alters your emotional state. She gives the view that doing outdoor activities, such as sketching in nature, can strengthen human relationships with them:

> A sketch reveals the extraordinary beauty within the everyday nature we take for granted. Once you've sketched something, you form a connection with it. You appreciate it and want to protect it. And, the more you sketch, the more you'll see (Foxon, 2022, p. 36).

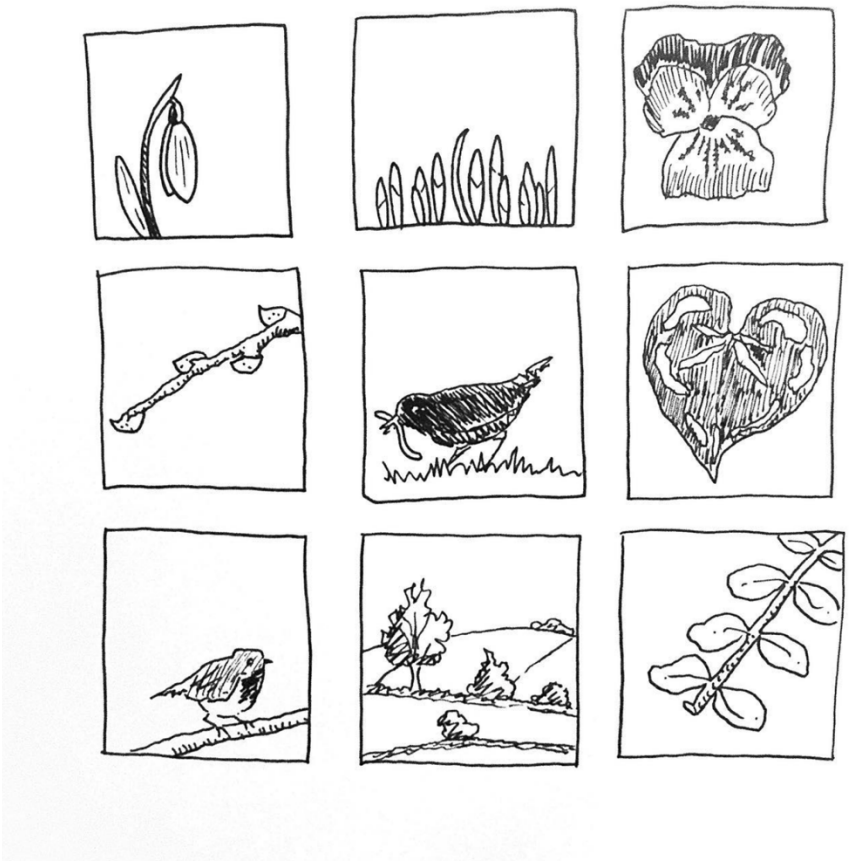


Figure 5: Example Green Sketching by Ali Foxon, 2022. Available at: https://www.instagram.com/p/CZfSfSkI3nn/ (Accessed 3 July 2025).

Thirdly, fieldwork is a noticing method. We can become aware of something that has yet to be noticed. Tsing noticed the relationship between humans and non-humans through fieldwork studies. For example, in her research on matsutake She realised that humans can coexist with other species while simultaneously contributing to their destruction:

> The mushroom shows me that humans are capable of living with other species ... We need to look carefully at that history of human's relations with other species ... But humans and non-humans lived together despite the agricultural systems, marine fisheries, and other kinds of human disturbances. We've had those disturbances without killing everything off. Matsutake is a creature that flourished during that set of disturbances. The fact that it happened to grow at Hiroshima is because not all the pine trees were killed ... If we are not careful with trees, we will lose fungi too (Lassila and Tsing, 2017, p. 29).

This statement highlights the concept of co-living among multiple species, illustrating how their interactions influence one another. These relationships can lead to ecological effects, such as animal extinction or abundant natural resources. Understanding these interdependencies is essential for appreciating the complexity and balance of ecosystems. Tsing also explained the importance of noticing in fieldwork:

> An example of this can be seen in our project fieldsite in central Jutland... Both biologists and anthropologists go to this place to practice what I think of as 'arts of noticing'. We've shared notes on our methods—and we have formed some small research projects in the place...What anthropologists always do in fieldwork is noticing—and learning from what we notice. We notice human relations with each other, we notice spirits, we notice all kinds of things. We should start noticing the plants and animals around us too. In fact, there's a lot we can learn just by paying attention. That's one of the basic ideas that I'm trying to promote.

> I can't think of any better discipline to study these things (Lassila and Tsing, 2017, p. 28).

Tsing's 'arts of noticing' involves not only a closer examination of details but also collaboration and the exchange of knowledge—what they observe across various disciplines in fieldwork practice.

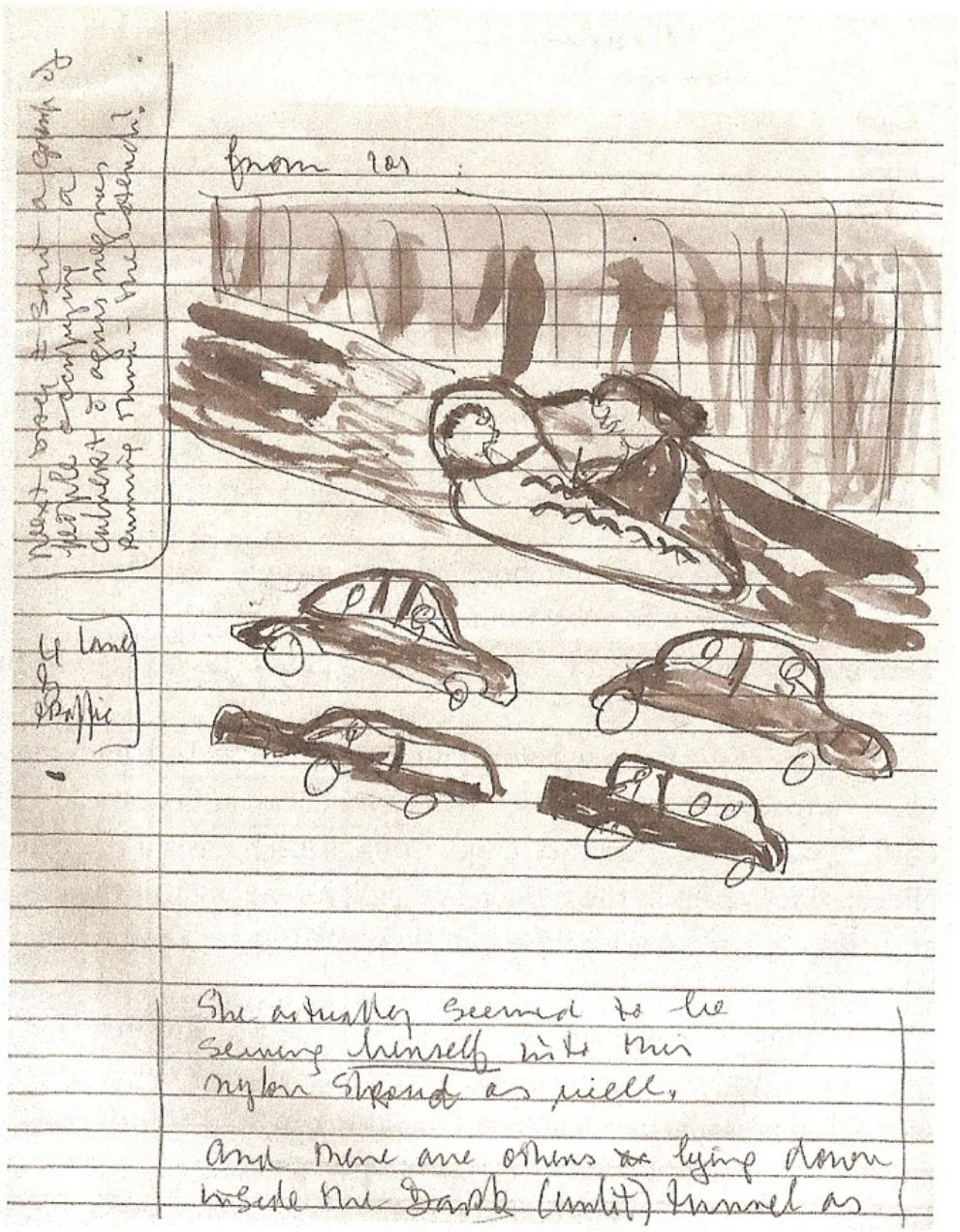


Figure 6: Example drawing of Michael Taussig
Available at: https://dongolablog.wordpress.com/2017/10/02/micheal-taussig-notebook-as-form/ (Accessed: 3 July 2025).

Michael Taussig (Taussig, 2011, p. 1), an Australian anthropologist, shares a similar experience. He describes how his practice of noticing through drawing allowed him to comprehend an unexpected encounter. He observed people lying in the tunnel beside the freeway in Medellin and illustrated what he had witnessed in his fieldwork notebook. This later sparked a series of questions that analysed what he had seen. He explains the meaning of drawing as a way of seeing that is filled with doubt, both in perception and in the human world. The drawing (Figure 6) transcends its origin, capturing a mix of calm and desperation as it creates a shelter from a nylon bag in a chaotic environment. He reflects on the serious issue of homelessness in Colombia, where about four million people are displaced because of violence, especially from paramilitary groups, impacting many in rural areas. He also mentions that by October 2009, an estimated 140,000 people had been murdered as a result of this conflict (Taussig, 2011, p. 2-3). His drawing practice is a place for being conscious, analysing what we see, and summarising this experience for the public.

Figure 7: Emma Stibbon (2014) *Sea Ice*
[Watercolour, graphite and aluminium powder on paper]. Available at: https://cris.brighton.ac.uk/ws/portalfiles/portal/23478050/Stibbon_Polar_Retreat.pdf (Accessed: 3 July 2025).

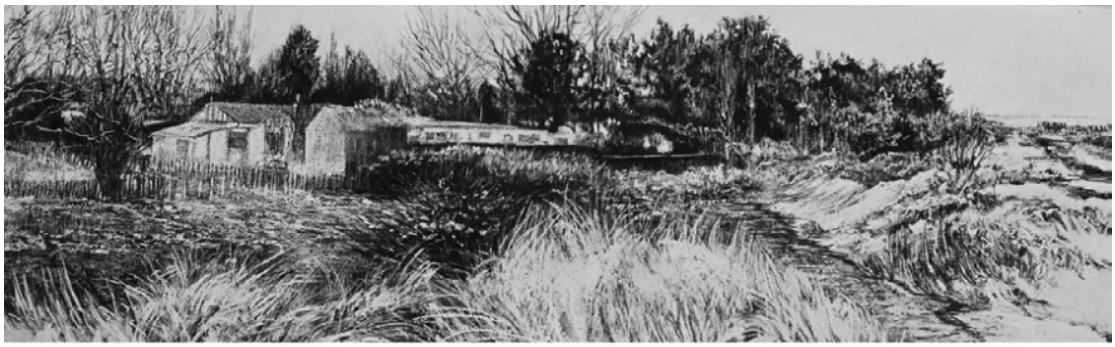
Another significant value of fieldwork is its ability to generate empirical knowledge that can benefit the public. Captain Charles Moore's discovery of the Great Pacific Garbage Patch during a field study in 1997 is an excellent example of this. His findings provided concrete evidence of the pressing issue of plastic waste in the ocean based on real-world experience. This knowledge is obtainable through reflexive reports that conclude the fieldwork process.

Fieldwork with art practice can involve recording environmental situations at specific times. Emma Stibbon demonstrates this approach by observing fragile environments through drawing and fieldwork practice. Stibbon believes that drawing is a form of fieldwork. The reason she provides is that she draws in the field in order to observe and gather information (Casey and Davies, 2020, p. 96). Challenging environments, such as hot and cold conditions, affect her drawing practice. There are restrictions on drawing and shaping the way the artist draws. As she says, she uses a different mode of drawing when working in the field and the studio. For instance, she has to draw quickly under cold conditions, such as in the Polar regions, otherwise, the ink will freeze. In her *Sea Ice* (2014) (Figure 7), she drew melting glaciers caused by global warming in the Polar regions to gather information and make observations (Stibbon, 2020). Global warming causes the vulnerable ice sheets to melt, leading to higher sea levels and a warmer environment. Stibbon draws on-site and then enlarges and develops it in her studio (Casey and Davies, 2020, p. 96). This shows that fieldwork influences artists' creativity and informs their end product. Moreover, artists can be actively involved in research subjects, rather than relying solely on secondary information sources. Using authentic and current situated information makes the artwork more powerful as evidence and impactful for audiences. Therefore, art is not just confined to imaginative subjects but can also engage us with real-world issues, particularly environmental problems.

Furthermore, fieldwork is a source of inspiration. Perdita Phillips (2017, p. 158), an Australian contemporary artist and independent scholar who creates artworks based on fieldwork and fieldwalking, claims that she draws inspiration from her direct experience with the physical landscape and cultural geography, as recorded in her fieldwork notebook. Furthermore, when doing fieldwork with drawing on-site in a notebook, it will be the record of inspiration where drawing can play a role here. She engaged with fieldwork with geologists and presents a drawing from her creative process as the final work. This experience is a result of the first phase of inquiry in fieldwork practice that has mysticism from blending inner and outer worlds—combining the raw materials of observation and drawing what we have seen with reverie—In which Michael Taussig (2011, p. xi) calls this phase as 'the imaginative logic of discover.' Fieldwork notebooks for Perdita Phillips became a resource and a space where art and science intersect.

Figure 8: Perdita Phillips (2017) *Studio Process Drawing as Part of both/and Project* [Mixed media drawing installation]. Available at: https://www.artsource.net.au/Magazine/Reflections/Perdita-Phillips (Accessed 3 July 2025).

For example, *Studio Process Drawing as Part of both/and Project* (2017) (Figure 8). This is a mixed-media drawing installation at the Artspace of Artsource Global City Residency Sydney, composed of drawings and physical objects from different activities from her residency (Phillips, 2017, para. 74). It means that objects from fieldwork, such as sketches and specimens, can be a part of the creative process and can be presented as final artwork in the form of installation art.



Up North Sea Lane
to Fitties

lace curtains
snow corners
ledges

black-headed gulls
on stake wire
fences, calling

at late winter's
bitter winds

at tide's
quick creep
incoming

unseen beneath
sandbanks: settled
settling land

Figure 9: Judith Tucker (monochrome drawing) and Harriet Tarlo (open-form poem) (2014) *Either Side* [Drawing and poetry].
Available at: https://thenatureoflandscape.wordpress.com/about/
(Accessed: 3 July 2025).

Finally, art-based field research can be a medium or agency that connects audiences to difficult-to-access areas in landscapes and seascapes. As a duo of artists, Harriet Tarlo (poet) and Judith Tucker (drawing artist) create ecological poetry and drawings through fieldwork on landscapes affected by exploitation (Figure 9), incorporating the concept of ecocriticism (Barry and Welstead, 2017, p. 7-8). They have collaborated on several place-based projects, such as those in the South Pennine region of Yorkshire, to examine landscapes and present this imaginative experience to audiences through ecological cross-disciplinary drawing and poetry (Tarlo and Tucker, 2017, p. 50). As Tarlo and Tucker (2017, p. 55) say, 'Ultimately, our aspiration is that out of difference come connections bringing new imaginings to our audiences, imaginings that mirror our own discoveries made through collaborative cross-disciplinary practice.' While walking together, they found advantages from shared fieldwork. They can learn from each other's artistic practices through close observation and share their similarities and differences in methods by immersing themselves in the environment. Moreover, their art practices enable audiences to access those

landscapes, which might otherwise be difficult to reach. Their art practices could also serve as a communication tool to report on the current environmental conditions of those areas. Similarly, Emma Stibbon shows the changes in the Arctic Sea ice resulting from climate change. I will do the same with microplastic pollution in Thailand and the UK through my art practices.

To sum up, these examples, including those of Anna Tsing, Michael Taussig, Ali Foxton, Emma Stibbon, Harriet Tarlo, and Judith Tucker, demonstrate the expanding roles of fieldwork in the artistic process involving drawing practice, ultimately benefiting the artists.

Science Meets Storytelling

Recently, there has been a growing interest in the connection between the environment and traditional stories, such as legends, folk tales, fables, and myths. The term 'eco-fable' has emerged. This writing merges ecological and fabulous components. It becomes a tool for cultivating and raising environmental awareness. In other realms of life and experience, fables have long woven pleasure and warning together in ways that make complex issues accessible.[7] This section will focus on Donna Haraway's works, which use mixed imaginative storytelling to convey philosophical thoughts. Alongside this, I will explain why they turn back to the use of conventional storytelling in their writings.

Donna Haraway has become a prominent figure in the fusion of science, ecology, and storytelling. Her concepts combine scientific, theoretical, philosophical, mythic, and imaginative elements to challenge our understanding of environmental problems, particularly in the Anthropocene. Her ideas have significantly impacted ecocriticism and art. However, I agree with Shannon Lee, a writer and editor based in New York, who gives an opinion as:

[7]For instance, *Fable for Tomorrow* in *Silent Spring* by Rachel Carson (1962); Starhawk and Lindy Kehoe (2012) *The Last Wild Witch: An Eco-Fable for Kids and Other Free Spirits*; Tom Simek (2013) *Eco-Fables: Green Stories for Children and Adults*; and Mike Brunt (2015) *Blue Marble: An Eco-Fable*, explore the merging of ecological and fabulous elements.

> While she may not exactly be a mainstream figure to those in the scientific field, Haraway's highly progressive scholarship and unorthodox approach has earned her high regard within the artistic community ... Haraway's texts would be quoted ad nauseum if there were any indication that anyone was tiring of hearing reference to her. Despite the fact that Haraway seems to be on the tip of every artist and curator's tongue... (Lee, 2018).

This opinion highlights Donna Haraway's strong influence within the art community. It provides another perspective that the research will consider to develop a distinctive artistic approach and concepts. Furthermore, from my point of view, her notable concepts are 'speculative fabulation' (SF), 'sympoiesis,' and 'Chthulucene,' which are synthesised from existing resources, and we will review these in the following sections to understand her sophisticated ideas.

Speculative fabulation or SF is a multidimensional concept that encompasses 'science fact, science fiction, speculative fabulation, string figures, speculative feminism, storytelling and fact-telling, so far' (Haraway, 2016, p. 10). SF is a 'mode of attention, a theory of history, and a practice of worlding' (Haraway, 2016, cited in Basile and Zwangsleitner, 2020). It is also a new way of storytelling to imagine a better world with co-responsibility (Basile and Zwangsleitner, 2020).

Additionally, SF refers to sympoiesis, a concept that challenges the scientific idea of 'autopoiesis'. Sympoiesis means 'making-with' and highlights that nothing can make itself and is genuinely self-organising. This concept emphasises that earthlings are never alone, and we must always work together. Sympoiesis is a term used to explain complex, dynamic, responsive, situated, and historical systems. It is a term for worlding-with, in company. Sympoiesis envelops autopoiesis and expands it generatively (Haraway, 2016, p. 58).

Haraway's concept of sympoiesis aims to show that all living things on earth are interconnected. It highlights the fact that environmental problems, including the definition of the Anthropocene, arise from human-centric thinking that values humans over animals. The sympoiesis concept also seeks to increase environmental awareness by eradicating the notion of a boundary between the human and non-human world.

Figure 10: Christine and Margaret Wertheim (2020-2021) *Coral Forest – Chthulu* (detail) [videotape anemones and kelps] a part of the *Crochet Coral Reef* project. Exhibited at Helsinki Biennial. Available at: https://crochetcoralreef.org/artscience/plastic trash/ (Accessed: 19 March 0224).

Haraway explains the concept of sympoiesis with various complicated implication in her book, *Staying with the Trouble: Making Kin in the Chthulucence* (Haraway, 2016). However, she provides the the *Crochet Coral Reef* (2007-ongoing) (Figure 10), an art-science activism project, as an example of the sympoietic practice of two Australian artists Margaret Wertheim and Christine Wertheim. The artwork is a response to the anthropogenic crisis, particularly the damage caused to coral reefs due to global warming, toxic pollution, and plastic pollution. From this artwork, we can synthesise the approach of sympoiesis with

the two main aspects. Firstly, it is an interdisciplinary practice. According to the *Crochet Coral Reef*, this project is co-created with different disciplines and creators worldwide. As Haraway (2017, p. 28) explains, 'the revolutionary momentum of the *Crochet Coral Reef* powers the sympathetic knotting of mathematics, marine biology, environmental activism, ecological consciousness -raising, women's handicrafts, fibre arts, museum display, and community art practices.'

Another component is engaging, including the meaning of technique and participating artwork. The act of crocheting symbolises a stringed relationship between different species and promotes collaboration across various fields. Since each art and science work, for Haraway, cultivates 'response-ability' for threatened places and beings (Haraway, 2017, p. 35). Haraway reasons that the interdisciplinary combination of reliable knowledge among disciplines effectively convinces and inspires audiences. When people engage in storytelling about their care for living things, there is more chance to shape the world around them (Haraway and Kenney, 2015, p. 261), including our world. The sympoietic method—collaboration and participation—enhances the value of art and science works.

The concept of SF is linked to the Chthulucene. Chthulucene is a concept and a way of thought that aims to challenge the Anthropocene. It came from the aspiration of SF (Haraway, 2017, p. 33). Haraway describes the Chthulucene as the 'ongoing, past, present, and future processes and entities of the earth' (Lee, 2018). Such a concept is rich in aspects of science fact, speculative fabulation and myth, connecting science and mythology because its story and the word 'Chthon' (Khthon and Kainos) come from Greek roots (Haraway, 2016, p. 2). Furthermore, the Chthulucence is a combination of the figure of Greek myth, lore and scientific concepts, such as multispecies, symbiogenesis and sympoiesis, which provide subjective and objective, imaginative and scientific qualities to the Chthulucence.

In the Chthulucene world, there is a living called Chthonic one. It represents a non-hierarchical relationship between humans and non-humans. Haraway's interest in old myths, folklore, scientific concepts, anthropology, and biology inspires this unidentified figure. Although we cannot see the exact figure in the physical world, we can imagine it through Haraway's descriptions of its various aspects, meanings, and functions.[8] In an interview, Haraway explains that the 'tentacular one' resembles jellyfish, squid, the Odd in Doctor Who, and Cthulhu from H.P. Lovecraft, among other similar entities. This figure represents a way of thinking that avoids the illusion of a singular literal meaning (Haraway and Kenney, 2015, p. 231). Consequently, her Chthonic may be conceived as a hybrid between animals and humans, possessing human-like intelligence based on its characteristics.

Although Chthonic is a provocative figure challenging the definition of the Anthropocene, it contradicts its intended purpose: to understand a more-than-human world. Chthonic of Haraway is similar to Cthulu of Lovecraft and others, in which this character is anthropomorphism in a negative due to being half-human and half-creature. According to a specialist in environmental humanities and deconstruction and ecocriticism, Timothy Clark (2011, p. 192) believes that anthropomorphism reflects anthropocentrism, leading to problems resulting from human actions on non-human entities. Moreover, Sebastian SchÖnbeck (2019, p. 112, 122-123), a comparative literature researcher, suggests animal studies and ecocriticism should examine the problematic use of anthropomorphism in traditional fables. Fables promote an understanding of animals and environments, and critical examination of how humans

[8]Haraway describes the Chthonic one with various aspects, meanings and ductions in *Staying with the Trouble: Making Kin in the Chthulucene* (Haraway, 2016). In brief, the Chthonic one is a tentacular-like living thing. He was born from a hybrid species and can be a ghost or monster. He is a symbiogenetic living thing who lives in the underworld and might have a relationship with a human. His characteristics might be both friendly (companion species) and scary. He appeared on earth sometimes to haunt critters of an ongoing past, present, and future. He is a monster but has the meaningfulness of earth processes and critters. He is not safe because he does not belong to anyone and has no ideologues. He is a feminist figure (Haraway and Kenney, 2015, p. 231).

anthropomorphise animals in fables is necessary to develop a contemporary fable theory that goes beyond simply relating the common notion that fables depict animals but represent humans.

On the one hand, the Chthonic character can effectively educate people about environmental issues because the Chthonic exists somewhere between good and evil and has terrifying characteristics, including magical power, mythology, haunting, ghostly, monstrous, and scary attributes (Haraway, 2016, p. 55, 101). Applying such a character in an environmental campaign, such as preventing littering in public places, could terrify people into changing their behaviour because people might be scared to be hunted by the Chthonic when they do bad deeds to the environment. Haraway also believes that the liveliness and deadliness of figures might help strengthen ecological 'response-ability' (Haraway and Kenney, 2015, p. 231). Such negative messages that powerfully evoke feelings of terror or dismay leave us feeling disempowered, overwhelmed and paralysed. This often leads to a sense of hopelessness and a lack of motivation to act (Blackmore *et al.,* 2013, p. 15). This contrast to Elena Blackmore *et al*. (2013, p. 56), who conducted the research *Common Cause for Nature: Practitioners Guide*, suggests using the communicational methods for nature world with positive experiences and the connection to encourage intrinsic values could lead to conservation efforts. This corresponds to the perspective of Stacy Alaimo, an English and environment studies scholar who advocates highlighting the interconnectedness between humans and non-humans to promote environmental awareness. Alaimo raises concerns about the Anthropocene Sea by tracing the human origin to the sea. Alaimo argues as:

> If one of the obstacles for ocean conservation movements is that terrestrial humans are disconnected from the aquatic habitats that cover much of the planet, then narratives, theories, paradigms, and practices that reveal interconnections between these spheres may encourage marine environmentalisms (Alaimo, 2016, p. 122).

The point above also reflects that environmental attitudes play a significant role in promoting environmental problems. Writers or artists with positive ecological attitudes can encourage people to listen. Ecological concepts in ethics and philosophy, such as biocentrism and ecocentrism, should be considered when creating ecological stories. Stories can shape our thinking about nature and the people in that habitat (Jung, 2021). Therefore, creators must be conscious of their attitudes.

Another factor in creating drawings in this project is the emphasis on the connection between species. This would lead to a greater sense of responsibility and awareness and avoid feelings of terrify and hopelessness. Furthermore, this research project is not influenced by Haraway's concepts; however, it offers an explanation of 'sympoietic practice,' and challenges the Chthonic figure, which I discuss in Chapter 5. The focus will be on interconnectedness, non-anthropocentrism, enjoyment, and seriousness as alternative components and approaches to Haraway's concepts, which are widespread in the art community.

Storytelling Matters in the Crisis

As we have seen, scholars like Donna Haraway and other ecological authors have started relying on traditional storytelling, particularly fables, to address environmental issues. Even today, storytelling is applied in many disciplines, such as anthropology (Anna Tsing), ecocriticism (Timothy Morton) and communication (Walter Fisher). Storytelling is popular due to the extension of its definition and role by various fields more than we used to. A further example of the rise of storytelling is that Loughborough University has launched a new programme that studies storytelling as interdisciplinary research in environmental humanities.[9]

[9] See more details at https://www.lboro.ac.uk/schools/design-creative-arts/research-innovation/our-research/storytelling/andhttps://story-tellingacademy.education

Donna Haraway, in particular, uses storytelling to explain complex ideas that encourage environmental responsibility, such as the concept of Chthulucene and *The Camille Stories: Children of Compost* (Haraway, 2016, p. 134). Haraway proposes an outstanding definition of storytelling about ecological thinking. She defines storytelling as 'SF' (Haraway, 2016, p. 10). In her documentary, *Donna Haraway: Story Telling for Earthly Survival* (Terranova, 2016), she demonstrates how storytelling can be utilised as an art, a method, a theatrical practice, and a way of thinking about the world. The morals in her tales convince us that storytelling has the potential to change the world, making it a powerful tool for social change (Kerrigan, 2018, p. 848). Therefore, stories could be an imaginative way to understand the environmental crisis. As Haraway expresses her view:

> I think the telling and reading and sharing of stories—visually too, not just textually, storytelling has many modalities—help us imagine what's possible or for that matter what is … I feel like the job of storytelling, and writing good history too, is an opening up of, giving a sense of what's actually happening in the world and what we're for (Haraway, 2020).

Story and storytelling were essential to humanity long before human history was written. Humans are story-creating and storytelling creatures because they think in images and stories (Reck, 1983, p. 8). Michael Wilson (2021), an academic in Drama, highlights that 'storytelling is at the heart of our existence as social animals'. These viewpoints align with Haraway's perspective. She considers theory a story of humans who habitually construct theories for everything (Haraway *et al*., 2015, p. 561).

Storytelling is essential for us in numerous ways. Several academic fields, especially folkloristics, anthropology, narratology, and ethology, mention values and functions that can be summarised with selected examples as follows:

Firstly, traditional stories or folklore can reflect and represent culture. According to an American folklorist, anthropologist William R. Bascom (1954, p. 338) mentions in *Four Functions of Folklore* that folklore is a mirror of culture. He also explains how folklore plays a role in culture within his article. For example, anthropologists are concerned that to understand people's folklore, we should understand their culture. Moreover, folklore in the historical era is used as a discipline found in Greek myths.

Secondly, traditional stories are believed to serve four significant functions for humans: amusement, cultural validation, education, and ensuring conformity (Bascom, 1954, p. 343-349). In their educational function, storytelling acts as a means of knowledge transmission. It aligns with Haraway's perspective; she states that a story is valuable to her because it provides new knowledge. She explains 'each time a story helps me remember what I thought I knew, or introduces me to new knowledge, a muscle critical for caring about flourishing gets some aerobic exercise' (Haraway, 2016, p. 29). Storytelling enables humans to transform experiences into knowledge. As Michael Wilson (2021) notes 'storytelling is more than a way of processing experience and converting it into knowledge (as important as that is), but it is also a way in which we construct, convey and modify our values and beliefs.'

Moreover, anthropologists accept that they debate storytelling is a theory. According to Carole McGranahan (2020, p. 73-75), an expert in contemporary Tibet, theoretical storytelling is essential to anthropology, with anthropologists serving as storytellers. They engage in theoretical debates through narratives that carry cultural significance, a key aspect of theoretical storytelling.

Thirdly, a story is essential as a way of thinking. As Wilson (2021) argues, 'they [storytelling] are ways of thinking about problems, about our values and of testing those things against the stories of others'. Corresponding to Alice Gibson (2020, p. 2, 33, 196), a philosophy and European literature researcher, points out the

significant values of philosophical fables to aid thinking and examines them concerning present environmental problems caused by changing anthropocentrism.

A fourth example is that stories are used as communication tools to explain complicated theories. For example, Leigh Van Valen, an evolutionary biologist from the United States, found inspiration in Lewis Carroll's Through the Looking Glass (also known as Alice in Wonderland) to develop The Red Queen hypothesis, which broadens the scope of evolution by suggesting that organisms are primarily adapted to their ecological surroundings. He posited that the interactions between different species, including predators and prey, also significantly contribute to driving evolutionary changes. Essentially, the Red Queen hypothesis proposes that species must continually adjust to keep up with their opponents, who evolve in reaction to the struggle for resources. This adaptation implies that species consistently change but do not improve concerning their adversaries. Similarly, Alice is caught in a race with the Red Queen, and despite exerting her maximum effort, she remains in the same position. To this creative metaphor, the Red Queen hypothesis has emerged as one of the most influential concepts in the field of evolution and helps us better understand gene function (Brockhurst *et al*. 2024).

Finally, a story offers an imaginative perspective that helps audiences think differently (T-Story EU, 2014). Thus, a story could be an imaginative way to understand the environmental crisis. Haraway (2020) expresses her view that storytelling can significantly shape people's perspectives on the world.

In short, this survey of the field focuses on key applications of storytelling. These specifically chosen examples support and demonstrate the values of my artistic practices and those of others who share similar interests, particularly in the roles of education, communication, critical thinking, and environmentalism. They indicate that storytelling should be a crucial component of my research methodology, enabling the creation of impactful ecological narratives.

In art and narrative, storytelling is a crucial aspect of contemporary works of art (Cambridge University Press, 2021).[10] Artists employ a wide range of expressive techniques to convey exceptional stories through conceptual narratives,[11] and I will delve deeper into these examples in the later section.

Art and Science Intersection

In this section, I explore why combinations of art and science may be more effective than either alone. Donna Haraway's works demonstrate the merging of seemingly opposing qualities of art and science, such as emotion and reason, as well as rigour with the evocative. According to Table 2: Similarities and Differences between Science and Art by Stephen Wilson (2002, p. 18), an author and co-editor of Leonardo/ISAST, the qualities of these fields may elucidate why art and science need each other and what their synergies and interrelationships gain. Why are Donna Haraway and others interested in this synergy, and how can an artist achieve it?

Table 2: Similarities and Differences between Science and Art by Stephen Wilson

Differences between Art and Science	
Art	**Science**
Seeks aesthetic response	Seeks knowledge and understanding
Emotion and intuition	Reason
Idiosyncratic	Normative
Visual or sonic communication	Narrative text communication
Evocative	Explanatory
Values break with tradition	Values systematic building on tradition and adherence to standards

[10]Cambridge University Press (2021) describes 'story' as 'a description, either true or imagined, of a connected series of events,' and 'storytelling' as, 'the activity of telling a story.'

[11]Conceptual narrative is combined with two words: 'conceptual', and 'narrative'. The word 'conceptual' means 'based on ideas on principles' (Cambridge University Press, 2021). Therefore, conceptual narrative means telling a story based on the idea behind or telling a story with characteristics of conceptual art. The latter would explain briefly as the artist would not tell a story straightforwardly, but it opens for audiences to interpret.

Similarities between Art and Science
Both value the careful observation of their environments to gather information through the senses.
Both value creativity.
Both propose to introduce change, innovation, or improvement over what exists.
Both use abstract models to understand the world.
Both aspire to create works that have universal relevance.

Some academics support the combination of art and science to address ecological issues. In the area of storytelling, Michael Wilson (2021) suggests that we need to combine certainty and reliability from scientific knowledge with art to strengthen messages about environmental problems. This corresponds to Barry and Welstead's (2017, p. 11) position that art and science should work together by using ecocriticism as a space to link these two disciplines. At the same time, Anna Tsing (Lassila and Tsing, 2017, p. 26) gives credit to artists who are essential to bringing cross-disciplinary discussions, especially concerning the Anthropocene, to public attention.

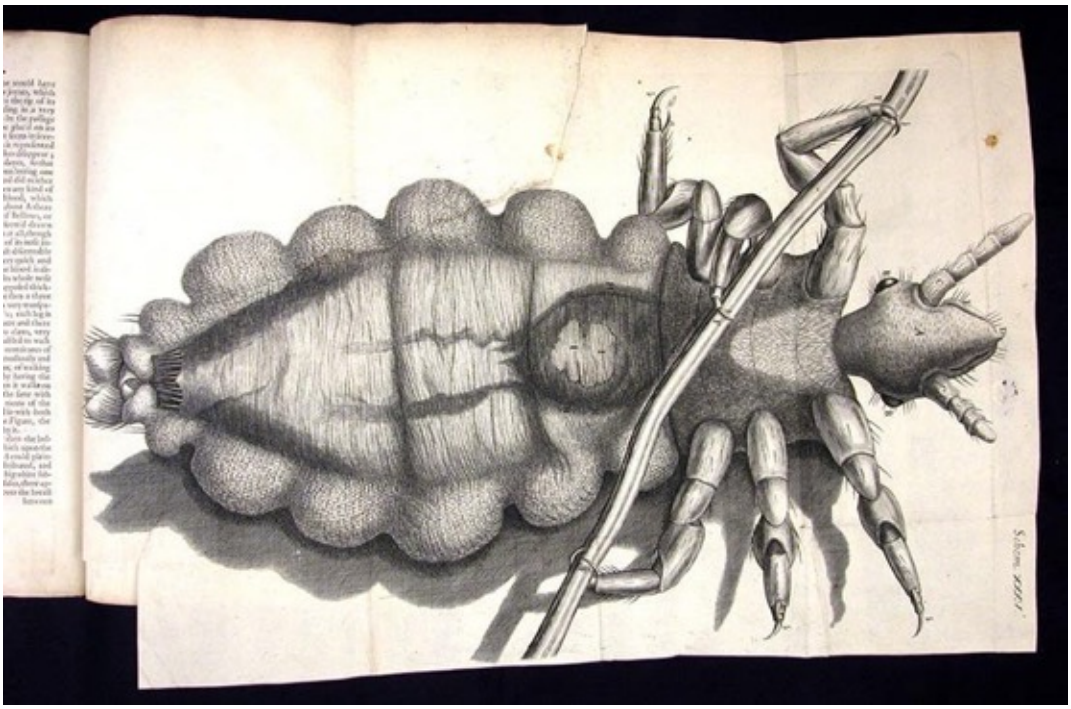


Figure 11: Robert Hooke (1665) *Louse, Micrographia* [Engraving]. Available at: https://www.lindahall.org/about/news/scientist-of-the-day/robert-hooke-2/ (Accessed: 18 August 2024).

Art and science have long worked in parallel, inspiring and relying on each other.[12] Scientific illustration is a prime example of this relationship, and its methods will be applied in this research project.

These illustrators can share their discoveries about the details of specimens with the scientific community, for instance, *Micrographia: or Some Physiological Descriptions of Minute Bodies Made by Magnifying Glasses, with Observations and Inquiries Thereupon* (1665), an illustrated book of microscopic images by Robert Hooke in 1665 (Figure 11). Nowadays, scientists and artists are expected to work together and even switch roles. For example, artists may work in a laboratory, while scientists may work in a studio. New art styles have emerged, such as art-science, bio art, symbiotic art, STEM art, bacterial art, et cetera, which are named based on their primary media. Interestingly, Ken Arnold, Head of Public Programmes at Wellcome Collection, provides the three-step approach for creating art-science for the public:

> 1. Science needing to find a more sympathetic public understanding by associating it with art; in this way the public will see it as less threatening.
> 2. Artists taking seriously the almost philosophical questions that science is throwing open in the words of biology and medicine.
> 3. A genuine, open-minded sharing of the intrigue of ideas, a new topic for artists who realise that art is more than being just about art. (Arnold, cited in Miller, 2014, p. 311-312),

He also mentioned that artists interested in science are often driven by a spirit of investigation (cited in Miller, 2014, p. 311-312). Likewise, I share a curiosity about understanding the world around us. For this project, I will work independently,

[12]For example, Stephen Willson (2002) *Information Arts: Intersections of Art, Science, and Technology*; Siân Edge (2005) *Art & Science*; Arthur I. Miller (2014) *Colliding Worlds: How Cutting-Edge Science Is Redefining Contemporary Art*; Adrian Holme, Heather Barnett, and Nathan Cohen (2021) *The Art of Science*.

much like Hooke, and synthesise sources from various disciplines instead of collaborating due to budget and time constraints. Additionally, I prefer to avoid being labelled as an art-science artist. Instead, I see myself as an artist interested in art, science, myth, and nature.

The question is whether we can attract new audience attention by mixing art and science communication modes. There are interesting research findings on the reasons audiences listen to a story. For instance, Rodolfo Maggio (2014, p. 103), an anthropologist and author, conducted a study on the storytelling of anthropology and found that telling a story through personal conversation is more engaging and understandable than through professional and academic presentations. This is because storytelling is more tentative, less precise, informal, emotional, and intimate (Maggio, 2014, p. 95). Maggio cites research by Uri Hasson (Hasson, 2003 cited in Maggio, 2014, p. 94-95), a neuroscientist, which found that storytelling creates a deep connection between the brains of the teller and listener. Storytelling has the power to synchronise the brain. This is highly likely why Donna Haraway and others try to use imaginative storytelling to merge into complicated scientific issues. In this project, I will investigate how combining art and science can draw attention to the environmental crisis. Moreover, my drawing practices will be created with an equal balance of these two qualities. Alongside, I exemplify contemporary artists who incorporate art and science practices in the next section.

Extended Ecocriticism in Art

Turning now to discuss the relationship between ecocriticism and art. Ecocriticism, initially confined to literary analysis, has expanded into various disciplines, including art. The extent to which ecocriticism has been reapplied is explored in *Extending Ecocriticism: Crisis, Collaboration and Challenges in the Environmental Humanities* by Peter Barry and William Welstead, according to their belief:

> This present book follows the belief that ecocriticism has relevance across disciplines. The chapters that follow include those from contributors whose interest is in the visual arts or performance, as well as others from writers whose collaboration with other genres and disciplines has widened their perspectives, and those who take ecocriticism into the fields of environmental justice and ecological sustainability. Our aim has been to explore both praxis and criticism while drawing on the growing literature on ecocritical and environmental humanities theory (Barry and Welstead, 2017, p. 6).

Art historians and aesthetics scholars now use ecocriticism to analyse artworks that deal with environmental concerns. Ecological art or eco-art involves ecocritical theories and concepts, including this research project. Ecocritics highlight the values of this art style and define a creative practice. For instance, Andrew Patrizio (2019), art historian and curator, has attempted to construct the principles of a future ecocritical art history that will be used for reading ecological artworks by focusing on 'non-hierarchy' as the core value for this kind of artwork by citing ecocriticism (Stott, 2020, p. 640). Malcolm Miles (2014), a writer and researcher on critical theory, art and urbanism, explores the aesthetics of ecological art as the means of an interdisciplinary approach, integrating the art, humanities, and social sciences. Meanwhile, Clive Cazeaux (2017, p. 149-169), a British philosopher and author, suggests an aesthetics formula and defines ecological art in his article *Aesthetics as Ecology, or The Question of The Form of Eco-Art*.

In his article, Clive Cazeaux provides perspectives on the aesthetics and values of ecological art with which I am engaged. Cazeaux (2017, p. 151-152) claims that ecocriticism has an attentiveness that can raise environmental awareness, 'ecocriticism is, therefore, an attentiveness to the power of categories to shape and form what is real, and a calling attention to the responsibility that comes with that power'. Furthermore, Cazeaux provides crucial points for practice in ecological art. He clarifies the necessary conditions for ecological art. Art

practice, critical of aesthetics, must include contemporary ecological practices to find harmony, sympathy or symbiosis with nature (Cazeaux, 2017, p. 149-150). From his perspective, ecological art focuses on a conceptual approach rather than perceptual art, meaning not to represent nature but to work with it. As Cazeaux (2017, p. 149-150). affirms art is not merely pictures of landscapes but also conceptual interventions. The principles mentioned above are applicable to increasing environmental awareness through art and align with my objective of presenting distinctive drawings on microplastic pollution in spatial installations, accompanied by fictional text and conceptual storytelling.

Table 3: Summary of Weintraub's Analysis of Eco-Art by Cazeaux

art genres	art strategies	eco issues	eco approaches
paint/print	instruct	energy	conservation
sculpture	intervene	waste	preservation
performance	visualize	climate change	social ecology
photo/video	metaphorize	technology	deep ecology
bio art	activate	habitat	restoration ecology
generative art	celebrate	sustainability	urban ecology
social practice	perturb	resources	industrial ecology
digital art	dramatize	chaos/complexity	human ecology
installation	satirize	systems	ecosystem ecology
public art	investigate	reforms	sustainable development
design			

Cazeaux (2017, p. 151) also discusses and summarises Linda Weintraub's research analysis of ecological art (Table 3). Cazeaux's summary shows the art strategies and application of ecological issues and approaches from forty-seven artworks selected by Weintraub. However, this project will add art genres and art strategies. The summary does not mention drawing practice as a key artistic strategy of ecological art. This might suggest that drawing is not commonly used in this art movement, despite the numerous ecological drawings, which I will describe in the next section.

Figure 12: Leonardo da Vinci (1505-10) *A Star of Bethlehem, Wood Anemone and Spurge* [Red chalk, pen and ink]. Windsor Castle, Royal Library, Berkshire. Available at: https://www.rct.uk/collection/exhibitions/leonardo-da-vinci-a-life-in-drawing/the-queens-gallery-buckingham-palace/a-star-of-bethlehem-woode-anemone-and-spurge (Accessed 4 July 2025).

Drawing for Scientific Investigation and Ecological Drawing

Drawing has long been involved in scientific study throughout history. Many authors have explored this connection, including Brian J. Ford in *Images of Science: A History of Scientific Illustration* (1992), Harry Robin in *The Scientific Image from Cave to Computer* (1992), Susan Owens, Martin Clayton, and Rea Alexandratos in *Amazing Rare Things: The Art of Natural History in the Age of Discoveries* (2007), Horst Bredekamp, Vera Dunkel, and Birgit Schneider in *The Technical Image: A History of Styles in Scientific Imagery* (2015), Florike Egmond in *Eye for Detail: Images of Plants and Animals in Art and Science 1500-1630*

(2016), and Anna Escardo and Julius Wiedemann in *Science Illustration: A History of Visual Knowledge from the 15th Century to Today* (2022).

Figure 13: Beatrix Potter (1887) *Magnified studies of a ground beetle (Carabus nemoralis)* [Watercolour, ink, and pencil on paper]. Victoria and Albert Museum, London, courtesy of Frederick Warne & Co. Ltd. Available at: https://fristartmuseum.org/article/frist-art-museum-presents-beatrix-potter/ (Accessed: 4 July 2025).

Before the advent of photography, drawing was the primary method for recording visual information. In the early modern era, artists utilised drawing as a tool for investigating the natural world. For example, Leonardo da Vinci created *A Star of Bethlehem, Wood Anemone and Spurge* (1505-10) (Figure 12), and Albrecht Dürer produced *The Rhinoceros* (1505). Similarly, scientists employed drawing to

document their observations. Galileo Galilei, for instance, sketched the moon in 1609 through his telescope, revealing that its surface was not smooth. Robert Hooke recorded intricate details of fleas, mould, and plant cells in his book *Micrographia* (1665) (Figure 11). Maria Sibylla Merian made significant contributions by illustrating flora and fauna, most notably in her work *Metamorphosis insectorum Surinamesis* (1705), which transformed the depiction of insects from a diagrammatic style to a more naturalistic representation (British Museum, no date).

In 1857, John Ruskin outlined methods for drawing as a means of studying the natural world in his book *The Elements of Drawing*. He emphasised the importance of observation and meticulous detail, stating, 'I believe that sight is more important than drawing; and I would rather teach drawing so that my pupils may learn to love Nature' (Ruskin, p. 13). At an early age, Beatrix Potter developed a love for nature, engaging in studies of plants and animals while drawing under a microscope. For example, the drawing of a ground beetle (Carabus nemoralis) in Figure 13. According to Kennedy:

> Potter received her education at home through governesses and was inspired to engage in drawing, painting, and exploring natural history via books, museum visits, and firsthand observation.' She gathered fossils, insects, plants, and rocks, utilising a microscope to create hundreds of intricate drawings of her findings (cited in First Art Museum, 2023)

In contemporary times, Casey and Davies have researched and written extensively on this topic in *Drawing Investigations: Graphic Relationships with Science, Culture and Environment* (2020), from which I will not repeat details here. However, it is worth highlighting a few contemporary examples that demonstrate how drawing has been used in ecological studies spanning art and science.

Figure 14: Insect drawings of Cornelia Hesse-Honegger in 1967. Available at: https://beyondnuclearinternational.org/2018/04/29/woman-who-paints-chernobyls-insects/ (Accessed: 4 July 2025).

Figure 15: Sarah Simblet (2020) *The Sea Hanauma Bay Preserve, Oahu* [Grey pen on paper]. Available at https://www.interimpoetics.org/383/sarah-simblet (Accessed: 6 July 2025).

Cornelia Hesse-Honegger, a Swiss artist, is the first example. She uses drawing to study insects affected by radiation (Figure 14), drawing inspiration from the aftermath of the Chernobyl nuclear disaster and a 1967 study of mutated fruit flies, known as Drosophila. She has devoted her life to demonstrating the global repercussions of radiation and fallout from radioactivity. The insects she depicts are deformed or have uneven colouration. Her artworks remind us of the harmful effects of increased radiation levels and the negative impact that humanity has on the natural world.

Similar to Sarah Simblet, a British drawer, studies in various natural subjects, such as botany, anatomy and dendrology. She mainly produces scientific drawings and books. However, she also captures movements of the river and the sea in her notebook with a grey pen while travelling and observing (Figure 15). This is an example of a powerful line drawing gesture that instantly captures the natural world on-site.

Drawings and sculptures are known for the British artist Tania Kovats. She uses drawing as a means to communicate her ideas, including those related to oceanic and climate change. She says, 'I think drawing is a process of thinking, making and communication…it's another part of the role for drawings: to allow yourself and others to see what you have seen' (Bright, 2018). Kovats's creations explore the intricate boundaries between the human and non-human realms (human and sea), revealing insights through the medium of drawing as a means of creation and perception. They address profound emotional, intellectual, and ecological ties to the sea. The artworks engage with various topics from the 'blue humanities,' including physical interactions with the ocean, its role in scientific inquiry, the geopolitics and cartography of seas, and the studies focused on the potential conservation of oceanic environments (Kroth, 2022, p. 4). Lilian Kroth explains the drawing series of *Sea Mark* (Figure 16):

> …*Sea Mark*, consisting of a myriad of individual sheets, have something iconic to them. The marks indicate waves and mirror a rhythmic, calm

> and humble attempt to catch the ocean's surface. Wave by wave, presented as even marks, gives, in a democratic sense, some idea of the gentle temporality with which all those marks come together as a sea-space (Kroth, 2022, p. 2).

She also explained the reasons why she uses drawing in her artistic practice in an interview with Phaidon Press, titled *Tania Kovats - Why I Draw* (no date). For instance, she stated, 'drawing is more portable, affordable, resilient, and direct' (Phaidon, no date), which is similar to my intention. Drawing is not only accessible and portable for my fieldwork but also useful for noticing, observation, scrutiny, and communication through drawing, as I mentioned earlier and in the later chapters.

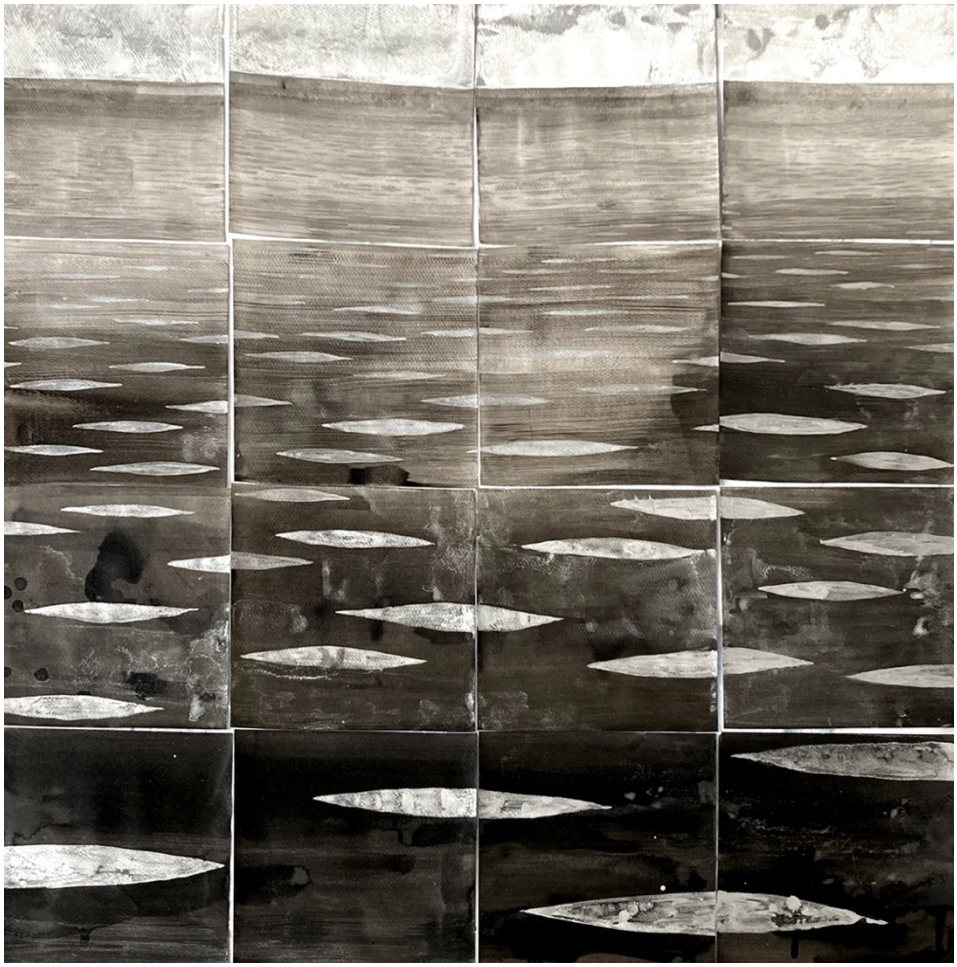


Figure 16: Tania Kovats (2023) *Sea Mark (Silver)* [Indian ink and aluminium pigment on paper]. Parafin. Available at: https://www.parafin.co.uk/exhibitions/2023/exhibitions-2023-tania-kovats (Accessed: 4 July 2025).

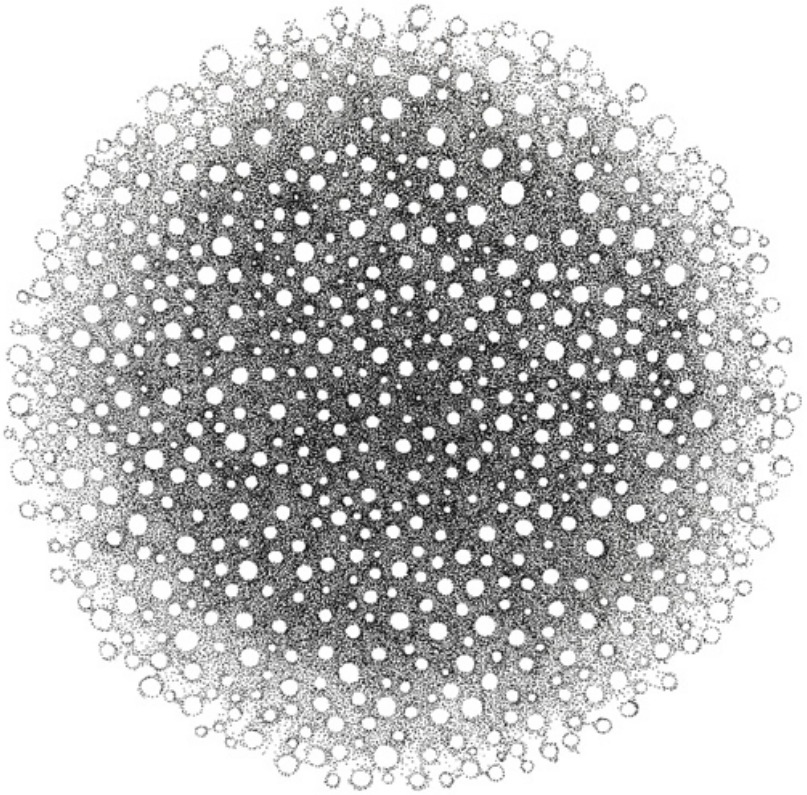


Figure 17: Annie Cattrell *Lewis I* [Ink on watercolour paper]. Available at: https://academiciansgallery.org/artists/326-annie-cattrell-rsa/works/ (Accessed 6 July 2025).

A Scottish multidisciplinary artist, Annie Cattrell focuses on neuroscience, meteorology, engineering, psychiatry and science. However, during her residency in Lewis on the Isle of Lewis between 2020 and 2022, she created drawings related to the natural world, water, and rock from her coastal journeys. Her primary objectives were to map the process to understand how culture, geology, and water interact and coexist on and around Lewis. She aimed to discover diverse methods for collecting relevant on-site information and references through walking, filming, drawing and direct casting within this landscape (jonmactobaidh, 2020). Her drawings seem more abstract than those of other artists in this section. In *Lewis I* (Figure 17), it resembles sea bubbles or tiny organisms merging to form a larger, circular living entity. This reflects her interest in the interconnectedness of all things, as shown in her exhibitions.

Figure 18: Example drawing of Lucienne Rickard at TMAG.
Available at: https://www.abc.net.au/news/2023-12-10/extinction-studies-art-project-plight-of-endangered-animals/103131870 (Accessed: 4 July 2025).

Lucienne Rickard, a Tasmanian artist, uses drawing as a practice of dedicating time to comprehending a topic, such as animals and plants. Between 2019 and 2023, she spent four years drawing extinct or endangered species at the Tasmanian Museum and Art Gallery (TMAG) as part of the Extinction Studies project (Figure 18). She created a live drawing area in the museum, depicting species from the International Union for Conservation of Nature's Red List of Threatened Species. Among her works are large-scale drawings of the Xerces blue butterfly and the Christmas Island pipistrelle. After completing each drawing, she erased it and drew a different endangered species on the same paper. This process of drawing and erasing symbolises evolution and extinction. TMAG (no date) describes the project title Extinction Studies as deliberately merging art and science, with 'study' referring both to a technical art term for a drawing or sketch done in preparation and more generally to the practice of devoting time and attention to understanding a topic.

These several examples of drawings that focus on ecological topics support my argument in Weintraub's analysis. These examples encompass various scientific disciplines and natural subjects. The artists present drawings in both realistic and abstract styles, created through careful observation using a range of drawing techniques. Most of the artists mentioned also incorporate fieldwork into their artistic process. They use drawing as a means of recording, communicating, investigating, and advocating for ecological issues. My research aims to expand our understanding of drawing as an ecological practice by applying it to the specific context of marine microplastic pollution.

Contemporary Artists' Responses to Plastic Pollution

In recent decades, plastic pollution has become a significant topic in artists' projects, exhibitions, workshops, and talks. New art terms have emerged, such as plastic art, microplastic art, and PET art. One of the critical literary references is *Plastic Ocean: Art and Science Responses to Marine Pollution* by Ingeborg Reichle (2021), a contemporary art historian, cultural theorist and Professor at the University of Applied Arts in Vienna. She compiled contemporary artists' writings and explored how artists respond to this ecological problem with practices that intersect between art, activism, and marine plastic pollution (Reichle, 2021, p. 61).

Another example of an artist's activity is the art and science workshop run by Kat Austen (artist) and Joana MacLean (biologist). Austen and McLean created a DIY workshop *(Un)Real Ecologies: Microplastics* at the Art Laboratory Berlin in 2018 (Figure 19) to teach participants examining microplastics with household chemical protocol and found that most specimens in the Panke River were fibres-like (Art Laboratory Berlin, no date). In the UK, works on microplastic pollution have included *Plasticide*, a public art installation on the pavement at the National Theatre, London, in 2016 by Jason deCaires Taylor. Jinxiu Chen and Lu Zheng created visual data of microplastics in the Thames River and exhibited them at the London Design Festival in 2023.

Figure 19: Workshop *DIY Hack the Panke/Microplastics* in 2018. Available at: https://artlaboratory-berlin.org/events/diy-hack-the-panke-microplastics2018/ (Accessed: 19 March 2024).

Figure 20: Prasopsuk Lerdviriyapiti (2017) *Blue Ocean, A Message From The Sea* [Installation] Plastic waste (3.5 metres in height). Bangkok Art and Culture Centre (BACC). Available at: https://artistsandclimatechange.com/2018/05/21/top-10-most-pioneering-art-sustainability-initiatives-in-thailand/ (Accessed: 19 March 2024).

Figure 21: Akin Kanjanapokin (2021) *Memorial Outcast* [Sculpture]. Bangkok Design Week 2021 and Art4C.

In Thailand alone, several contemporary artists are working towards addressing the issue of plastic pollution. One of these artists is Prasopuk Lerdviriyapti, who has been creating art from discarded materials since 1996. One of her artworks, *Blue Ocean, A Message From The Sea* (2017) (Figure 20), used plastic waste collected from Phuket Beach in Thailand. In recent years, there has been an increase in art exhibitions focused on plastic waste and ecological problems in Thailand. For example, during the Bangkok Design Week 2021 festival, an artwork called *Incarnate* by Wishulada Panthanuvong featured fashion clothes made from plastic waste. Another artwork titled *Memorial Outcast* (Figure 21) by Akin Kanjanapokin (TEEPRANG) showcased canine sculptures made from fashion and technological waste. Furthermore, Patipat Design Studio's work, *Ecological Expansion: FABRITT x Meclass*, designed natural wallpaper made with eco-friendly building materials and UV digital ink.

As previously mentioned, many examples are addressing plastic pollution. It is beyond the scope of this thesis to provide a complete survey, but it is necessary to highlight a few significant examples. The selection of contemporary artists has been made to foreground the intersection between art and science, interdisciplinary art, in which imaginative, scientific and mythic components mix. Specifically, I focus on their integrated approaches of ecocriticism, storytelling, and interdisciplinary fieldwork to create my distinctive way. Interestingly, my initial survey found that these artworks can be two-dimensional or three-dimensional. However, most of them use plastic waste and microplastic particles as their artistic medium, which they adjust and rearrange aesthetically and conceptually creatively. It is worth noting that techniques of drawing as such are less commonly used to address plastic pollution, and drawing used to depict plastic pollution representationally is far less common still.

The examples of artwork in this review can be categorised into three groups: cataloguing, mimicry, and storytelling. I am taking my lead from *Five Ways to Integrate: Using Strategies from Contemporary Art* by Julia Marshall (2010), an American scholar in art education. Although these categories overlap within one artwork, I classify the examples based on their outstanding apparent strategies. The artworks presented in this review relate to different art approaches, such as ecological art, rubbish art[13], conceptual art, art-science, and interdisciplinary art, all of which address plastic and microplastic pollution. These examples will demonstrate how my drawing practices in this project differ from these previous works.

This review aims to explore the following core questions:

1. How and why do artists borrow methods from other disciplines to address plastic and microplastic pollution?

2. How can cross-disciplinary art practices, which have scientific, imaginative, and mythic qualities, raise environmental awareness?

[13]This is an art style that is constructed with trash.

Cataloguing

Cataloguing is the majority strategy that artists use for plastic and microplastic pollution. It is an application of documentation, cataloguing, archetyping, taxonomy, and classification of museums in science, natural history and archaeology to their art creative process. Most works have characteristics of recording, collecting, identifying, categorising, labelling, and displaying. It is because humans have inherent aspects of cataloguing and categorising (Weintraub, 2007, p. 22). These approach and presentation style can be seen in the significant work among scientific drawers titled *The Guild Handbook of Scientific Illustration, edited by a scientific illustrator at the Smithsonian National Museum of Natural History Elaine R.S. Hodges* (2003), which is composed of conversions, techniques and styles. These examples of artwork share characteristics similar to those of scientific images. They feature dominant objects placed on a plain background and include the text, which these conventions will also be used in the research project. Since these images aim to identify and communicate the population sample.

Mark Dion is an internationally renowned American contemporary artist known for creating artworks that explore our understanding of natural history and knowledge. His work integrates scientific disciplines such as archaeology, botany, and entomology, and relies on fieldwork to gain insight into the subjects he studies. Since the early 1990s, he has incorporated expeditionary fieldwork into his artistic practices, often adopting the roles of naturalist and explorer (Marsh, 2009, p. 39). Through his work, Dion addresses contemporary issues related to travel, ownership, attitudes towards nature, conservation, and the construction of the explorer's identity (Marsh, 2009, p. 41). His exploration of the natural world through fieldwork captures themes of classification, display, exploration, and preservation in his installations, drawings, and prints. Some of his artworks focus on environmental issues, including global warming and plastic pollution. One notable piece is *Cabinet of Marine Debris* (2014) (Figure 22), which features collected and arranged plastic debris from Alaska, a contribution to the

GYRE project in 2013. This work resembles Renaissance curiosity cabinets and highlights his unique approach to art. Dion explains, 'this is kind of the way I know things, by collecting, by having physical contact with actual material' (Gan, 2013). His works reflect a blend of scientific inquiry and imaginative sensibility.

Figure 22: Mark Dion (2014) *Cabinet of Marine Debris* [Installation]. Cabinet, wood, glass, metal, paint assorted marine debris; plastic, rope (113 x 84 x 32 inches; 287 x 213.4 x 81.3 cm.), Tanya Bonakdar Gallery. Available at: https://www.tanyabonakdargallery.com/ artists/34-mark-dion/works/9650-mark-dion-cabinet-of-marine-debris-2014/ (Accessed: 19 March 2024).

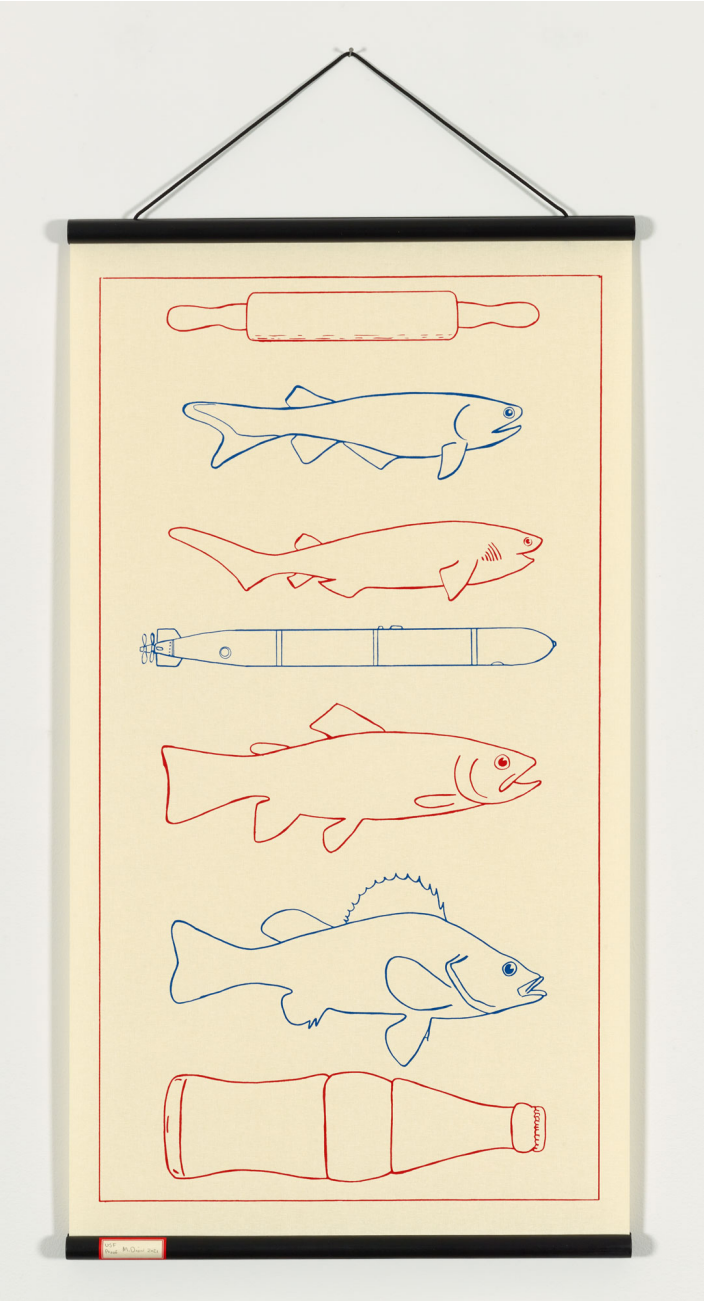


Figure 23: Mark Dion (2021) *Marine World* [Screenprint on Iris book cloth]. Available at https://ira.usf.edu/GS/artists/dion_mark/dion.html (Accessed: 4 July 2025).

Another example, the drawing *Marine World* (2021) (Figure 23) reflects on human waste in the ocean by categorising fish with human objects, such as a bottle, a rolling pin, and a submarine missile, as if to depict marine creatures that might be seen in the ocean, in the form of a scientific illustration. He presents it as a museum exhibit. The format of a museum display as artwork prompts audiences to question their assumptions about the value of the artefacts displayed. It

provokes us to imagine the amount of existing single-use plastics in remote locations. This is again an example of a conceptual narrative approach in contemporary art. These plastics also reflect our daily choices and cultural values, threatening nature and other lives. As Dion asks questions through his similar work, discarded plastic items are wondered. Their bleached and mangled condition raises questions about their origins and highlights the artificiality of plastic objects that once symbolised capitalist domination over nature. However, their patina suggests nature's response. Examining our treatment of the environment can reveal what values our culture holds (Payne, no date).

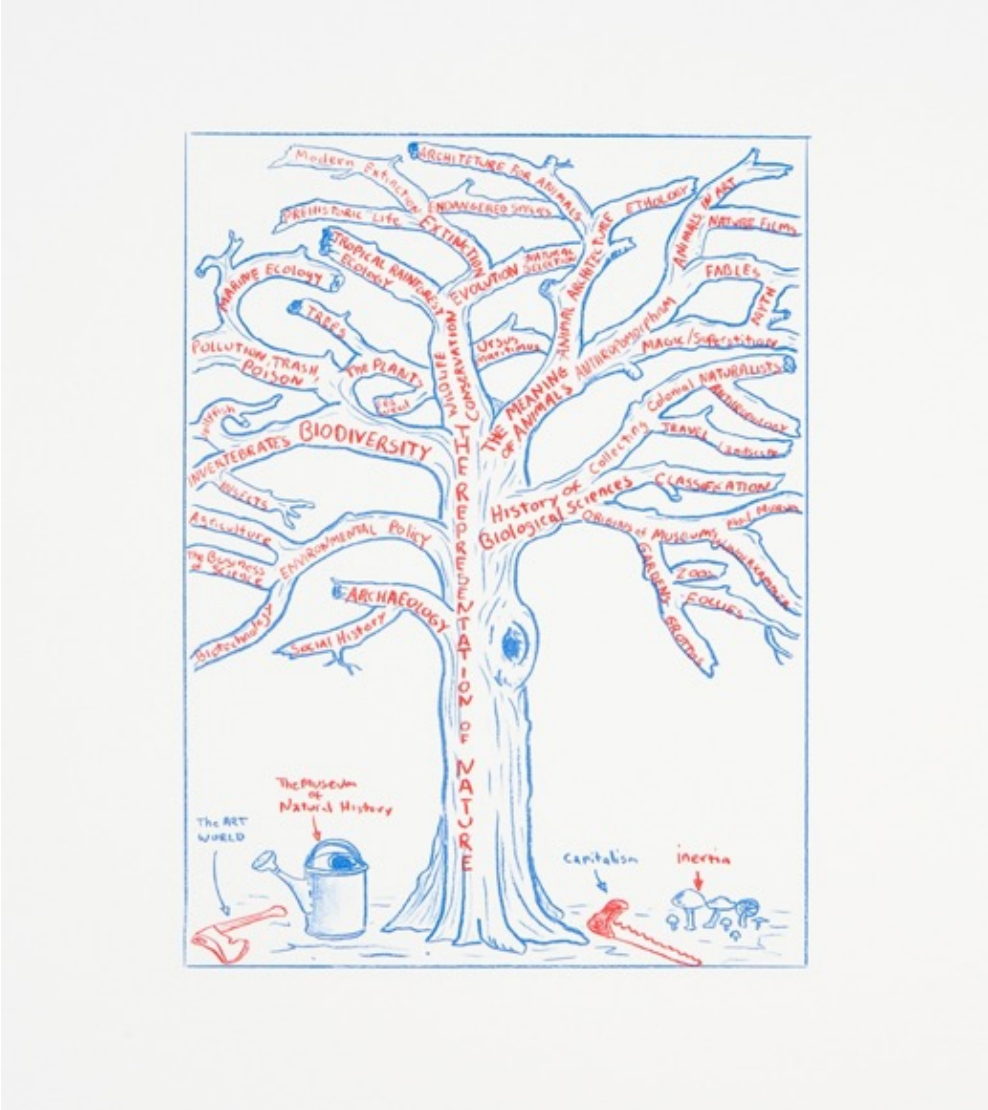


Figure 24: Mark Dion (2009) *Tree Scheme* [Lithograph]. 42.2 x 33.7 cm. Available at: https://www.artspace.com/mark_dion/ tree-scheme (Accessed: 19 March 2024).

The composition of the drawing mirrors marine scientific illustrations from the 18th and 19th centuries. Most specimens are shown without a background, making the forms appear to float within the frame. Once again, scientific images of marine creatures are often positioned facing the same direction and displaying their sides, as seen in *Marine World*. Therefore, his drawing combines both scientific and imaginative approaches to tell the story. Additionally, his artworks are conceptual narratives rather than purely realistic representations of the subject. Dion's (2009) drawing work *Tree Scheme* (Figure 24) supports this, demonstrating the connection between disciplines to depict nature in both scientific and imaginative ways. There is little doubt that these disciplines influence his artistic approach.

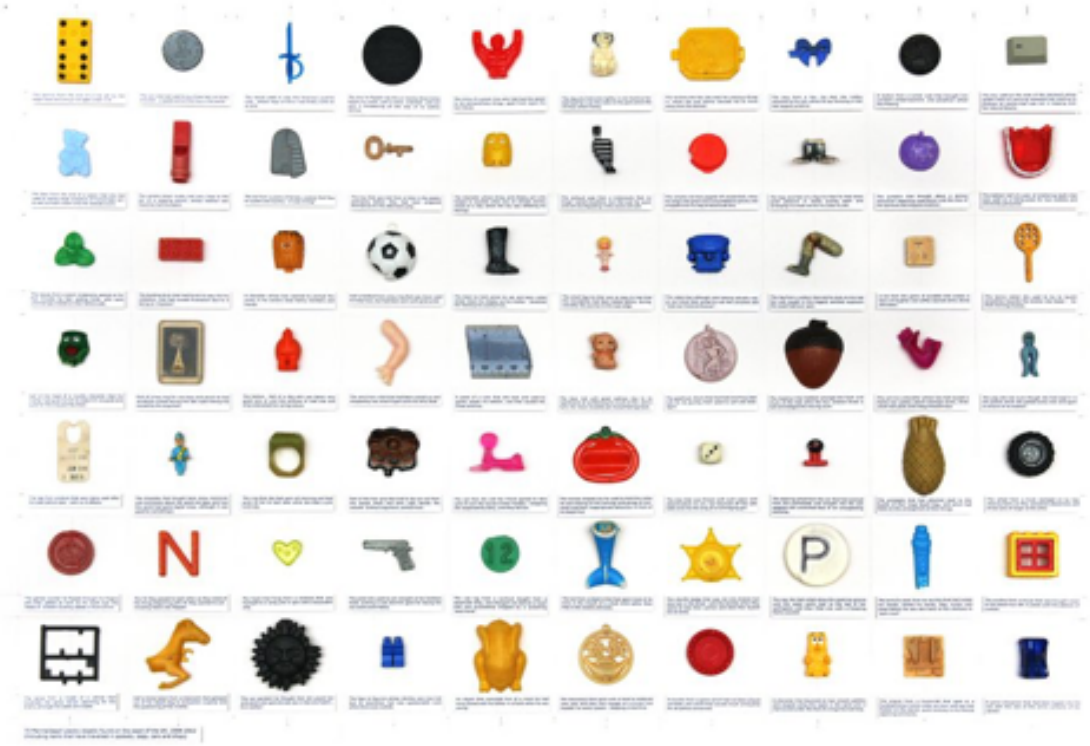


Figure 25: Steve McPherson (1994-2012) *70 Marine Objects* [Three-dimension]. Marine plastic objects found on the coast of the UK (Including items that have travelled in pockets, bags, cars and ships) and text on card. Approx. 87 x 62 x 4 cm. Available at: https://www. stevemcpherson.co.uk/ artwork/70-marine-objects/ (Accessed 19 March 2024).

The cataloguing of plastic waste in the ocean is evident in the works of Steve McPherson, a Kent-based artist, and Liina Klauss, a German artist and environmental activist. Steve McPherson has been using discarded plastic objects that wash ashore on the Kent coast, the UK, as his primary source materials since 2007 to raise environmental concerns. He compares his practice to that of an archaeologist, collector, and paradoxical treasure hunter (McPherson, no date). He reuses his collection of plastic waste for new consideration and narrative through art practices in both three-dimensional and two-dimensional. The artwork *70 Marine/Beach Plastic Objects* (Figure 25) is a collection of his found objects on the beach in the UK between 1994-2012. It is an art practice with characteristics similar to eco-activities, reminding us of beach cleaning.

Figure 26: Liina Klauss (2021) *Involuntary Pairs* [Three-dimension]. Available at: http://liinaklauss.blogspot.com (Accessed: 19 March 2024).

Steve McPherson arranged them similarly to the traditional museum approaches with labelled objects and descriptions. He also creates art prints of marine plastic objects with similar patterns in the principles of visual composition (Figure 25).

This can also be seen in the *Involuntary Pairs* (2021) (Figure 26) of Liina Klauss. This work is one of her 'environmental art installations' (Klauss, no date). She collected over 300 plastic and natural objects on beaches in the South China Sea, Indian Ocean, Andaman Sea and Bali Sea. She arranged the specimens similarly to the 18th-century museum displays by classifying and comparing similarities between human-made and natural objects, for example, the shapes of plastic forks and crab claws.

Figure 27: Max Liboiron (2013-2014) *Sea Globes* [Three-dimension]. Ocean plastics, historical landfill, New York City, kitsch, globes: 7 1/8" x 6" diameter). GYRE: The Plastic Ocean, the Anchorage Museum, Alaska. Available at: https://maxliboiron.com/2014/03/ 23/sea-globes/ (Accessed: 19 March 2024).

Mimicry

Mimicry is an imitation method of objects, events, and phenomena. Artists use their creative arrangement to turn one thing into another, using various discourses, methods, media, and techniques. Artworks are conceptual-led. Most of these examples show how artists create artwork based on scientific research.

Max Liboiron, a Canadian artist and a founder of Civic Laboratory for Environmental Action Research (CLEAR), created an art object, *Sea Globes* (2013-2014) (Figure 27), by taking water samples from the Hudson River, South Brooklyn, collecting bituminous coal, embellishing the components with snails and small plastic bottle miniatures to create a souvenir-like snow globe. This globe, rather than simply evoking positive memories, serves as a reminder of the plastisphere and highlights the plastic pollution in the Hudson River. Liboiron uses microplastic as art material but does not provoke audiences to consider its value as some other artists have. Instead, she prompts us to rethink waste management, a topic we are familiar with but overlook (Reichle, 2021, p. 69).

Similarly, Mara Gercik Haseltine is an American pioneer artist in art and science and an environmental activist. She depicts the threat of microplastics to marine plankton with the series of sculptures *La Bohème, A Portrait of Today's Oceans in Peril, Plastic & Plankton* (2013) (Figure 28). She is inspired by her discovery of plankton samples from the coast of Chile (Haseltine, no date). She studied it with a microscope and observational drawing (Figure 29) before enlarging it in sculpture. The massive mimic sculpture of Tintinnid plankton touches audiences by seeing them threatened by pollution. The sculpture is made with hand-blown uranium-infused glass ensnared in micro-degraded strands of plastic and is presented with the sound of the tragic opera of Giacomo Puccini, *La Bohème*, set in Paris in the 1840s and performance. Joseph Barning performs as Rodolfo, and the Tintinnid plankton represents Mimi, telling the tale of interspecies love. Haseltine (no date) calls it 'the tragic tale of interspecies love at the dawn of the Anthropocene age'. This work shows the transformation method from scientific data into creative work, resembling the threatened plankton. It is also an example

of cross-disciplinary art, showing a potent combination of empirical and imaginative methods in art practices.

Figure 28: Mara Gercik Haseltine (2013) *La Bohème Series I* [Sculpture and Performance]. Agnés b., NYC. Available at: https://www.calamara.com/artwork/la-boheme-a-portrait-of-todays-oceans-in-peril-plastic-plankton/ (Accessed: 19 March 2024).

Figure 29: Mara Gercik Haseltine, Pencil study for *La Bohème,*
in case Tintinnids are caught in a UV-degraded plastic ribbon.
Available at: https://jenniferbruni.com/2013/04/29/the-art-science-of healing - the-planet-geotherapy-and-mara-g-haseltine/ (Accessed: 23 March 2024).

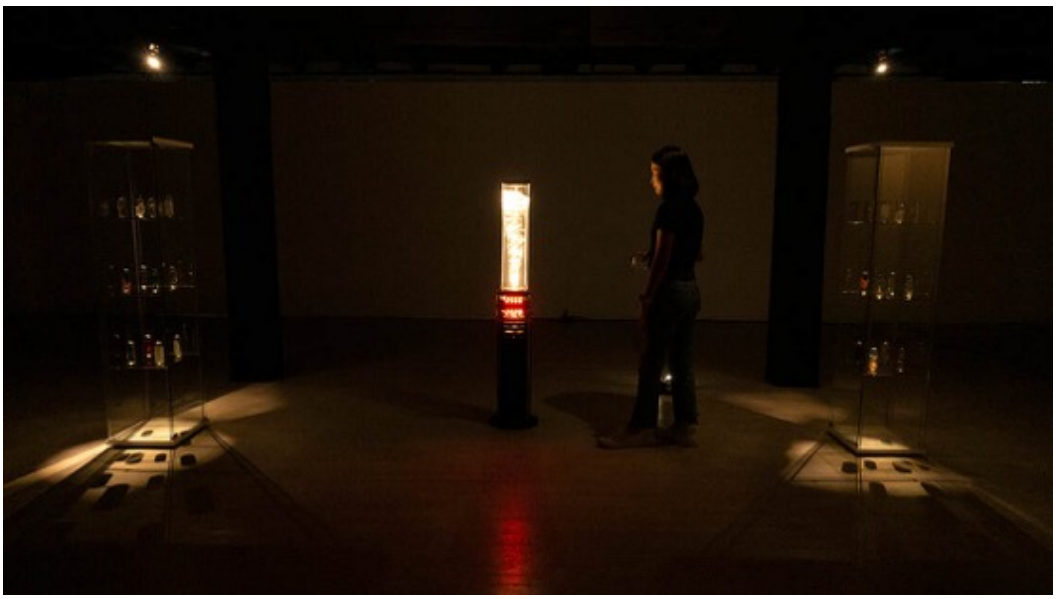


Figure 30: Witaya Junma (2021) *Plastic Sea* [Interactive Installation].
CU Art 4C, Faculty of Fine and Applied Art, Chulalongkorn University, Bangkok, Thailand. Available at: http://www. witayajunma.com/plastic-sea.html
(Accessed: 23 March 2024).

Witaya Junma has a creative method similar to Mara Haseltine's, using scientific data to create artwork but focusing on statistics and numbers. Witaya is a pioneering Thai new media artist who creates interactive installations and data visualisation. The exhibition *Plastic Sea* (Figure 30) is the title of an interactive installation about plastic pollution in Thailand, exhibited under the festival *Bangkok Design Week 2021*. The artwork is based on marine plastic waste data of Thailand from 2007 to 2021 provided by the Department of Marine and Coastal Resources. His statement explains that Thailand was the seventh biggest marine plastic polluter in 2019. Most waste is from commodities, such as water bottles, foam, plastic bags and straws (Chulalongkorn University, 2021, p. 17).

The installation presents the data on marine plastic waste. Participants can interact with the installation by putting a capsule of plastic waste in a water tube. Then, the water in the glass tube will move and flow, creating a whirlpool. The swirling of water will show two numbers: the year of waste collection in the sea and the percentage of waste found in each type of waste. The data will be randomly generated when the capsule is dropped in the water tank. The stronger the swirling, the greater the number of that type of plastic waste. The artwork enables audiences to participate in order to raise environmental awareness that they might be part of this problem directly and indirectly. By resembling scientific data and museum display, this artwork has a sense of art and science that can convince audiences' thoughts.

Mandy Barker, a British photographer, is another artist who has worked with marine plastic debris for over 14 years to raise awareness about plastic pollution. She collaborates with scientists to highlight the harmful effects of plastic pollution on aquatic life, climate change, and, ultimately, humans. Additionally, her artwork is grounded in her research, effectively engaging audiences. She documents her studies through nature journaling and field note-taking (Figure 31), reflecting an empirical approach by observing, recording, and noticing during her creative process.

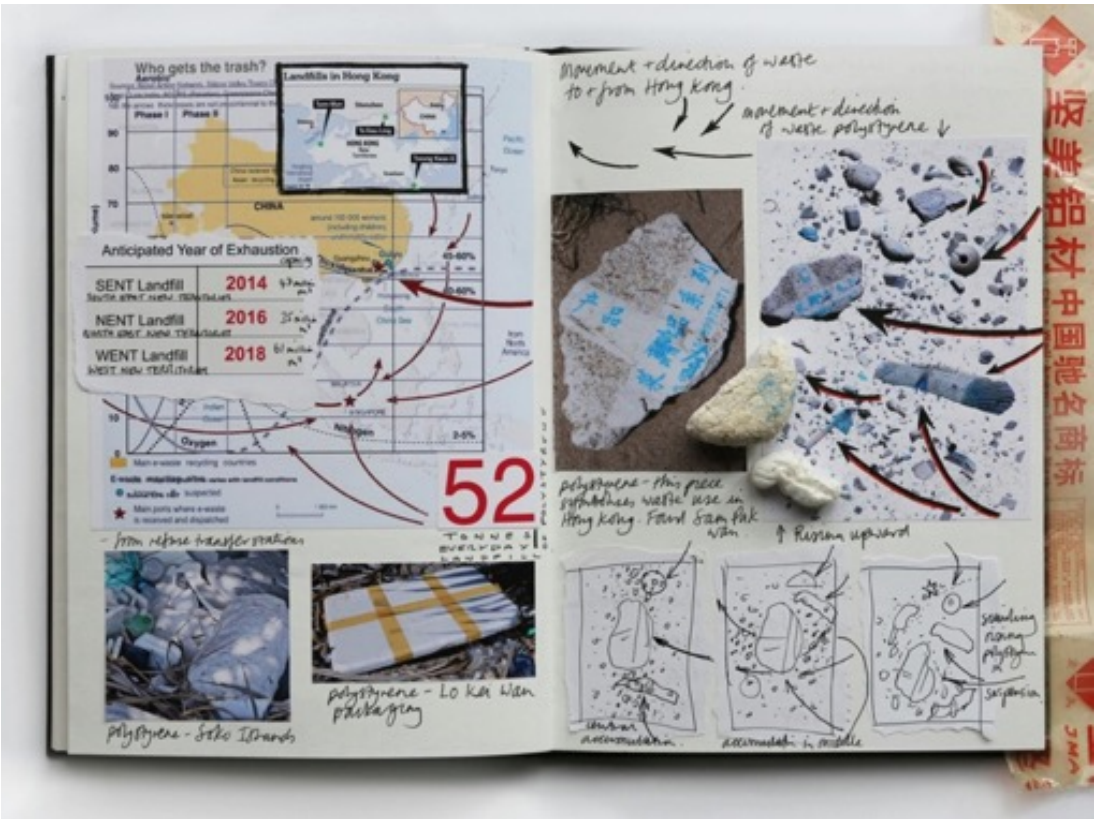


Figure 31: Many Barker's Sketchbook.
Available at: https://www. mandy-barker.com/sketchbook-1
(Accessed: 23 March 2024).

Barker's photographs of plastic waste inspire viewers to take action against plastic pollution in the oceans. One of her photograph series, *SHELF-LIFE* (2019), depicts the journey of plastic objects that were once placed on shelves, whether in a supermarket shop or at home, and eventually recovered. The *Barcode - 490250 5085680 (Japan)* (Figure 32) is a part of this project under the *Henderson Island Expedition 2019*. In this image, the plastic objects resemble the Red Sea Anemone and Gorgoniidae, ocean creatures. She uses plastic waste as her subject directly but slightly manipulates images to provoke us with the amount of waste in the ocean. However, they are plastic fabrics that remind us of *Involuntary Pairs* (2021) of Liina Klauss (Figure 26), the threatening marine creatures of plastic waste.

Figure 32: Many Barker (2019) *Barcode - 490250 5085680 (Japan)* [Photograph]. Three pieces of fishing net were recovered from Henderson Island in June 2019. Available at: https://www.mandybarker.com/shelf (Accessed: 23 March 2024).

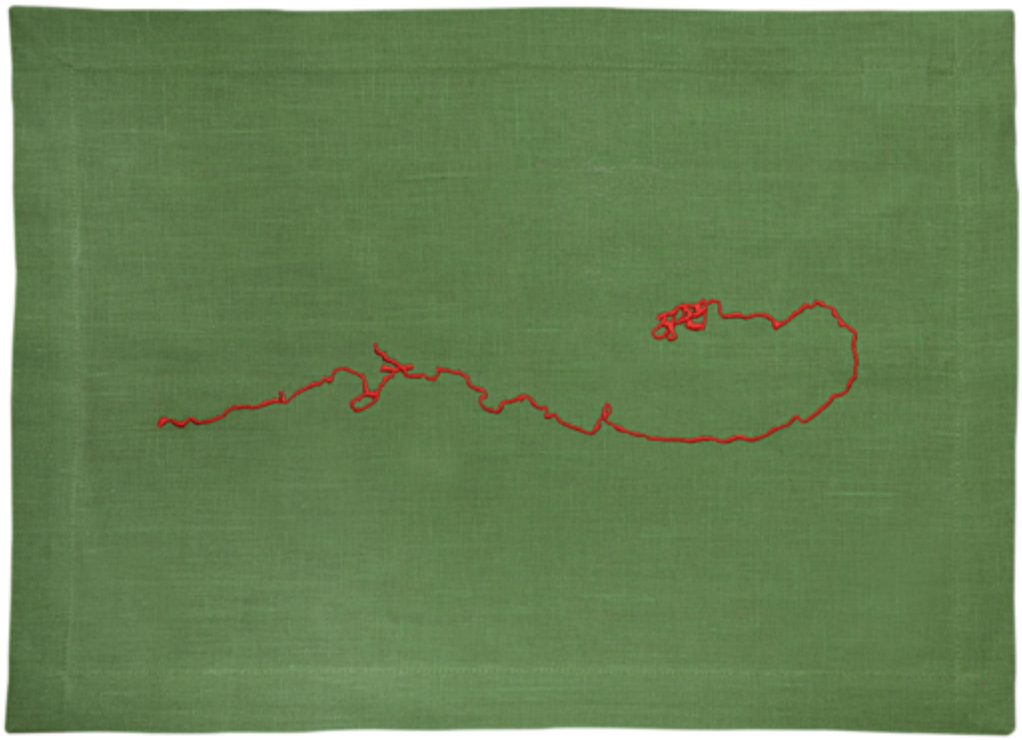


Figure 33: Swaantje Guntzel (2015) *15FXZ* [Embroidery on linen] part in the *Visual mapping/Tracking Trash*. 37 x 50 cm. Available at: http://www.swaantje-guentzel.de/visual-mappingmarine-debris (Accessed: 23 March 2024).

Figure 34: Swaantje Guntzel (2016) *Microplastics* [Performance]. Available at: http://www.swaantje-guentzel.de/#/microplastics (Accessed 23 March 2024).

Another method of mimicking is a simulation of the mapping and cartography of plastic pollution. Artists like Swaantje Guntzel and Pratchaya Charernsook have created artworks using this method. Swaantje Guntzel is a German artist who uses various art forms, including performance, conceptual art, and mixed-media, to create art related to marine plastic pollution. The conceptual embroidery series *Tracking Trash* (Guntzel, 2015) (Figure 33) is an example of her work, which was created in collaboration with the *High Sea Ghost Net Project*. This artwork is a map or visualising the travelling of waste in the Pacific Sea from 2008 to 2013 (until the signal was lost). Large debris was tagged to represent the trace of waste accumulation in the sea, reflecting that pollution is a global issue. Another artwork of hers is a performance *Microplastics* (Guntzel, 2016) (Figure 34), in which she collected 1,370 pieces of microplastics per square meter at Playa de Montana Bermeja Beach in Lanzarote. This artwork mimics recreational beachcombing but sends an ironic message to remind us that we will collect microplastics instead of precious natural objects in the future. These conceptual works provoke our thoughts about the ocean crisis of existing plastics and microplastics.

Pratchaya Charernsook, a young Thai artist, won the 42nd UOB Southeast Asian Painting of the Year (POY) award in Singapore in 2023. Her artwork, *Chumphon Estuary* (2023) (Figure 35), is a mixed-media artwork incorporating microplastics collected from her hometown beaches in Chumphon. The picture depicts a bird's-eye view of the Chumphon Estuary, showing how microplastics are transported from the city to the sea through various waterways. This artwork is another example of a representational art style about microplastic pollution, mimicking a map to remind us of the origin of marine microplastic pollution from an urban lifestyle.

Figure 35: Pratchaya Charernsook (2023) *Chumphon Estuary* [Salvaged microplastic on canvas]. 160 x 180 cm. UOB Southeast Asian Painting of the Year, Singapore. Available at: https://www.uobgroup.com /uobandart/uncovering-talent/painting-of-the-year/winners-showcase.html (Accessed: 23 March 2024).

Figure 36: Kentaro Hiroki (2016) *Rubbish* [Coloured pencil on paper]. Exhibited at Singapore Art Biennale 2016: An Atlas of Mirrors. Singapore Art Museum (SAM), Singapore. Available at: https://www.roots.gov.sg/ CollectionLanding/listing/ 1387471 (Accessed: 23 March 2024).

An artist whose approach to mimicry resonates with practice is Kentaro Hiroki, a Japanese contemporary artist. He creates delicate and accurate real-size drawings of waste with coloured pencils on paper. For example, *Rubbish* (Hiroki, 2016) (Figure 36) was exhibited in *An Atlas of Mirrors*, the Singapore Biennale 2016. His drawings are made on three-dimensional paper and constructed to mimic trash in actual size. They are presented in a physical gallery without protective barriers for the artwork. The drawings are so realistic that audiences can hardly distinguish them from actual absolute trash, similar to the drawing style I will use in this project. Although Hiroki's works do not directly address plastic pollution, they remind us to consider the value and responsibility we place on our objects. He provokes thoughts by playing with our consciousness, which is interconnected with the factors contributing to plastic pollution. His artwork is full of conceptual and perceptual qualities, without applying scientific disciplines into artistic practice, but it still miraculously encourages us to take responsibility for waste. He may ask audiences if we consider the trash on the streets as art masterpieces, would we still overlook them?

Storytelling

This category comprises artists who use storytelling, metaphor, fantasy, literature, and scientific approaches to address the natural world and environmental problems. Using these methods provides a mythic, educational, and puzzling sense. Mythic becomes an element that connects art and science elements in this practice, bridging the gap between imagination and scientific knowledge. Myths are situated between truth and belief and can be used to bridge between those concerned about plastic pollution and those who are not. Myths can be used to educate and resolve differences. This artistic approach corresponds to Haraway's suggestion that imaginative storytelling can help us better understand the environmental crisis (Haraway and Kenney, 2015, p. 261). It is the type of approach that I am eager to explore further. However, few artists create artwork on plastic and microplastic pollution using mythmaking. Some examples here are Joan Jonas and Alexis Rockman.

Figure 37: Joan Jonas (2019) *Moving Off the Land II* [Installation]. Ocean Space, Chiesa di San Lorenzo, 2019. Photo Enrico Fiorese. Available at: https://www.e-flux.com/criticism/ 290045/joan-jonas-s-moving-off-the-land-ii (Accessed: 23 March 2024).

Joan Jonas is an American artist whose work often engages with ecological concerns. She is interested in mythology and creates artworks on environmental awareness with multimedia, combining objective and subjective sensibilities. Jonas tells stories about the human relationship with the environment, the danger of climate change, and extinction (Tate Modern, 2018). Her installation *Moving Off the Land II* (2019) (Figure 37) is focused on the essential role of oceans in human cultures as a totemic, spiritual, and ecological touchstone (Hessler, 2019). The installation is the result of three years of concentrated research conducted in aquariums worldwide and the waters off the coast of Jamaica, commissioned by TBA21–Academy. This itinerant installation forms part of Thyssen-Bornemisza Art Contemporary (TBA21) and was first installed at Ocean Space in Venice in 2019.

The installation (Figure 37) includes performance, video, sculpture, drawing, object, and sound, blending with the poetry and prose of Emily Dickinson and Herman Melville with written works by Rachel Carson and Sy Montgomery. She

uses many media to engage our senses, seeing and hearing the urgent threats to marine ecosystems of overfishing and the proliferation of algae. Her video shows her empirical experience with diving in aquariums and seawater to look closely into nature. The installation demonstrates the biodiversity and delicate marine ecology that should be concerned about. Her artwork combines poetic, observational, mythological folklore, contemporary narratives, and scientific studies, inviting viewers to immerse in her message. Her works indeed have aspects of storytelling, such as presenting visual narratives and personal stories through multimedia.

Figure 38: Alexis Rockman (2006) *The Pelican* [Oil on wood]. Smithsonian American Art Museum. Available at: https://americanart.si.edu/exhibitions/rockman (Accessed: 27 March 2024).

Figure 39: Alexis Rockman (2009) *The Reef* [Oil and resin on wood panel]. Smithsonian American Art Museum. Available at: https://americanart.si.edu/exhibitions/rockman (Accessed: 27 March 2024).

Alexis Rockman is another contemporary painter from the United States of America whose work addresses genetic engineering, logging, and climate change. He synthesises elements of fantasy and scientific sources, including natural history, scientific illustrations, museum dioramas, and science fiction (Smithsonian American Art Museum, 2011). Rockman's paintings blend mythic

storytelling with factual reportage and are represented in pictorial and scenic style. The evidence can be seen in *The Pelican* (Rockman, 2006) (Figure 38) and *The Reef* (Rockman, 2009) (Figure 39), displayed in the exhibition *A Fable for Tomorrow* at the Smithsonian American Art Museum in 2010-2011, inspired by Rachel Carson's Silent Spring, 1962 (Smithsonian American Art Museum (2011). Through his art, Rockman invites viewers to consider the facts and implications of pressing environmental issues and imagine the possible consequences of human activities affecting ecosystems, such as climate change and pollution.

In summary, this chapter's three sections highlight the urgent consequences of the Anthropocene and how each sector responds to marine microplastic pollution. The chapter draws on the relationship between ecological literature and art, and art and science to show how theories are applied in practice.

The contents of this chapter are wide-ranging due to the nature of interdisciplinary research. The early discussion emphasises how interdisciplinary fieldwork can be an art form and method that allows an artist a broader perspective, especially when engaging in ecological debates. It also enables intimate knowledge of the topic and the authority to convey a more convincing story to audiences. The concepts in ecocriticism influence the artists alongside are extended by artists. Ecocriticism is considered a place and method for art and science to intersect and a way to raise environmental awareness in society. The chapter also demonstrates the prospect of methods for merging disciplines with the aspects and methods of art and science. Alongside the crucial roles and functions of storytelling to support the importance of my drawing practices.

The contemporary artists mentioned here approach the problem of marine microplastic pollution in three different ways. Some of them represent this crisis through art objects and installation art within art movements: conceptual art, art-science, interdisciplinary art, and ecological art. Most artists use scientific and imaginative qualities to create their artworks. Some of them create artworks based on interdisciplinary fieldwork and research. These examples demonstrate

how complex ecological problems might be made more accessible to public audiences through artworks, in addition to information from news and scientific reports. These artists use fieldwork practice, scientific approaches, and techniques of museum archiving, curation and display to highlight the marine plastic pollution crisis and emphasise our environmental responsibility. They collect specimens as if scientific evidence and re-contextualise disposed non-valued objects to become valuable artefacts, alongside reflecting the museum's roles. These are echoes of the re-contextualisation of found objects in the modernist artworks of Marcel Duchamp, for instance. Furthermore, these sample artistic practices highlight the magic role of artists and their discourse, which can be metaphors for alchemy and witchcraft, blurring the line between science, imagination, and myth.

At the time of writing, there are no significant examples of artists or scientists drawing microplastic pollution using a method that combines scientific and imaginative approaches. Therefore, in developing a drawing methodology that blends fable and science based on empirical and imaginative knowledge, this research project will play a role in communicating, critical thinking, and ecological storytelling about the complex ecological issue of marine microplastic pollution in selected locations. My research results can also add new ways of ecological storytelling and drawings as an ecological activity.

3. Methodology

This chapter explains the research method and process, building on a contextual review and my experience in art and scientific study. An integrated methodology, including fieldwork, nature study, on-site investigative drawing, scientific drawing, and fable-making, creates an eco-fabulous drawing with the gold-point drawing technique. I will describe how scientific methods are integrated with imaginative drawings and how the technical specifications of materials allude to their symbolic meanings, showing the relationship between data and art practice.

An Eco-Fabulous Drawing Method and Process

An eco-fabulous drawing method has been developed based on structures and definitions of methodology in scientific and artistic practices. Both fields have a long relationship. Outstanding evidence is that scientific drawings have used aesthetic conventions for centuries to communicate complex scientific information (Hodges, 2003, xi) and serve as an identification of subjects. My drawings are filled with aesthetics, imagination, and scientific insight to depict marine microplastic pollution.

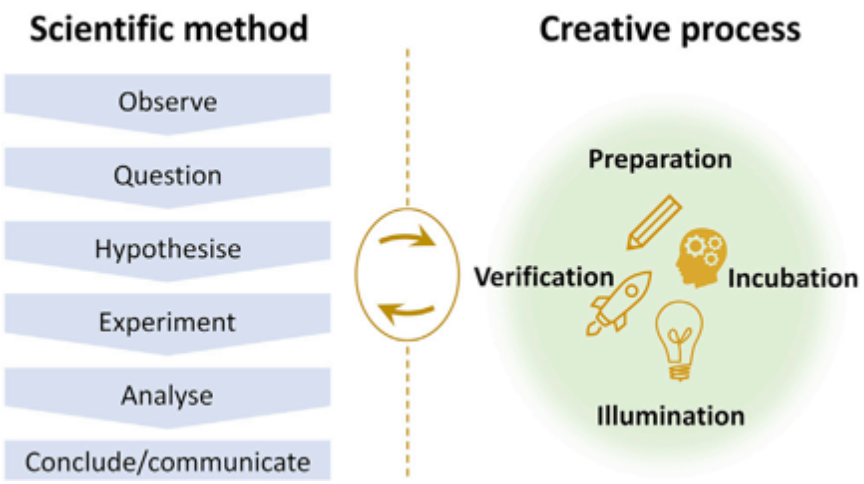


Figure 40: A diagram comparing the process of the scientific method and creative thinking by Alexander B. Cook (2020, p. 1074, Figure 2).

According to a polymer chemist, Alexander B. Cook, the scientific method also has similar steps in the creative process (Figure 40):

> Whereas the scientific method is relatively formal, there are many comparable steps in the creative process, i.e., preparation is akin to observation, questioning and hypothesising similar to incubation of an idea, and experiment and analysis analogous to illumination (Cook, 2020, p. 1074).

These comparable steps can be seen in the eco-fabulous drawing process, which I also review with other methods in Table 4 (see Appendix 1) to structure my creative response. Although the scientific method and the creative process have similar structures and components, they use different terminology to describe their procedures. In short, they can be categorised within the general method of studying, analysing, and summarising what you study, as well as in my eco-fabulous drawing method.

Table 4 presents the example processes and methods I have researched and applied, arranged in numerical order. Some applied processes include: steps (2), (3), (4), and (5) of the scientific method from *The Scientific Method and Climate Change: How Scientists* Know by NASA (2018); steps (1), (2), (4), (5), (6), and (9)

from *Steps in Fieldwork Research* by Delta State University (2004); steps (2), (3), (4), (5), (6), (8), and (9) of the scientific drawing or scientific illustration process from *The Guild Handbook of Scientific Illustration*[14], edited by Elaine R. S. Hodges (2003); steps (1), (2), and (3) of the observational drawing process from Stephen C.P. Gardner's book, *Drawing: A Complete Guide* (2019); phrases (1), (2), (3), and (4) from *The Creative Process* by Graham Wallas (1926); steps (1), (2), (3), (4), (5), and (6) from *Comparing the Scientific Method with the Artistic Process* by the Art of Education University (2018); and the fable-making process from *Reading and Writing Fables: The Ultimate Guide for Students and Teachers* by Shane Mac Donnchaidh from the Literacy Creative (2021).

Furthermore, I integrated these processes and methods with my experience participating in scientific workshops and drawing workshops in Thailand and the UK, sharing information on marine plastic pollution in Thailand with Trash Hero Thailand (THT) in 2021, and collecting microplastics and nurdles in *Nurdle Hunt* with The Bay: A Blueprint for Discovery in 2024 (see chapter 1). All of these steps and experiences formed the eco-fabulous drawing method.

The Eco-Fabulous Method Structure

The eco-fabulous drawing method is divided into two phases: fieldwork practice (outdoors) and studio practice (indoors), which consist of a total of seven steps. These phases function linearly and may overlap in certain situations cases:

Phase one, fieldwork practice consists of two steps: find: exploring recourses and collect: gathering data.

Phase two, studio practice consists of five steps: look: examining the subject, get: incubating the idea, sketch: conveying the idea, create: making a complete drawing, share: communicating with others.

[14]I also apply scientific conventions and techniques to my drawing practice, drawing on my previous experience participating in the *14th Scientific Illustration Workshop* organised by botanists at the Department of Plant Science, Faculty of Science, Mahidol University, in 2013, which I will explain in chapters 3 and 4.

The eco-fabulous drawing process is divided into two phases to create detailed and imaginative drawings. The first phase involves fieldwork, where I physically engage with marine microplastic pollution, gain direct experience, examine sites, and collect and record the subject in order to understand it deeply. The second phase takes place in the studio, where I reflect on my experiences with this pollution and create the final artwork with sympoietic practice. In the studio, I examine the subject under controlled conditions and apply objective judgment and criteria, treating it as a laboratory for refining drawing skills, knowledge, and creative invention. The process has seven steps in total, which will be explained in detail below.

Find: Exploring Resources

“Finding” involves exploring resources and practice on-site. The resources are theoretical and practical, based on documentary information and physical locations of marine microplastic pollution. In theoretical resources, I research the current situation of this crisis and relevant contexts, which are science, anthropology, ecological writing and art areas. As fully described in the contextual review chapter and elsewhere, the research included academic papers, textbooks, scientific research, theoretical writings, and documentaries.

Practical resources are located at the survey sites. I conduct on-site surveys to assess how microplastics accumulate in these geographical areas and to identify the most suitable locations for my fieldwork, which I will explain in the following section. For each survey, I begin by researching nearby locations and places where I can find plastic pollution, using maps, and checking the weather and tide conditions. I then prepare my specimen-collecting equipment, including plastic cups, reusable food bags, forceps, and a sketchbook to document any microplastics I may find. After I select the locations, I revisit the locations with relevant documentary information to research and understand the sources of plastic waste and microplastics.

In this project, I surveyed several sites in Thailand and the UK, including both freshwater (rivers and canals) and saltwater (coastlines and bays). I aim to identify two locations in each country where microplastic pollution flows in the canals, from a city to the ocean and coastal line, corresponding to scientific research results (Schmidt, Krauth and Wagner, 2017; Emmaerik and Schwarz, 2019; Laville, 2021; Macfarlane, no date). The Chao Phraya is the main river of Thailand, flowing from the northern part to the Gulf of Thailand. This waterway is estuarine, similar to the River Lune and River Wyre in Lancashire, which converge in Morecambe Bay and the Irish Sea.

Figure 41: A Bryde's whale foraging at the Chao Phraya River estuary, the Gulf of Thailand, Samut Prakan Province, in 2019. Available at: https://siamrath.co.th/n/94294 (Accessed: 20 June 2024).

I surveyed places in Thailand in 2021 before focusing on specific locations for fieldwork. Most are in the central and eastern parts of the country. In midland are the Lat Pho Canal Floodgate, the Naval Historical Park, and the Phra Samut Chedi. Every year, Bryde's whales forage close to the end of the Chao Phraya estuary in Samut Prakan province next to Bangkok (Figure 41). That is one of the reasons why I focus on this river. Other locations examined were Samut Sakhon, Samut Songkhram, Phetchaburi, and Chon Buri provinces. I did some freedives at the

Same San Bay in Chon Buri and Bo Thong Lang Bay in Prachuap Khiri Khan Province between the years 2017 and 2021. These are locations connected to the Gulf of Thailand, where plastic pollution and urban garbage accumulate.

In the UK 2022, I surveyed locations in Lancashire and Yorkshire. I visited the River Lune Estuary, Morecambe Bay, the Heysham Coast Line (Half Moon Bay), the River Wyre Estuary, Knott End-on-Sea, Fleetwood Beach, Rossall Beach, Cleveleys Beach, Blackpool Beach, and St. Annes Beach, all of which are connected to the Irish Sea. In contrast, I have visited Whitby Beach and Robin Hood's Bay on the east coast, both of which flow onto the North Sea. In these areas, there is a high probability that plastic will reach the North Atlantic Garbage Patch and the Arctic Ocean, according to The Ocean Cleanup (no date).

Furthermore, my scoping of locations has run parallel with appropriate research activities concerning environments, contexts, and sources of information, such as related places, museums, exhibitions, panel discussions, and workshops. This has been a continuous and extensive deep engagement (see Chapter 1). It has enabled me to immerse myself in the local context and develop distinctive drawing practices.

Collect: Gathering Data

"Collect" is the second step to collecting primary data through interdisciplinary fieldwork, which integrates anthropological and scientific methods for drawing practice. This step involves four main methods: exploring, observing, collecting sampling, and recording with drawing on-site, field note-taking, photography, and video.

Exploring is the first process of fieldwork practice, involving examining specific sites within defined boundaries. I focus on the amount and frequency of microplastic pieces found at the locations. Other factors to consider are geography, accessibility, neighbourhood, functional place, stories and historical

backgrounds. This exploration results in the identification of four locations which can be categorised based on the sources of riverine microplastics and marine microplastics:

A) Riverine microplastic resources

(a1) The Chao Phraya River at Rama VII Park, RG87+5VM, Wong Sawang, Bang Sue, Bangkok 10800, Thailand, GPS coordinate 13.815547610 114194, 100.5148606795176.

(a2) The River Lune at Aldcliffe Hall Lane, 25MF+Q8, Lancaster, UK, GPS coordinate 54.03426794711082, -2.8286071312948775.

B) Marine microplastic resources:

(b1) Bo Thong Lang Bay, 6H7H+J9J, Mae Ram Phueng, Bang Saphan District, Prachaub Khiri Khan, part of the Gulf of Thailand, GPS coordinate 11.214295168778705, 99.5789982109894.

(b2) Rossall Beach, VXR3+C8 Thornton-Cleveleys, UK, GPS coordinate 53.89135800140441, -3.0438576041456797.

The selected locations have significant factors. The River Lune has greater access to riverine microplastics than the Chao Phraya River due to its geography and easy-to-reach microplastics on the strandline. In contrast, Bo Thong Lang Bay and Rossall Beach have significant amounts of marine microplastics, which are the main focus of this drawing project. Both also connect to rivers from towns and have local stories.[15] I will return to discussing these four locations later.

The observation method, which incorporates ecological concerns and attentiveness, involves walking, watching, discussing, and freediving to integrate various senses and subjects on various scales. This approach focuses on

[15]This is a local fable about a village called 'Singleton Thorp' located near Rossall Point in Fleetwood, which disappeared due to flooding from the sea. Some remnants of an ancient forest and wooden cottages can be found in this area, opposite Norbeck in Blackpool to Cleveleys Beach (Kingshill and Westwood, 2012, p. 210-211). In Cleveleys, a local tale, *The Sea Swallow*, was written by Gareth Thompson in 2011. There is also a walking trail known as *Cleveleys Mythic Coast Sculpture*, which is based on the book. I have noticed a similarity between the legend of *Laplae Town* and this story. Both narratives employ the symbol of gold.

understanding the ecological entanglements of humans and nonhumans by observing specimens and their surroundings, including natural and unnatural phenomena. I track water tides and weather using mobile applications such as Tide, Yahoo Weather, and Met Office. I also observe how the locations facilitate the purposes of both humans and nonhumans: public parks, seafronts, tourist attractions, fishery, public areas, recreational areas, and rich food resources.

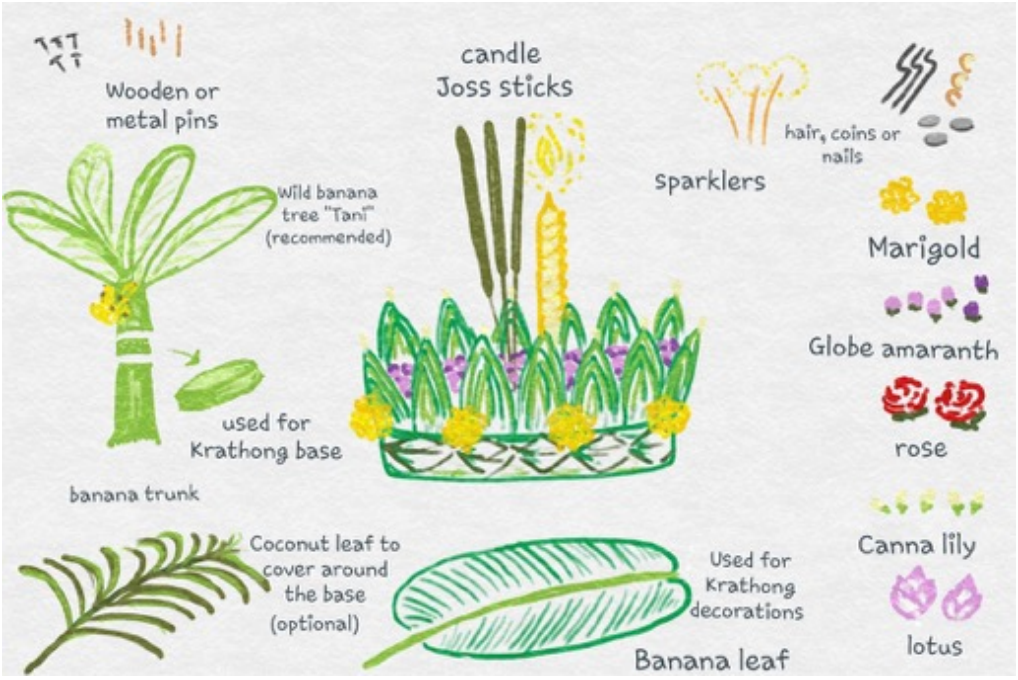


Figure 42: Making 'Krathong' by thecrafthumpy.com. Available at https://www.lionbrand.com.au/blog/loy-krathong-the-hidden-spirit-of-thais/ (Accessed: 11 August 2024).

The project entailed 51 rounds[16] (see Appendix 4) of stage 1: "Find" between 2021 (in Thailand) and 2021 to 2024 (in the UK). From this stage, I have noticed the sources and effects of the pollution in these locations. Human activities, such as littering and beach activities, contribute to the pollution. I have recognised the types of waste corresponding to these activities, which later became microplastic debris. In the Chao Phraya River, for example, the waste is from throwing trash, leaving garbage bags close to the shore, and making merit by releasing 'Krathong', a lotus-shaped natural vessel (Figure 42). There were camping traces near the

[16]The amount of exploration excludes the casual visiting the locations.

River Lune. Beach activities and fishery left some tracks in Bo Thong Lang Bay and Rossall Beach. Along with fishing nets, the waste included plastic bottles, beach toys, snack packages, cans, lighters, cigarettes, and camping gear. All of these findings are detailed in the Appendix 4.

Figure 43: Collecting microplastics on Bo Thong Lang Beach, 2021.

Figure 44: Beach clean campaign at Lynmouth, 2024.

Figure 45: Drawing on-site practice at Rama VII Park, 2021.

Collecting in the field is another crucial and detailed process. This activity is similar to nature study and mudlarking. At first, I begin the research by collecting a wide range of plastic debris, from macroplastics to microplastics, before being restricted to the types of plastic debris. I use a plankton net for water-based collection and forceps for land-based collection (Figure 43). The fragile nature of microplastics requires careful handling and storage. Therefore, I keep them in plastic containers and reusable food bags to prevent contamination and breakage. This collection could be an ecological activity, as well as a campaign to collect litter on beaches (Figure 44). Meanwhile, I record the specimens on-site using drawing practice (Figure 45), photography, and video recording. The observed microplastics are later studied in the studio, while other waste is disposed of in recycling bins.

My on-site drawings include both text and images to document real-time specimens (see Appendix 5). I adapt methods and techniques from observational drawing, scientific drawing, field sketching, and nature journaling[17]. These drawings require visual information and note-taking. A scientist or artist must

[17]They are from Elaine R. S. Hodges (2003) *The Guild Handbook of Scientific Illustration;* John Muir Laws (2016) *The Laws Guide to Nature Drawing and Journaling*; Stephen C.P. Gardner (2019) *Drawing: A Complete Guide*.

gather data in the field as much as possible to complete researched drawings in a studio or laboratory. We use these drawings for their practical purposes. Images can quickly describe complex details (Taussig, 2011, p. 13), while words can record precise data, such as specimen details, date, time, weather, tide, location, phenomena, and other observations. In my final drawings, these details are connected to storytelling.

Fieldwork influences techniques for my drawing on-site. Therefore, the drawing techniques in the field differ from those in the studio. Experience has refined my technique and tools for on-site drawing.[18] The simple multicoloured pencil is the most robust and adaptable instrument. This pencil enables quicker and more confident drawing, presenting transparent objects and subtle colours imperceptible to animals. Occasionally, I use graph paper with a smooth surface, employing field drawing practices in anthropology (Hodges, 2003, p. 475) for precise data recording (Figure 46). This approach has its pros and cons. The gridded paper aids size observation, while the smooth texture allows faster drawing with less pressure. However, it provides a pale colour and cannot add more layers or value of colours to it. Drawing on hot press paper with little teeth produces a brighter colour than graph paper, requiring more power to draw a picture.

[18]For this project, I also experimented with several drawing materials, such as graphite, coloured pencil, technical pen, ballpoint pen, and digital drawing (see Appendix 4 and 5), under various weather conditions and sites. For example, digital drawing on an iPad requires less equipment and is easy to store files, but it is challenging to see on-screen under bright light.

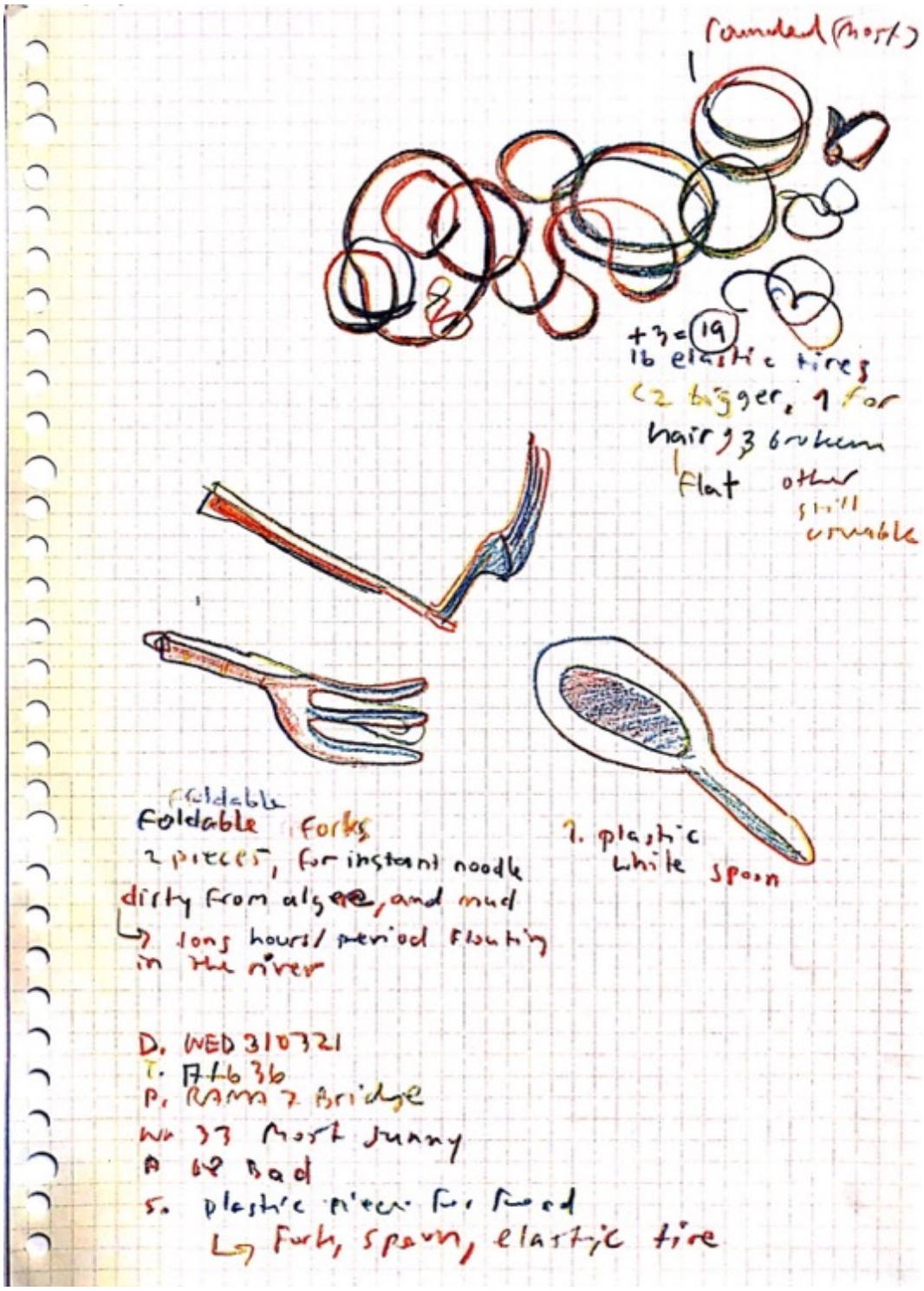


Figure 46: Example of the drawing on-site.

INFORMANTION

Date: **Time:**
Place:
Temperature: **Air:** **Wind:**
Tide:
All Day: Low Tides: Hight Tides:

OBSERVATION:

SPECIMEN Yes_____ NO_____

Scientific name(s): _____
Common name & family: _____
Type specimen: Yes__ & locality: _____, No___
Specimens will be: live___, unmounted___, mounted and how_____
On microscope slides___, in fluid and what kind_____
Note:

DRAWING

Entire specimen (habitus): ____ Selected parts, describe:_____
View:
Lateral: ___Anterior to face right__,left__, top___, bottom ____of page
Dorsal: ___Anterior to face right__,left__, top___, bottom ____of page
Ventral: ___Anterior to face right__,left__, top___, bottom ____of page
Three-quarter: ___ Anterior to face_____
Cross section: _____
Exploded: ____Anterior to face right__,left__, top___, bottom ____of page
Structures to be illustrated: external___, internal___
If there is overlap of structures, how should this be indicated? e.g. dotted or dashed lines, layers of tone, other: _____
Technique:
Medium: _____ Line _____ Continuous tone _____
Color _____
Note:

PICTURES

Figure 47: Example record template for fieldwork.

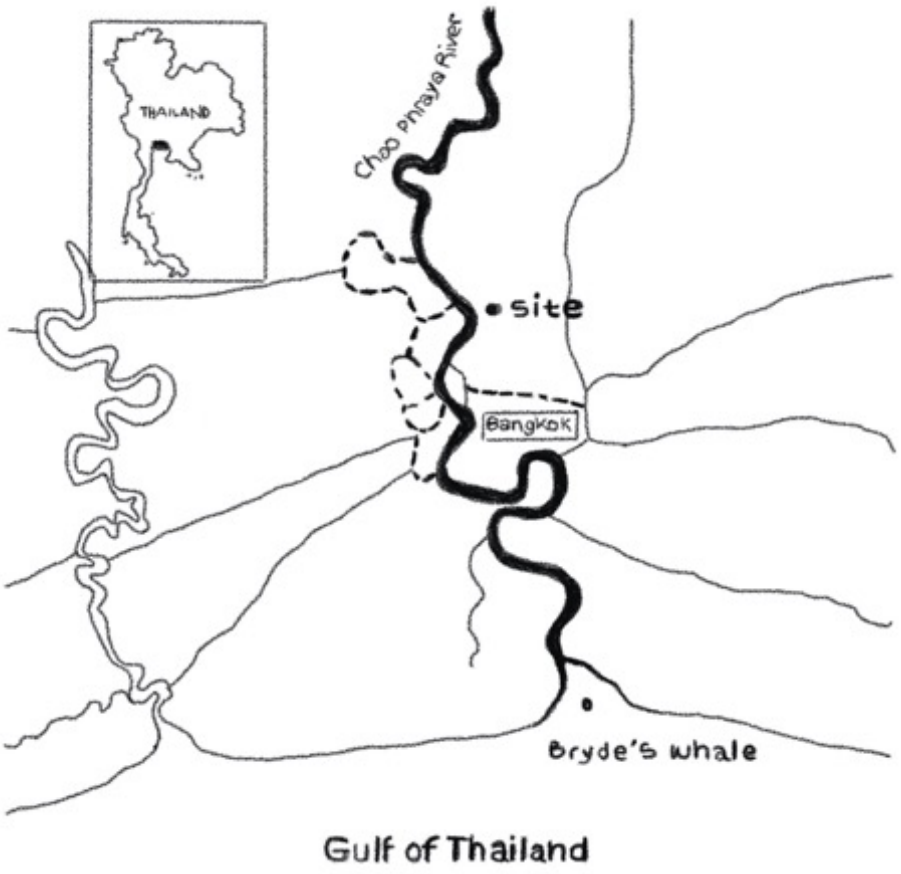


Figure 48: Burnett *et. al* (2007) Map of the Chao Phraya River in Bangkok, connecting to the Gulf of Thailand.

Figure 49: Weeds and rubbish are stuck under the canalside at the Chao Phraya River.

My recording system is based on scientific illustration and nature journaling. I created a template (Figure 47) that follows Elaine R.S. Hodges and John B. Rondall's guidelines (2003, p. 5) to quickly record on-site observations and add more details in the studio. This process enables me to analyse and understand microplastic pollution using numerical data, frequency of occurrence, and various influencing factors. I then use this information to analyse and generate ideas for creative artwork that combines scientific and imaginative practices.

The observation and collection of microplastics relies on natural phenomena such as high tides and floods, which distribute waste from upstream areas to lower regions. Microplastics can be found along the Chao Phraya River (Figure 48), where I conducted fieldwork when the high tide reaches the flood protection dike and riverbank, especially during the rainy season. Heavy rain creates strong waves and floods, transporting waste from towns in the north to the lower part of the country, including rubbish beneath riverside houses around the shoreline. As you can see in Figure 49 it depicts the accumulation of waste in an area adjacent to my fieldwork sites in Bangkok. The waste then moves through waterways and floating weeds. Similarly, high tides at the Lune Estuary and Rossall Beach carry rubbish from urban areas to the sea; simultaneously, it washes back onto the seashores. These natural phenomena play a significant role in the discovery of microplastics.

As I write this, I participated in The Bay: A Blueprint for Discovery in September 2024 to collect nurdles on Marine Beach and Rossall Beach in Fleetwood and to observe how locals address marine microplastic pollution (Figures 50-51). I also shared my experiences collecting microplastics on Rossall Beach and Cleveleys Beach with the team and participants. Mike McDonnell (2024), a nature and wellbeing officer for this organisation, informed me that microplastics in these areas reappear each season after high tide reaches the shores, not only in spring.

Figure 50: Collecting nurdles on Rossall Beach in September 2024.

Figure 51: Nurdles and Microplastics from Marine Beach in September 2024.

Look: Examining the Subject

This step occurs in the second phase when I work in the studio. In this stage, I experiment by mixing elements from scientific and artistic drawing practices, including methods, techniques, and conventions: examining specimens with a digital microscope, taking measurements for precise scales, using magnification for detail and accuracy, classifying the types of microplastics, recording information and observational drawing in studio.

Figure 52: Mesoplastics and microplastics are arranged by size.

I start this process in a closed studio by studying the plastic pieces and classifying the microplastics' size and types (see Figure 52 and Table 1). If the microplastics are still wet with sand, I will leave them to dry for a few days before studying, then use a colander to separate them. Then, I visually examine them with a digital microscope, forceps, and a forensic ruler. I draw them to understand their structure, form, texture, colour, and types, following recording by note-taking and photography. For example, since my fieldwork at Bo Thong Lang Bay in 2021 (see the fieldwork record number 27 in Appendix 4), I found 307 mesoplastic and

microplastic debris (see Figure 51). I set criteria to identify outstanding specimens for drawing practices. The criteria are based on considering imaginative story-making to enhance the attractive drawing. There are six components:

Figure 53: A caterpillar-like shape of mesoplastics.

Firstly, according to the scientific definition, microplastics should be smaller than five millimetres. Secondly, the shapes of microplastics should have a recognisable image, similar to naturally occurring objects and animals, such as gold, a worm or a caterpillar (Figure 53). This quality supports me in reading a new meaning into a specimen. Microplastics with this quality can also be interpreted as semiotic and symbolic. Therefore, the third criterion is a form or an irregular shape (from Table 1). Fourth, it should be the most found or rare to be a representative sample of the locations. Fifth, the microplastics should have details, such as texture, shapes, and characteristics, to identify them. Sixth, the characteristics of materials might be difficult to differentiate between food and plastic for animals, such as clear and green, long and filament, film, or fibre. As shown in Figure 53, the clear blue longed microplastic is similar to a caterpillar because of its round edge and protrusive legs.

Figure 54: The examination of microplastics using a microscope and drawing.

After selecting the subjects to draw, I examine them visually using an integrated drawing and microscope (Figure 54). I measure their size, record their characteristics, colours, materials, and locations, and take microscopic images.

Drawing directly through a microscope is a traditional method of scientific drawing. A scientist uses this method or enlarged photograph from microscopic images of minuscule specimens and detailed items. It has many advantages. It can help to differentiate similar shades of colours, textures, materials, layers and dimensions. A closer look with a microscope provides different spectrum views than human eyes. Moreover, the more seeing details, the more realistic and precise you will get. Also, you might notice something unnoticed before. As Elaine R.S. Hodges and John B. Rondall say:

> Drawing a specimen is an excellent way for either scientist or illustrator to understand its structure and see its details. Because the illustrator may spend more time intently gazing at the specimen than the scientist does, the illustrator might discover new characters in the specimen overlooked by the scientist (Hodges and Rondall, 2003, p. 3)

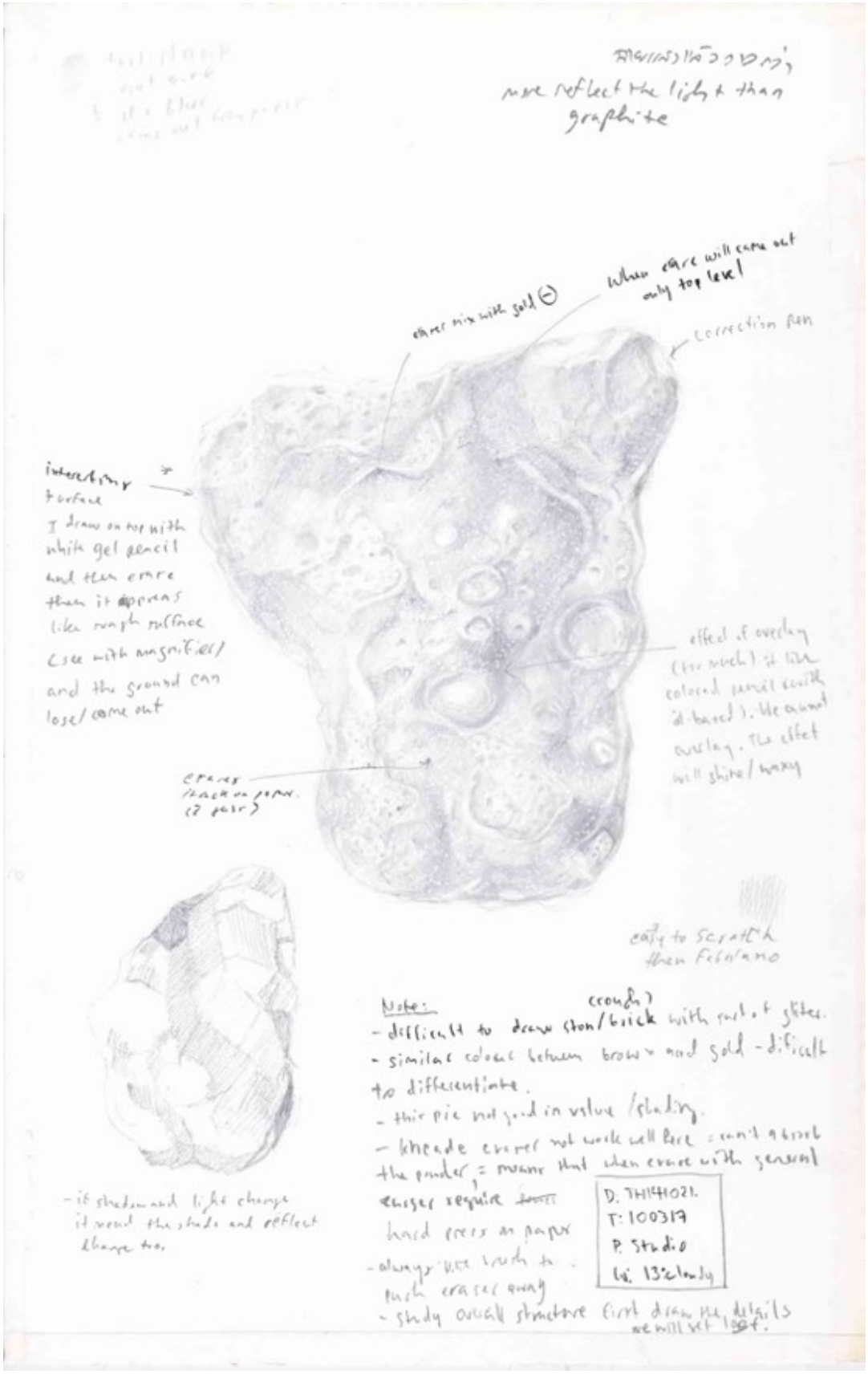


Figure 55: Example study of the golden sediment through drawing with a microscope.

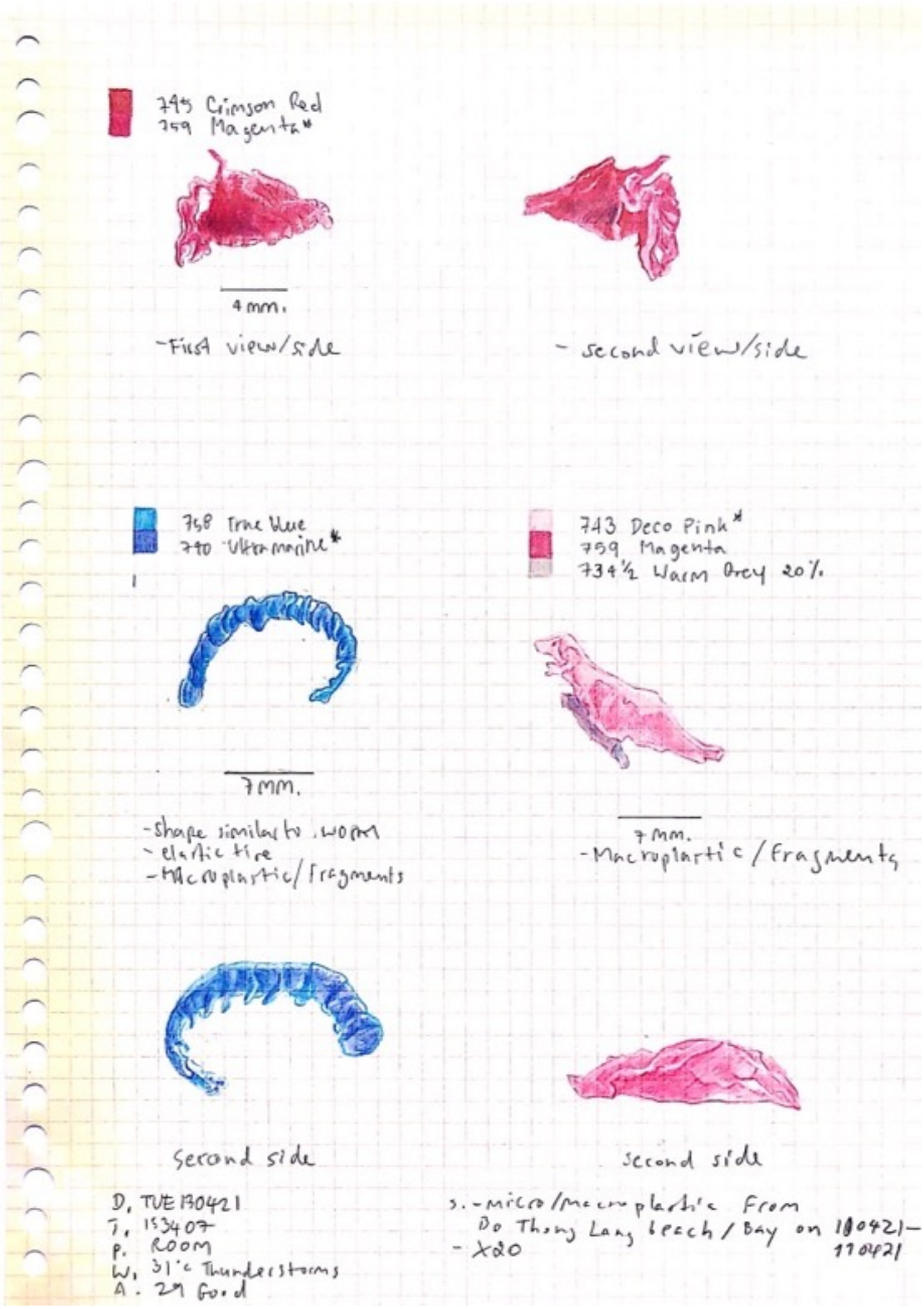


Figure 56: Drawing microplastics in studio with coloured pencils, 13 April 2021.

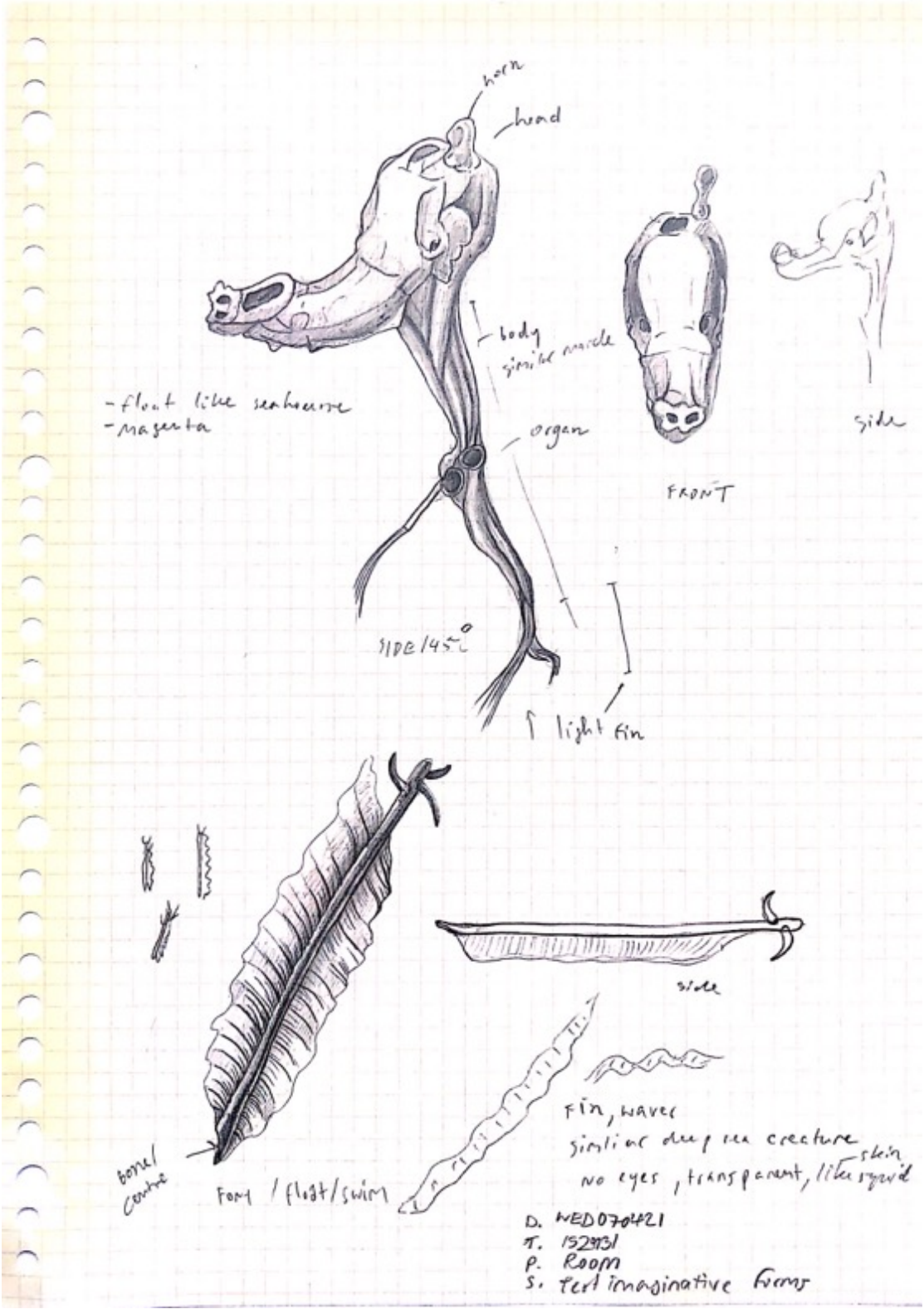


Figure 57: Drawing for examination of microplastics in the studio, 7 April 2021.

Figure 58: Drawing in studio with graphite on paper, 20 March 2021.

Figure 59: Drawing in studio with coloured pencils on paper, 20 March 2021.

During observational drawing in the studio (see Figure 55 and Appendix 5), the process also sparks ideas for the final artworks, especially in *RADALAB 6: Are They Organisms?* (see Chapter 4). While examining specimens through a microscope and with my eyes, I take time to analyse them and make careful decisions about details, forms, and shapes. Simultaneously, I compare the object with my drawing. I am consciously aware of my examination process. I make critical decisions about the object, my drawing, and the relationship between the two. I notice the forms of microplastics and interpret what I see in both imaginative and scientific ways. In Figures 56-57, I perceived microplastics as various marine creatures, such as a worm, a seahorse, a nudibranch or sea slug, a squid, a marine microorganism, and a deep-sea creature. However, I will again finalise the interpretation of the forms or characters in the following steps. I also experimented with the visual composition of found microplastics in various ways (Appendix 5). In Figures 58-59, I attempted to represent microplastics and mesoplastics from the Chao Phraya River by letting them flow in a plastic bag to create an abstract-like visual composition with graphite and coloured pencils on paper. However, these studio drawings while examining specimens could not merge scientific, imaginative, and mythic aspects, unlike in Figures 56-57. This process serves as a space for noticing and analysing primary data intersecting with my imaginative interpretation.

Alongside this project, I also applied the eco-fabulous drawing method with a different subject and visual composition. The three eco-fabulous drawings are about face masks entering the ocean by imagination as a new type of seaweed, named '*Chlorophace mascus* Lalin' and '*Facelassia mascus* Lalin' (see Appendix 3).

Get: Incubating the Idea

The fourth step is rich in sympoietic practice or integrating approaches. The drawing's content in the studio emerges from synthesising sources, including primary data (size, scale, materiality) and a visual examination of texture, colour,

and form. Then, through an initial sketch, I make the image and idea visible in the following step.

Firstly, I identify the connection between materials. The historical backgrounds of the locations are very important in creating a story. They help me immerse myself in the local context and make my drawing more attractive and accessible to those audiences. I interpret a famous local story through the lens of microplastics. Another approach I take is to interpret the characteristics of microplastics with my imagination, seeing them as something else. Then, I create a story in the form of a fable.

Fable-making inspires story-making in my drawing practice for several reasons. Fable is a tool for conveying and understanding the place we live. According to William R. Bascom, fables and folklores have value as 'a mirror of culture' because they are based on local knowledge (Bascom, 1954 p. 337-338), where we can learn our culture. This type of storytelling is also more understandable and engaging due to being tentative, less precise, informal, emotional and intimate (Maggio, 2014, p. 95, 103). This way, fable could make my drawings more attractive to larger audiences. Concurrently, contemporary ecological writers also return to fables to use in their writing (Schonbeck, 2019).

Fable offers many functions and values to support my artistic practice. A traditional fable is a short story that conveys morals and environmental problems to people through living things or objects with an ending lesson in the story. Most traditional fables or animal stories have animals as protagonists who can talk like humans. That means the fable is entirely anthropocentric. This characteristic enables me to shift my perspective from an anthropocentric to a more ecocentric one. The fable also allows me as the author-artist to take a more respectful approach to nature, as a French anthropologist and ethnologist Claude Levi-Strauss (1978) claims in *Myth and Meaning*, building on my Buddhist background and the concept of ecological eyes as proposed in *The Ecological Eye: Assembling*

an Ecocritical Art History by Andrew Patrizio (Patrizio, 2018) and developed in this thesis.

For example, the drawing installation *RADALAB 5: Is It Gold?* (see Chapter 4), I was inspired by both a fragment of golden material from Bo Thong Lang Bay and the legend of *Laplae Town*, which is a Buddhist mythology related to gold, human behaviour, and morals (see Chapter 4). Some people believe the story is from Phetchaburi province, next to the fieldwork site where I found the golden fragment. The tale of *RADALAB 5* is narrated through installation, including drawings, images, and texts (see the full story in Appendix 2), set separately in one space. In contrast, the series of drawings in *RADALAB 6: Are They Organisms?* (see Chapter 4), the visual story and text are synthesised within each drawing.

In another group of drawings, *RADALAB 6: Are They Organisms?*, I created a story based on the characteristics of microplastics in a sympoietic and imaginative way. I represent microplastics with something else, such as animals, minerals, and forms (see Chapter 4 and Appendix 2). These ambiguous images create confusion and tension between living things, objects, and microplastics. The image conveys the negative interconnectedness between humans and nonhumans. We are unknowingly threatening their lives with our consumerism.

Throughout the incubating, I noticed similar elements of fable and drawing, including structure, function, imaginative creativity, and scientific qualities in verbal or visual storytelling communication they both have. I connected my situated knowledge and research materials, which evolved into a new type of fable drawing. I call drawing 'eco-fabulous.' In my eco-fabulous drawings, the protagonists are nonhuman, the microplastics themselves. They would not play roles equal to humans but would give ecological and moral questions, thought, imaginative knowledge, and reflection of human behaviour to audiences. This fabulation is presented through concise conceptual meaning within drawing and text, as a traditional fable has an ending lesson, such as the works of Aesop.

While creating a story, I find an appropriate drawing technique. This technique should connect to the content to establish unity, as one of the elements in the principles of composition in art[19]. I also consider presentation and other components of the total artwork. For instance, working with gold-point reflects the ideas of value associated with precious metals such as gold.

To create the image, I apply the approach and conventions of scientific drawing. Scientific drawing or research drawing has different details of the creative process and specific conventions from the art field. For instance, artists may prioritise aesthetics, imagination, and expressing their emotions over the precision of identifying subjects with scientific names and scales. However, microplastics are a part of human artefacts. It relates to anthropology and archaeology. The project, then, focuses on image-making with archaeological drawing, which will make my drawing intense and serve as a communicational tool for scientific concepts (Hodges and Rondall, 2003, p. 3).

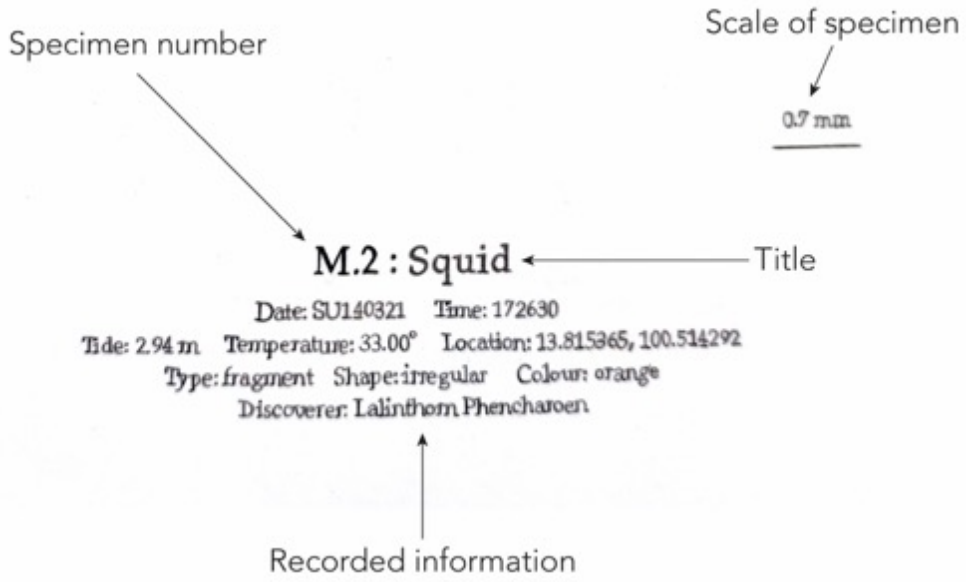


Figure 60: An example of labelling in a drawing work.

[19]The principles of composition in art encompass a blend of balance, movement, rhythm, emphasis, contrast, repetition, proportion, and sometimes unity, which refers to the overall harmony of a piece achieved by applying the other elements (Seymore, 2023).

Figure 61: Example of museum labelling
Royal Albert Memorial Museum and Art Gallery, Exeter.

As a tradition in scientific drawing, I focus primarily on accuracy, precision, clarity, and neatness[20] in finished artwork. My black-and-white drawings adhere to archaeological conventions. This colour is easy to reproduce (Morales, Loynd, and Hansen 2003, p. 466) and offers an ambiguous image of the subjects. I employ a rendering technique instead of stippling, as archaeologists depict grainy stones and bones (Morales, Loynd, and Hansen 2003, p. 466).

Although archaeological drawing has different techniques and conventions from other types of scientific drawing, it still uses some standard conventions of scientific drawing (Morales, Loynd and Hansen 2003, p. 466). For example, I arranged the light source in the upper left and displayed the identification of

[20]Neatness here refers to achieving clean lines, including the background, by using a kneaded eraser to lift excess lines, unintentional lines, and marks.

specimens on a plain white background. Other text elements are the metric scale of subjects and readable information with sentences or labelling (Figure 60) inspired by the presentation of museology (Figure 61), including date, time, tide, temperatures, location, classified category, shape, and colour of microplastics I found. All of these conventions appear in my eco-fabulous drawings.

At this stage, drawing is a means of making connections between the different sources of information, synthesising ideas and realising the direction of the next step. This could be another example of sympoietic art practice, under the definition of Donna Haraway.

Sketch: Conveying the Idea

The fifth stage involves creating a preliminary drawing. After completing a rough sketch of an idea for a drawing, I review and revise it through self-evaluation or by seeking peer feedback to ensure it aligns with the research objectives. There is no limit to the number of sketches. Still, I ultimately choose the most achievable one by considering the unity of visual composition, responding to the idea, and presenting an imaginative, scientific, ambiguous image. Then, I create a refined sketch by editing, reflecting, and revising it. I check the composition, size, scale, clarity, and sharpness of lines and details and remove any draft lines to produce a clear sketch. Once I have finalised the sketch, I scan and enlarge it to create the proper preliminary or scaled drawing by printing it to create the final drawing. Sometimes, I finalise the draft using Adobe Photoshop and Illustrator, as these programmes allow me to manipulate photos and work precisely with real-size artwork. Furthermore, I also plan the arrangement of objects in the installation but may rearrange or adjust them to fit with physical space and materials.

Create: Making a Complete Drawing

This step focuses on creating the final drawing and physically bringing the story to life with the gold-point stylus or lead, similar to the silverpoint drawing technique. This process has four main steps: transferring the initial drawing onto a prepared

piece of paper, rendering it, adding the text and scale, and finally reviewing all the details of the artwork.

Application of the gold-point technique

I use the gold-point technique for very particular conceptual reasons. The first reason is that I was inspired by a fragment of golden brick, which I collected from Bo Thong Lang Bay, in the *RADALAB 5: Is It Gold?* Gold-point is a metaphor for value and damage. It could be an eco-friendly technique due to producing less waste—one gold lead can draw a hundred pictures compared to a graphite pencil. The hardness of the gold-point provides fine lines and longer the retaining of sharpened tips (Schenck, 2015, p. 11). The technique enables a long-lasting picture. Moreover, the drawing will not change colour and tarnish through oxidation over a period of time (National Gallery of Art, 2015). Gold-point provides a greyish matt because of the gold-point's resistance to oxidation of metallic particles (Schenck, 2015, p. 11). This reaction makes the artwork more valuable and vulnerable. When a gold-point line is exposed to light, a picture will glisten with the meaning of the value of gold. However, the disadvantage is that a gold-point will provide less reflection than a silverpoint because it provides a lighter tone. In Figure 62, we can see the differences between the density of grey tones of shading from silver, gold, and yellow brass, even under the sunlight.

I decided to use this technique after experiments with graphite and coloured pencils. They cannot provide the same shiny metallic effect. Personally, drawing with a synthetic gold coloured pencil affects the image of the golden sediment. It looks uncomplicated and fake. Therefore, I decided to use the gold-point technique, which evoked more natural origins. It provides an ambiguous drawing material between graphite and gold-point drawing. It also has a long history that goes back to the master drawers of the Renaissance era.

In keeping with scientific methodology, I explicitly provide all the techniques and materials for creating eco-fabulous drawings with gold-point leads so that other artists or researchers can repeat and apply these in their own research.

Figure 62: Drawings depicting plastic debris with silver (left), gold (middle), and yellow brass (right) techniques.

Figure 63: Preparing paper for the gold-point drawing technique.

The following process is used to create the final artwork with the gold-point drawing technique:

1) Enlarge the original sketch to the desired size of the final piece.

2) Prepare the paper (Figure 63) by applying four layers of the Golden Silverpoint Drawing Ground, which is white liquid acrylic. Apply the primer from left to right for the first layer, then from top to bottom for the second layer. Continue this process until you have applied four layers because the gold powder will not stick to the surface with too many layered groundings. A thicker ground provides a smooth surface but has no paper tooth, which makes it difficult to scratch the paper.

3) Transfer the preliminary drawing onto the primed paper to minimise errors and maintain a clean appearance.

4) Use gold-point or gold lead to add varying levels of shading. The darkest shades, especially on the text, are applied using graphite. Blend the shading with a blending stump or tortillon, a rolled paper.

5) Include a title and scale on the drawing.

6) Remove any pencil marks with a Kneaded Eraser.

7) Reinforce the lines and darkness of the lines.

Figure 64: Drawing materials in this project.

The materials (Figure 64) to create gold-point drawings in this project include:

1) Hot Press Paper, which has a smooth surface suitable for drawing lines, 220 gsm and 440 gsm, off-white, and acid-free paper

2) Tracing paper for copying images, wrapping and storing work, and supporting hands during shading to prevent sweat from hands and moisture that can cause the paper to become mouldy and bend.

3) Handmade 99% pure gold lead by a German goldsmith with a rounded tip 0.5 mm diameter, which is the same size and proportion as a general drafting pencil lead, and the Roberson 9-carat gold wire with a sharp tip 1 mm diameter in 2-inch length,

4) Graphite, a non-water-soluble pencil, is used to copy sketches on paper into actual drawings. The most intense shading and rendering of the text are applied, and the graphite intensity is chosen at the HB level so that the intensity and texture of the graphite are not too different from those of the gold lead.

5) Silverpoint dual-end stylus and metal mechanic pencil to insert gold-point.

6) The Golden Silverpoint Drawing Ground offers a metal receptive ground.

7) Drawing board and paper clips.

8) Kneaded eraser to erase pencil marks from sketches. This eraser can be moulded into small sizes to erase along edges or small areas in the drawing. When used to erase pencil marks, it does not damage the paper surface or cause damage to the workpiece.

9) Blending stump to increase shading of gold-point.

10) Pencil sharpener.

11) Sharpening stone, nail file, and fine sandpaper to sharpen the tip of the gold-point and a blending stump.

12) Rabbit hair paintbrush or a synthetic plastic hairbrush to wipe dust and erase scrapes.

13) Rulers and drafting squares for measuring and cutting paper.

14) Paper cutter for sharpening pencils, cutting paper, and scraping away wrong gold lines on the paper.

15) Nitto or low-viscosity removable tape that can be removed without damaging the paper.

16) Magnifying glass to examine small details of the image, checking the sharpness and intensity of the gold lines and rendering.

17) White gloves to prevent sweat and oil on the hands from touching the paper while drawing, painting, and moving the work.

18) Forceps.

19) Digital microscope kit, composed of 20x/ magnifier/macro lens for a smartphone with 20x, USB light for examining microplastics, power bank and acrylic stand.

20) Mobile phone with high-quality lenses and microscope mode for microphotography.

21) Hair dryer to dry grounded paper in cold weather.

Share: Communicating with Others

This final step is preparing a presentation for the public. I survey the location to set up the artwork, take photographs, and measure the space. I then make setting sketches and adjust some artwork components to fit the space. Meanwhile, I prepare other presentation parts, such as framing, exhibiting, and publicising.

This step involves sharing the drawing and sending the pollution message to audiences. For example, the three drawings were selected to participate in the OPEN 2023, a local art exhibition at the Grundy Gallery in Blackpool (see Appendix 3).

In summary, this chapter has described the distinctive cross-disciplinary drawing method used in this research, which is an archetype for applying. The method is divided into two phases between on-site and studio practices and comprises seven steps, along with explicit examples, techniques and materials. Furthermore, I also described how and why integrating methods from different disciplines to create attractive drawings for marine microplastic pollution. The results of applying this method are in the next chapter.

4. Eco-Fabulous Drawings

This chapter documents two drawing installations resulting from the core research inquiries following the methods described in the previous chapter. The drawing practices used the contributed model and the method that others can apply. These two drawing sets are the project's primary practice-based research outcomes. I have coined this new approach to drawing: ‘eco-fabulous drawing’. I will now discuss these two bodies of drawing, developing new tools to be shared for research and communication on marine microplastic pollution.

RADALAB 5: Is It Gold?

RADALAB 5: Is It Gold? (Figure 65-67 and Appendix 2) is an example of an eco-fabulous drawing installation composed of a drawing, a label, sketches, photographs, and readymade objects: a microscope, a lamp, a table, a chair, microplastics, plastic wastes, books, a lab coat and scientific tools for examination.

Figure 65: Lalinthorn Phencharoen (2021) *RADALAB 5: Is It Gold?*

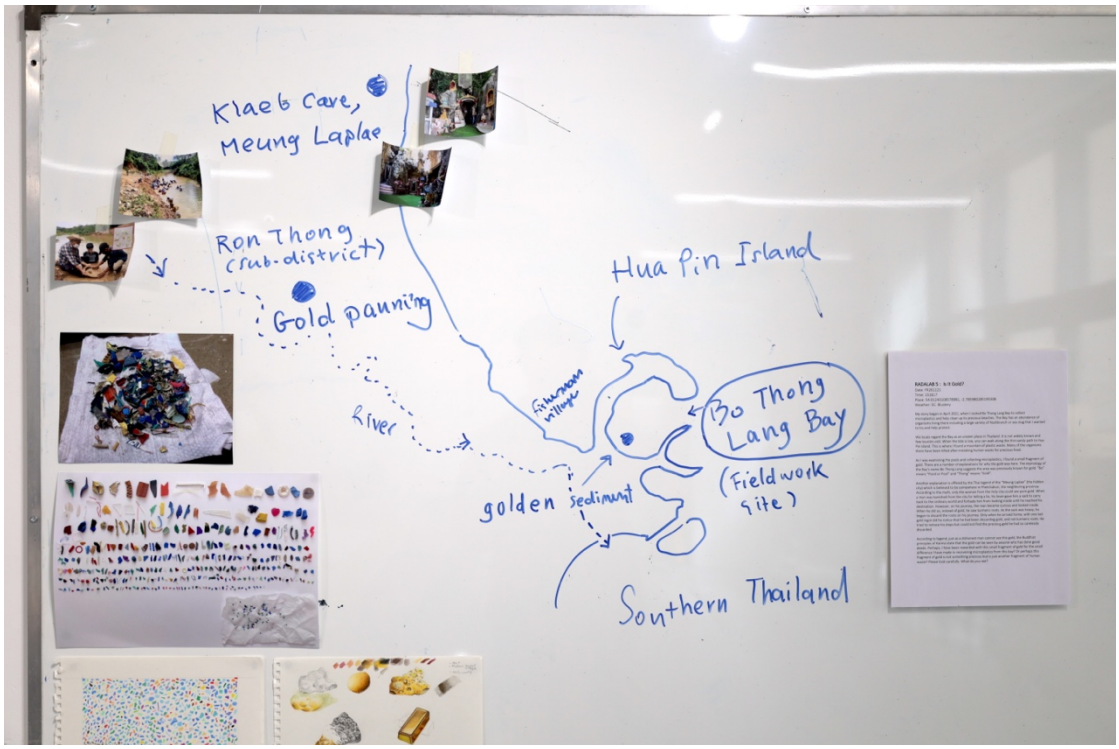


Figure 66: Lalinthorn Phencharoen (2021) *RADALAB 5: Is It Gold?* (detail). Dimension variable.

Figure 67: Lalinthorn Phencharoen (2021) *RADALAB 5: Is It Gold?* (detail). Dimension variable.

The installation presents information from interdisciplinary fieldwork, including site visits, collecting and examining organic and inorganic material, and subsequent creation in the studio of eco-fabulous drawings in a multimedia, layered manner under a fictional laboratory to raise environmental awareness. Furthermore, the project is a call to preserve Bo Thong Lang Bay and its cohabitants.

Figure 68: The golden specimen from Bo Thong Lang Bay.

The installation tells a story of finding a speck of gold, a fabulous metal, as the main component. It results from synthesising data from fieldwork with creative practice in the studio. Integrating fieldwork with the studio brought together the history, anecdotes, myths and physical facts surrounding the location where I collected a fragment of gold in the bay. This integration is an example of using the eco-fabulous drawing method, cross-disciplines between art, science, anthropology, and ecocriticism. We will look at this point in more detail in the following sections.

Three sources inform the project of information inform the project: gold's role in local myth and religion, the geography of the bay, and accepted ideas of gold's monetary value.

The first source was the gold specimen (Figure 68), collected at Bo Thong Lang Bay during fieldwork practice from 9 to 14 April 2021 (see Appendix 4). This period coincided with the Songkran, or Thai New Year festival (13 April, with the holiday extending from 14 to 15 April), in the summer season, which attracted many tourists. During this time, I made several drawings on-site while the tide was low (see Appendix 5). This tiny fragment became the main character in the story *Is It Gold?* (Appendix 2), which was selected from the 307 specimens found in the bay. Subsequently, the story became the information label wall text for the installation. This chance finding led to research on the bay's name, the Buddhist story, and the value of gold.

The bay's name derives from the tree. Local beliefs suggest that the bay was once surrounded by the Indian Coral Tree (Erythrina variegata Linn), known as Thong Lang in Thai. However, upon analysing each word, I found that 'Bo' means 'pound' and 'Thong' means 'gold'. Furthermore, the bay is next to the Ron Thong sub-district, where locals discovered pure natural gold through panning. This brings to mind a metaphor for the place of gold.

Figure 69: *Klab Cave*, at *Wat Bun Tawee (Wat Tumklaeb)*, Phetchaburi, Thailand.

The golden sediment also has ties to local myths, such as the legend of *Laplae Town*. This legend has varying details across different provinces of Thailand, but I specifically focus on the version from Phecthaburi province, which is located not far from the bay. The legend of *Laplae* serves as the main inspiration for my project. It revolves around the theme of honesty. The story involves a man from the town who is tested for his honesty using turmeric roots, which later turn into gold ingots. To gather more information, I conducted a field survey at Klab Cave (Figure 69) in Bun Tawee Temple (Wat Tumklaeb), a Buddhist temple in Thongchai, Phetchaburi, Thailand, which some locals believe to be the place where the story originated. This holy place reflects how much people believe in the story.

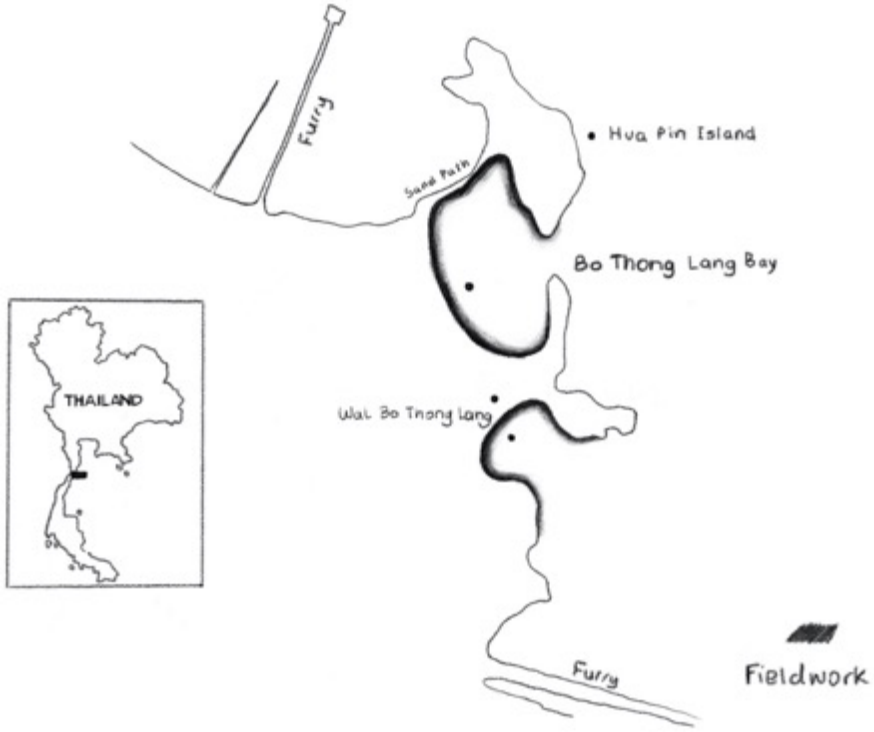


Figure 70: Fieldwork site at Bo Thong Lang Bay.

Figure 71: The waste at Hua Pin Island, Bo Thong Lang Bay.

Figure 72: Plastic waste under coral reefs in Bo Thong Lang Bay.

Figure 73: Local reaction while I was collecting microplastics.

The second source of inspiration is the bay itself—its physical characteristics, ecological condition, and inhabitants. My fieldwork included walking the bay, the tideline, and freediving over the reef. Canels from towns in this province flow to

the bay, which is cup-shaped and collects pollutants (Figure 70). The sand has plastic fragments, from large to small, and many microplastics (Figure 71). Underwater, the coral reef also traps plastic waste (Figure 72). Many animals ingest marine microplastic pollution. The bay was once home to many species of Nudibranchs, a signal species for healthy, nutrient-rich waters. However, their number is decreasing, indicating the ecosystem is under pressure.

The third source is the meaning of gold. When I was searching for microplastics on the sand, visitors looked at me and asked, 'What precious thing had you lost?' (Figure 73) This local reaction inspired me, considering how much people value ownership and possessions.

Figure 74: A drawing of golden sediment with gold-point.
Part of *RADALAB 5: Is It Gold?*

When I found the gold fragment, ideas of monetary value, microplastics, and ecological damage began to fuse. Gold, as an idea that could move across these different realms, became a character in the narrative. Moreover, using pure gold lead as a material for drawing would draw viewers into the theme and imagery of the artworks.

The golden sediment then becomes my main character, symbolising a universal concept of value. It acts as a narrative to engage viewers. As a result, their attention was heightened when I informed audiences that I used pure gold-point to create drawings (Figure 74) alongside the fabulous story next to the drawing, as they looked closely and discussed with me, such as how to make the gold lead, and how the colour will change.

All three sources become an eco-fabulous story about the gold and drawing technique in the installation. I created the extraordinary appearance of golden-coloured fragments by linking the specific sources. The existing resources made the story more reliable because they mixed scientific examination with imaginative practices. This is a helpful point to consider when we consider that not all news about microplastic pollution is entirely trustworthy.

Reflections on RADALAB 5

I present the drawings in a fictional laboratory (Figure 65), intending to suggest scientific methods and museum labelling. The title *RADALAB 5: Is It Gold?* also references lab work. It is a combination of words, 'Rada' comes from my full name 'Kulrada', and 'Lab' is an abbreviation of 'laboratory', followed by the number of my art creations, arranged in the fifth[21]. The role of the question mark is twofold: to draw the viewers to examine the drawing and specimens and to suggest that it

[21]The first installation is *INS 1: LALINLAB*, exhibited at Khoj International Artists' Association in New Delhi in 2015. Subsequently, *INS 2: LALINLAB* was presented at Doi Saket, Thailand, also in 2015; followed by *LALINLAB 3: Testicular Allegory (Why is beaver the great engineer?)* at L'OEIL de Poisson in Quebec in 2016; *and LALINLAB 4: The Fable of Braying, Chirping, and Sizzling Sounds*, at the Bangkok Art and Culture Centre (BACC) in Thailand in 2018.

might not be gold but something more damaging. All presentation tactics are designed to recognise and communicate the impact of microplastic pollution.

While the installation is open to various interpretations, it provokes audiences to examine personal values and balance their engagement with and behaviour in nature (represented by the fragment as microplastic) with their desire to see the monetary value (the fragment as pure gold). This provocation, juxtaposing two materials with contrasting symbolic values, points to areas of tension and difference, sparking ideas of interconnectedness. The possibility that the imagery represents both living and material things suggests that drawing can bring together relative and opposite values to create images of symbiosis and the effects of 'living with.'

Conceptual and fabulous moves to complicate the understanding of the specimen are paralleled by technical and material decisions in the drawing practice. With its enticing shimmer, gold-point imaginatively transports the viewer, prompting them to think the object is gold. However, the precise drawing language which picks out features similar to wounds and pustules and its semi-scientific presentation as a specimen together put desire and disappointment into tension and further communicate the environmental implications of pollution.

RADALAB 6: Are They Organisms?

RADALAB 6: Are They Organisms? (Figure 75-79 and Appendix 2) is a second drawing installation. It consists of 21 drawings created with the gold-point technique on paper between 2021 and 2024. The drawings respond to specimens found in the 30 fieldwork practices and 96 drawings in the studio and on-site at Chao Phraya River, Bo Thong Lang Bay, River Lune, Cleveleys and Rossall Beach (see Figures 80-81, Appendix 4 and 5) between 2021 and 2024, until I reach microplastics. This drawing installation draws inspiration from attentive observation during fieldwork and the examination of specimens in the studio.

Furthermore, this project represents the similarities of microplastic pollution situations in Thailand and the UK.

Figure 75: Lalinthorn Phencharoen (2021-2024) *RADALAB 6: Are They Organisms?* (right wall). Dimension variable.

Figure 76: Lalinthorn Phencharoen (2021-2024) *RADALAB 6: Are They Organisms?* (left wall). Dimension variable.

Figure 77: Lalinthorn Phencharoen (2021-2024), *RADALAB 6: Are They*

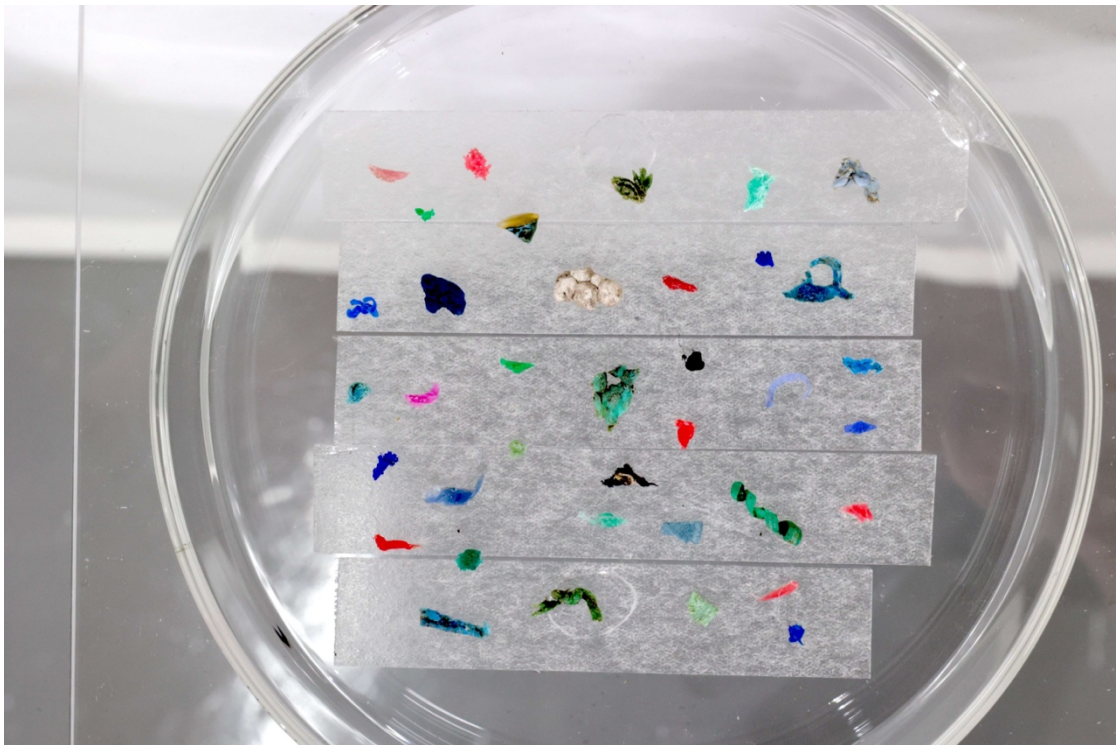


Figure 78: Lalinthorn Phencharoen (2021-2024) *RADALAB 6: Are They Organisms?* (detail). Dimension variable.

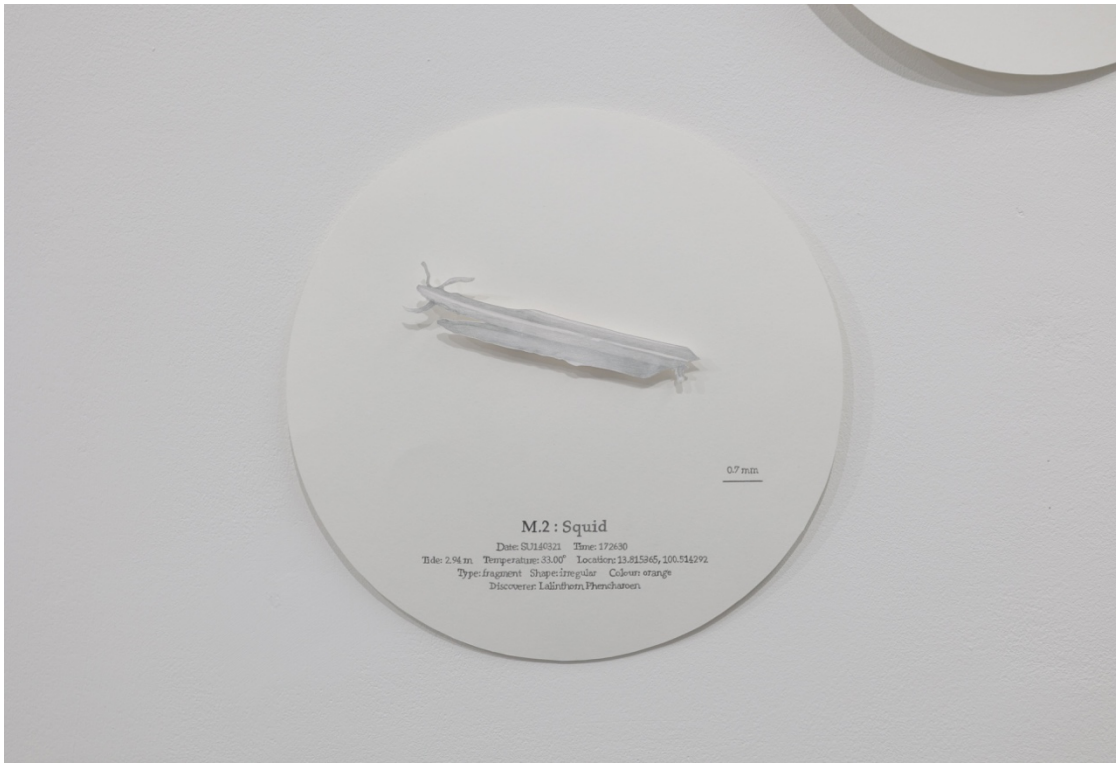


Figure 79: Lalinthorn Phencharoen (2021) *M.2: Squid*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Figure 80: Collecting microplastics at the River Lune Estuary, 25 October 2021.

Figure 81: Microplastics on Cleveleys Beach, 27 May 2022.

RADALAB 6 has created a virtual scientific archetype of hybrid microplastics, organisms, human and natural objects, as if simulating the emergence of new species. It illustrates the classification, articulation, and organisation of the archetypes, drawing inspiration from scientific illustrations and the human instinct for identifying and categorising (Weintraub, 2007, p. 22). The aim is to inform and raise awareness about this type of pollution. The collected microplastics are incorporated into specimens, and the drawings depict these tiny particles realistically on circular paper. The drawings give the impression of observing the microplastics through a magnifying glass or microscope, as they are not easily visible to the naked eye. Each specimen is assigned an imaginative name that contrasts with its actual identification, presenting a playful fabulation and wondrous aspect, while also provoking audiences to imagine the effect of microplastic pollution on the natural world. All of the drawings are interpreted as animals, objects, nature and plants. For instance, in *M.2: Squid*, 2021 (Figure 79), the microplastic is named *Squid* due to its tentacular form.

Another characteristic of the scientific archetype is evident in the lower portion of each drawing, where an informative label is included. This label provides factual details about the collection and its characteristics, such as the date, time, tide, temperatures, and location. I classified the specimens' categories, shapes, and colours according to the scientific criteria used to describe microplastics, as discussed in Chapter 2. Finally, I signed my name on the drawing as the specimen's discoverer rather than using an artist's conventional signature. This approach aligns the drawing with the conventions of scientific naming (Winston, 1999) and the authorship typically associated with a discoverer.

For example, in the drawing title *M.2: Squid*, 2021 (Figure 79), I identified and recorded information about a microplastic from the Chao Phraya River. In the title, the 'M' is an abbreviation of the word 'microplastic.' I identified it as a fragment type with an irregular shape and orange colour. I also recorded information about collecting this specimen, found on the 14th Sunday of March 2021 at 17:26:30, when the tide was high at 2.94 metres and the temperature was 33 degrees

Celsius. The location had GPS coordinates 13.815365, 100.514292, and the discoverer's name is Lalinthorn Phencharoen (see Chapter 3).

When I draw specific individual items of microplastics through my drawing, they will be presented in the installation as virtual archetypes of simultaneously microplastic pieces and imaginative objects or living things. Each drawing specimen represents the examining image I saw through a microscope and the precise identification of objects as part of a chain of links between imaginative and scientific drawing. I made microplastics explicit by enlarging their sizes around ten-fold. I drew rigorous details through a microscope to realistically present their characteristics. Drawings are also in black and white on a plain background. Meanwhile, the juxtaposition of black and white on abstract or unidentified creature forms creates tension in the audience's perception, resulting in an ambiguous interpretation between animals and microplastics. This is similar to how audiences see ambiguous figures of the Gestalt principles of perception (Interaction Design Foundation, 2016).

However, I finalised the drawing by transforming microplastics into something new and unexpected. This results from my imaginative interpretation of previous visual experiences shape our perception, seeing as something else. This interpretation might result from selecting unique specimens (see Chapter 3) and monochrome drawings that make ambiguous images to confuse the perception, alongside questioning our awareness of microplastics. As a result, it is a method to call attention from audiences by blending scientific and imaginative qualities.

Reflections on RADALAB 6

The drawings have multiple layered meanings. On the one hand, they suggest the agency of microplastics. They can also be seen as archetypes or interpreted as museum specimens and evidence. In *RADALAB 6*, viewers can see things that are usually invisible to the naked eye without using devices. This prompts viewers to

wonder about the existence of microplastics, opening up the world of microplastics to broader viewers.

Figure 82: Lalinthorn Phencharoen (2021) *M.5: Dugong*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper

My microplastic drawing uses sympoietic practice to make hybrid meanings. Firstly, they resemble a sample of living things threatened by microplastic pollution, such as squid (Figure 79), dugongs (Figure 82) and others. In contrast, marine microplastics are presented as metaphors for alienated organisms due to their unidentified characteristics (i.e. they look like they could be mutated organisms that have yet to be discovered). They remind us of the danger of human waste, which should not appear in the sea. Captain Charles Moor, who discovered the Great Pacific Garbage Patch in 1997, urges us to consider the danger of waste that acts as if it is a predator of the sea (Alaimo, 2016, p. 137-138). Furthermore,

this waste can have a transformative effect on the organisms in the ocean—mutations that might have occurred as species adapt to try to survive.

The fabulous microplastics become the characters of storytelling. I create them based on imagination and existing evidence. This practice is driven by turning research into informative and educational material. In other words, drawings present themselves as traditional fable but with scientific images instead. This practice might be similar to contemporary eco-fables, which are far from entertaining stories for children. Therefore, my eco-fabulous drawing plays a role in identifying one of the impacts of marine microplastic pollution.

My drawings are intentionally constructed to be open to interpretation. They have both positive and negative features. Alienated forms can provide a sense of danger, life and death, as Haraway claims, 'the liveliness and deadliness of figures might help strengthen ecological response-ability' (Haraway and Kenney, 2015, p. 231). However, this eco-fabulous drawing method intends to raise our motivation for responsibility rather than provide hopelessness for re-worlding that might make people ignore microplastic pollution. The drawings show the connection of shapes between man-made waste and species. As Stacy Alaimo suggests, to encourage marine concern, we should show interconnections between human and oceanic habitats and use the concept of 'Trans-corporeality' to explain this interconnect in the narratives, theories, paradigms, and practices. (2016, p. 112 and p. 122). Questioning and open interpretation are elements of creating attraction in my drawings.

With all the above, eco-fabulous drawings offer a helpful tool to address marine microplastic pollution. They incorporate scientific characteristics and imagination. The artworks could support each fieldwork site by being evidence of urgency and calling for an environmental response.

Outcomes

RADALAB 5: Is It Gold? and *RADALAB 6: Are They Organisms?* are research-based art pieces. I created them by integrating fact, evidence and imagination. Presenting through a multimedia installation enables me to create a fictional lab where 'eco-fabulous making' occurs.

Using the eco-fabulous drawing method blends characteristics or qualities of science and imagination in my artworks and prompts people to consider the relationship between facts and myths. The scientific qualities are apparent in the process and presentation of the installations and respond to the similarities and differences between art and science identified by Stephen Wilson (2002, p. 18, see Chapter 2). Firstly, they seek knowledge and understanding of marine microplastic pollution through fieldwork practice and scientific study in the studio. Examination of specimens provides a better understanding of their structure, texture, and dimensions. I can observe overlooked details and raise awareness of these. For example, I discovered that the 'golden sediment' is, in fact, simply a gold-coloured fragment of brick, so it is not a gold or microplastic. I also observed that most microplastics in Thailand and the UK are in geometrical shapes and plain colours, including blue, green, red, pink, purple, yellow, white, and black. Microplastics in both countries originate from floating trash from towns to the ocean and fishery activities. Waste management unquestionably needs improvement, a topic beyond the scope of this research. However, by employing the eco-fabulous drawing technique, we can unveil the microplastic world akin to how Robert Hooke revealed the microbial world in their studies.

The installations also have explanatory and narrative text as characteristics of science (Wilson, 2002, p. 18). Precise drawings adhere to scientific image-making conventions, which are an explanation tool for scientific discoveries. Drawings here become examined evidence, from observation details under a microscope to transferring accurate microplastic pieces onto paper alongside written text. The explicit evidence from the examination also corresponds to Michael Wilson's

opinion that we need provable evidence, a part of the paradigm of scientific knowledge, to create storytelling as a tool for sustainable thinking (Wilson, 2021). The text, drawings, and scientific objects are arranged logically and aesthetically to make the artwork more reliable and attractive to audiences. These presentations are similar to exhibiting specimens at museums and providing reliable information. Again, scientific objects and scientific drawings are not usually used in artistic practice. However, they give a sense of pseudoscience, resulting in an outcome that makes it difficult to distinguish between artwork and museum presentation.

The characteristics of fables are in the content of installations. They include mythic, moralistic, and fabulous. They both tell unique stories based on existing sources and specific locations. In this case, microplastics are used as fabulous and non-anthropocentric characters to convey a message presented in an open-ended format for reflection. With this, the eco-fabulous drawings serve as conceptual storytelling or a speculative future, unlike traditional fables that typically end with a concise moral lesson. However, they have slightly different methods of expression to attract audiences. The story in *RADALAB 5* is combined with the local myth. As a result, it has a more mythic, narrative and complex written story. Meanwhile, *RADALAB 6* is full of my imaginative stories about microplastics' characteristics, which are in each caption of the drawings. The eco-fabulous drawing method then can be a new way of fable-making with multimedia.

In *RADALAB 5* and *RADALAB* 6, I used fabulation to highlight the contrast between valuable and worthless objects and to connect life and death. However, the reflection also brings attention to the harmful effects of microplastics on marine animals, which seem to be overlooked and undervalued. By portraying the concept of alien life forms, some viewers may fear and begin to consider the impact of human waste on nonhuman creatures and how pollution affects their well-being. This reflection urges us to examine the complex relationship between human actions and the suffering of nonhuman beings.

In other words, the drawings contain ecological fabulation but are presented with scientific research methods. This means that the qualities of disciplines intersect, resulting in artistic expression in drawings rich with serious and playful senses. It is an approach to creating drawings on marine microplastic pollution that are appealing and accessible to audiences.

When audiences viewed these installations in the same exhibition, they were guided as if walking into a scientific laboratory. The installations were arranged to resemble real-life situations and led audiences through my research process, from the research background, collecting specimens, experimentation in the studio, where objects were laid out on the table alongside the installations and other artworks, and finally, the results. This navigation presentation provides knowledge to help audiences understand the artworks and the research project. Furthermore, I also open the wave sound to evoke the feeling of being at the sea. Some audiences reacted surprisingly when they discovered that the drawings were created by real gold lead and originated from microplastics found on their beaches, especially in *RADALAB 6*. Then, they started comparing drawings and microplastics. They also shared their imaginative visual perception or agreed with what I saw. Audiences also showed me that the drawings mainly depict marine creatures, reflecting my deep interest or affinity for them. Ultimately, most audiences had a positive reaction to *RADALAB 6*, indicating that it was more accessible and appealing than *RADALAB 5*.

In summary, the eco-fabulous drawing installations can be a creative tool to raise awareness about marine microplastic pollution and exemplify sympoietic practices. They are based on existing materials and result from the model method. By integrating methods and concepts from various disciplines—including art, science, anthropology, ecocriticism, and fable-making—the installations present visual and textual evidence that is explanatory, reliable, scientific, aesthetic, imaginative, non-anthropocentric, mythic, speculative, philosophical, and connectivity, and fabulating about marine microplastic pollution to educate and inspire action.

Moreover, multimedia enhances these thought-provoking and engaging artworks, blurring the lines between fact and myth. These installations promote environmental issues and encourage viewers to reimagine their relationship with the environment. Prompting questions and inspiring imaginative responses can help raise community awareness and foster a more responsible attitude toward plastic consumption and disposal.

This method of an eco-fabulous drawing is where my investigation offers an original contribution to knowledge. The linkage between fable and scientific pieces of knowledge could create an original story which communicates environmental issues to audiences in a playful way. The drawings encourage the viewer to pay attention and to be involved in interpreting the story in the drawings, especially in relation to the locations where the plastics were found. The combination of rich imagination and scientific data responds to the need for evidence and reliability of scientific knowledge to make us more concerned about the environmental crisis and the art tools for communicating it. In the final chapter, I will summarise the specific outcomes in more detail.

5. Discussion and Synthesis

The contents have been organised into four subheadings: drawing for ecological changes, drawing for art, and drawing for societies. I intend to present research describing how drawing can be employed and appreciated and how it can contribute to more extensive conversations about humanity's relationship with the natural world.

Drawing for Ecological Changes

One of the results of an eco-fabulous drawing practice is that it has the potential to expand our knowledge in various areas, particularly in marine microplastic pollution and ecocriticism. In this section, I focus on how my drawing can be a tool to physically and theoretically save our environment and how it can be a communication tool for microplastic pollution, benefiting societies to some extent. The second section covers how I incorporate the concept of ecocriticism into my drawing practice. The details on these topics are in the following sections.

A Communicational Drawing

The findings show that an eco-fabulous drawing has the potential to serve as a novel and compelling mode of communication about microplastic pollution in scientific, aesthetic, mythic and conceptual narrative ways. Two reasons support this claim. Firstly, the drawings uniquely blend scientific and imaginative qualities from fieldwork practice and examination. These scientific study methods provide empirical knowledge, making the drawings a source of evidence and information. The drawing method concerns gaining 'certainty' and 'reliability' in environmental communication, as proposed by Michael Wilson (2021). They can be a report presenting current environmental conditions akin to the works of artists such as Emma Stibbon, Sarah Casey, Harriet Tarlo, and Judith Tucker, who bring discoveries and share findings from remote areas to locations with audiences. By adopting and embracing this approach, it is possible to encourage individuals to address environmental problems effectively and thoughtfully.

Secondly, an eco-fabulous drawing method has the potential to effectively visualise and make explicit characteristics of microplastics uniquely and delicately. By using this method, drawings can serve as a representation of microplastics and assist in visual communication. The significance of this lies in that using drawings to depict this type of pollution is not a popular artistic approach. As demonstrated in Chapter 2, most artists present microplastics directly through photographs, as seen in the works of Max Liboiron and Mandy Barker. Therefore, introducing an eco-fabulous drawing fills this gap and calls for a new approach and inspiration to address environmental issues (Lassila and Tsing, 2017, p. 27; Tsing *et al.*, 2017, p. 12). While people widely use the photographic approach, we have become accustomed to it. We may overlook the severity of this pollution due to feeling overwhelmed and hopeless about finding a solution.

The point above raises the question of the value of drawing in the age of photography. One may wonder why we still use drawing techniques when we have access to high-quality photography. However, as others demonstrate, there are several advantages to using drawing techniques for both artists and audiences. Artists gain first-hand experience with their subjects and can discover new details that they may have overlooked otherwise (Hodges and Randall, 2003, p. 3). Correspondingly, Sarah Casey and Gerald Davies (2020, p. 208) have noted that drawing can complement other methods to comprehend information in a manner that cannot be achieved using technologies. Additionally, Michael Taussig (2011, p. xi) has argued that drawing on-site involves a process called 'the imaginative logic of discovery' blending of internal and external worlds. This capacity also correlates to Timothy Morton's idea (2021) that a critical element of ecological art is a matter of fact which arises from data and aesthetic experience through apprehension of subjects.

This point is highlighted in my example of *RADALAB 5,* which reveals the actual material of the golden specimen. Furthermore, it reveals a close relationship between imaginative projection and scientific examination. Not only that, but the drawings also provide a glimpse into the realities of marine microplastic pollution in our locations. Overall, I believe that drawing techniques offer unique benefits that cannot be replicated through photography alone.

Another way eco-friendly art can contribute to the environment is by inspiring ecological action. According to the Metro Council (2021), ecological action involves implementing environmental concepts to lead to environmental success. This research involves integrating ecological concepts into the artistic process, from gathering specimens during fieldwork to creating drawings. As a result, an eco-fabulous drawing presents a unique approach to promoting ecological action, aligning with the interdisciplinary *Feral Atlas* project curated by Anna Tsing and others in 2021.

The Extension of Ecocriticism

Now, I will turn to the ecological literature and explore how my findings extend our understanding of ecocriticism. My research has shed light on several crucial points, including the interdisciplinary approach towards innovative methods for environmental storytelling, and as an aid in thinking about the Anthropocene.

To begin with, eco-fabulous drawing can serve as a valuable link between art, science, anthropology, and ecocriticism. As Barry and Welstead (2017, p. 11) suggest, art can create a conducive space for interdisciplinary practice. Creating drawings with reliable knowledge across disciplines supports my practice of inspiring audiences to listen to ecological messages. Additionally, Tsing's perspective that art is crucial in creating interdisciplinary conversations further emphasises the significance of sharing knowledge across discipline boundaries (Lassila and Tsing, 2017, p. 27).

Eco-fabulous drawing hybrids create a sense of simultaneity, existing in two states of being: the imaginatively playful and the scientifically serious. This new method adds to emerging practices for environmental storytelling in impactful ways. This outcome also fulfills the demand for a new way of storytelling. For instance, Donna Haraway advocates for new interdisciplinary narratives for a better environment and worlding, as she says:

> If people start telling these kinds of stories around things that they care about—dogs, coral reefs, immigration, the problems of Israel-Palestine, the questions of permanent war in the Democratic Republic of Congo, or of desalination in Santa Cruz—if we really engage in storytelling as a sympoietic practice, which is propositional and invitational, then we have a chance for re-worlding (Haraway and Kenney, 2015, p. 235).

Another key outcome of the linkage is that it provides more roles for drawing practice as an aid of philosophical thinking. This is because it contains scientific methods and speculative fabulation and involves philosophical speculation. According to Alice Gibson, the fable has a significant role as an aid of philosophical thinking and has its genre called 'philosophical fable'. Furthermore, current philosophical fables play a crucial role in imagining other futures, which can awaken us to stop destroying the planet and extinction of other life forms (Gibson, 2020, p. 30, 215). This perspective enhances the drawing's role in raising environmental awareness.

As eco-fabulous drawing aids philosophical thinking, it can discuss Haraway's Anthropocene and Chthulucene. Haraway uses fables to critique this topic philosophically and explores human attributes in environmental crises through an anthropocentric figure named 'Chthulu'. However, the eco-fabulous drawing method takes a different approach by using an animal-object hybrid as the protagonist. This non-anthropocentric but ecocentric choice enables a better response to environmental crises in the Anthropocene era in terms of theory.

Furthermore, an eco-fabulous drawing serves as a critical form of visual folklore designed to address individuals and communities of humans and non-humans on the need for interconnection between them. It is a motivating tool for us to take steps towards safeguarding our planet. Contemporary ecological writings support my claim. As we can see, many of them are trying to encourage us to rebuild this connection in various book genres (see Chapter 2). They have used this connection to raise awareness about environmental responsibility by highlighting our relationship with other species. They remind us to rethink prioritising other lives on Earth. They reflect the human yearning for nature in contemporary times. My drawings and writings can be accounted for as social values' a mirror of culture', according to the explanation by William R. Bascom. Since folklores are literature based on their knowledge, they are a means to understand our culture (Bascom, 1954, p. 337-338).

Drawing for Art

Eco-fabulous drawing represents a cross-disciplinary practice that enhances our understanding of ecological art and contemporary drawing. It also makes an important contribution to the field of drawing and has the potential to inspire other artists to explore similar themes and techniques. I now elaborate on the implications for artists and theoretical dimensions and how to expand the drawing capacity below.

My research identified several limitations in the use of art forms and materials within contemporary ecological art, particularly in relation to microplastics, as discussed in Chapter 2. One notable gap is that Linda Weintraub's analysis of ecological art does not include drawings. Additionally, references to drawings related to microplastics are scarce. However, I have cited numerous ecological drawings from the early modern era to the present (see Chapter 2), which include a variety of scientific illustrations as well as contemporary drawings which are overlooked by Weintraub and demonstrate the importance and relevance of drawing in the context of ecological research.

Furthermore, the eco-fabulous drawing method that I have developed can integrate artistic strategies and marine microplastics into the discourse of ecological art. I have demonstrated how this approach can address these gaps, expand the definitions and boundaries of ecological art, and create new opportunities for research in this field by exploring innovations in materials, methods, and processes.

As mentioned earlier, the components of the eco-fabulous drawing method are a potential way to create drawings that strike a balance between science and myth. This method allows for a mixed sense of perception that can make the drawings more effective and attractive in raising awareness about marine microplastic pollution. The research of Rodolfo Maggio (2014, p. 94), who found that people tend to pay more attention to academic presentations delivered in a storytelling style, supports this approach—not dominating science over drawing practice

results in the unique characteristics of eco-fabulous drawing that differentiate it from the work of previous artists, such as Joan Jonas and Mark Dion. As a result, these distinctive drawings blend science, imagination, and aesthetics and can be used to raise environmental concerns.

The eco-fabulous drawing method also shows how the solo artist can integrate scientific methods into my work and create experience-based art pieces with an objective examination oblique to the imagination. This method challenges the perspective of Arthur I. Miller (2014, p. 226), an American scientist and author, who believes that art is simply a medium for conveying scientific information to the public. It can push the boundaries of what art can be and explore new ways to express themselves.

Eco-fabulous drawing is a means to connection, sympathy and symbiosis with nature, according to Cazeaux's crucial conditions for ecological art (Cazeaux, 2017, p. 149-150). I gained more insight into the environment through this drawing practice, especially the second step (see Chapter 3). The more I immerse myself in the practice, the more I connect and understand the crisis of microplastic pollution. I was overwhelmed when I saw the microplastics on Bo Thong Lang Bay and Rossall Beach. I felt sympathy and imagined the suffering of affected animals, leading to increased awareness of this pollution (see Appendix 4). Because drawing engages our non-verbal cognitive reasoning, producing comprehension from seeing and perception (Foxon, 2022, p. 32). This also reflects the drawing capacities, which are the means to connect us with nature, according to Ali Foxon (2022, p. 36), and how drawing engages marine microplastic pollution.

The claims above are supported by the two eco-fabulous drawing installations and within this dissertation. By highlighting the typically overlooked qualities of microplastic pollution, my drawings serve as valuable visual evidence that helps us better understand its impact and promote awareness of the crisis of this pollution.

Drawing for Societies

In this final part, I will explain the findings from the drawing process, especially in the second step, collect: gathering data. The outstanding unexpected findings can add more evidence about the factors of marine microplastic pollution. These findings are relevant and timeless, especially concerning, given the significant impact of microplastic pollution on our oceans and the delicate ecosystems that depend on them. Moving forward, it will be essential to continue exploring the factors in greater detail to better understand this critical environmental issue.

From Rivers to Ocean

According to 51 fieldwork practices and 96 drawings on-site and in the studio (see Appendix 4 and 5) in Thailand and the UK, I found factors of marine microplastic pollution in these locations by analysing these primary data, which were consistent with those of previous studies. For example, the research *Export of Plastic Debris by Rivers into the Sea* by Christian Schmidt, Tobias Krauth, and Stephan Wagner (2017, p. 12246) found that rivers are considered a significant source of global marine plastic pollution.

During my fieldwork, I observed that the Chao Phraya River has substantial floating plastic waste (Figure 83) and microplastic pieces. On the other hand, the River Lune Estuary has debris on the strandline along the riverbank, where I found microplastic sediments (Figure 84). Both rivers are connected to the sea, which increases the possibility of river-borne plastic ending up in the ocean. These observations reflect that the origin of microplastic pollution is primarily due to disposed wastes from urban areas and demonstrate that waste begins to break down before it reaches the ocean.

Figure 83: Floating debris in the Chao Phraya River, 15 February 2021

Figure 84: Debris on strandline at the River Lune Estuary, 20 March 2022.

Figure 85: A shoe under the sand at Bo Thong Lang Bay, 8 April 2021.

An additional finding is the characteristics of microplastic debris. As outlined in previous chapters, most of the microplastics I retrieved had geometrical shapes and were predominantly plain colours. The properties of the material and colouration can provide insight into their origin, such as household plastic waste, food packaging, and fishery equipment. Upon reviewing 30 out of 51 fieldworks in both countries, it became apparent that most river-borne garbage consists of single-use plastic items, such as water bottles, plastic bags, straws, and cutlery. The appearance of these items can also provide insights into how long they have been polluting our rivers and oceans. For instance, a shoe covered in shells indicates prolonged exposure to the elements (Figure 85). This finding highlights our tendency to disregard the impact of waste on our environment.

Waste Management

Field surveys of the project found that poor waste management is a significant issue in Thailand and the UK, especially in the rivers and beaches. Locals in

Bangkok often leave bin bags next to the canal Klong Bang Khen (Figure 86) and have an inefficient method of gathering the floating waste (Figure 87). At Bo Thong Lang Bay, they seem to have a shortage of proper bins, as piles of garbage can be seen on the shore, causing potential transportation of land-based litter to the aquatic world (Figure 88). Unfortunately, this problem was noticed during fieldwork in Lancashire, where new trash from leisure activities and burnt old trash were present on the shores (Figure 89). These traces reflect a lack of ecological responsibility for local communities. Surprisingly, in our advanced world, there is still an urgent requirement to develop effectively designed bins, sustainable waste management systems, and perhaps even laws to address this issue, as well as the call for this management in the works of Max Liboiron (see Chapter 2).

Figure 86: Bin bags along Klong Bang Khen, 12 February 2021.

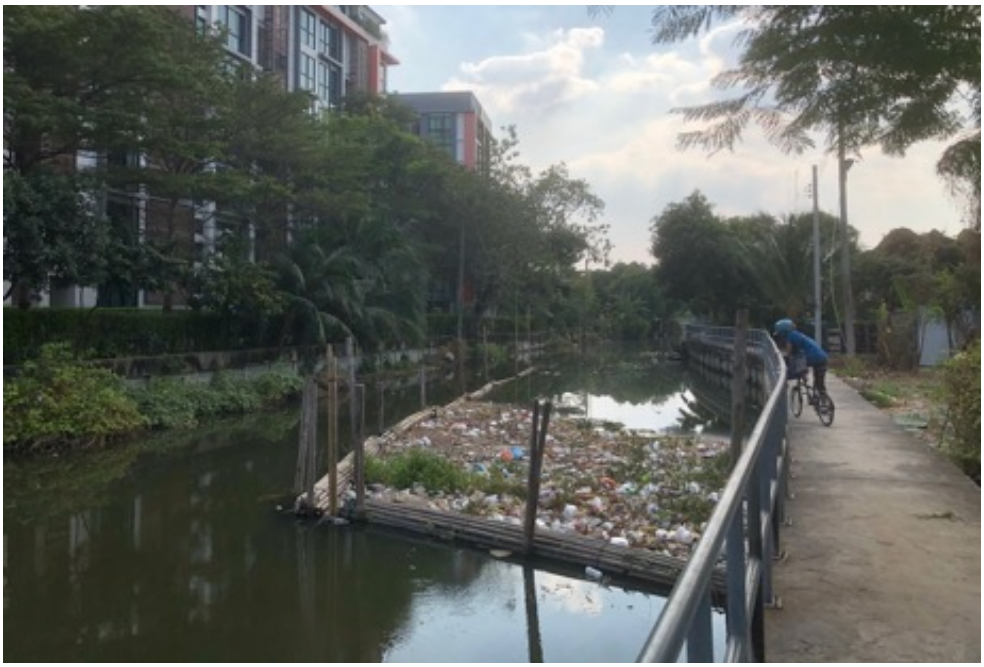


Figure 87: Trash in Klong Bang Khen,
12 February 2021.

Figure 88: Piles of waste at Bo Thong Lang Bay
9 April 2021

Figure 89: Trace of camping at the River Lune Estuary,
20 March 2022.

Sympoiesis

Eco-fabulous drawing might be seen as an application of what Haraway calls 'Sympoiesis'. In the literature review, 'Sympoiesis' is defined with a simple word as 'making-with' alongside a short following sentence. However, she further explains that adopting sympoietic practices is a way of embracing art, science, and worldings to coexist in a damaged natural world (Haraway, 2016, p. 67). According to her meaning, an eco-fabulous drawing method is a testament to this claim and can be seen as an example of 'sympoietic practice'. In this section, I will explain how this is so.

The sympoietic practice in an eco-fabulous drawing is a hybrid practice that merges disciplines to raise environmental awareness. In this case, 'sympoietic practice' refers to a synthesis approach. I combined knowledge from various fields with my own experience with microplastic pollution and my imagination to create the drawing. To be visible, synthesis or sympoietic practice can refer to an interdisciplinary approach where disciplines intersect. This approach allows my drawing practice to be a place for this connection through a solo researcher. Although the project has a limited timeframe and does not entirely follow the interdisciplinary ideal, it can still be developed further in future projects. However, I shared the comprehension results from integration with the public through a presentation, resulting in expanded fields to other contexts, accounting for responding to the calls from Haraway and ecocriticism, who urge us to 'making-with' for the environment (see Chapter 2).

One of the outcomes of the sympoietic practice is creating a non-anthropocentric form. I have created this form by considering the relationship between humans and non-humans, resulting in a scientific-imaginative interspecies, an animal-object hybrid form, in *RADALAB 6,* that represents this connection, and the characters are different from Donna Haraway's Chthulu. The form serves to inspire us to initiate a response to microplastic pollution for a more sustainable environment. Therefore, this form corresponds to the sympoiesis concept of

'making-with' with the two imply. One interpretation is to urge us to collaborate in response to pollution. Another interpretation is that the form reminds us of the effects of microplastic pollution, which affects not only humans but also non-humans. The dead animals, from ingesting microplastics, did not intend to hurt themselves, as Haraway (2016, p. 58) believes 'noting makes itself', but the human-made objects did. This approach is an interconnectedness—humans, nature, and objects interacting together—under this global crisis.

My practice of sympoiesis can help us better understand this concept. Haraway may not explain concrete applications of sympoiesis. To make it more accessible, I refer to the analysis *Similarities and Differences between Science and Art* by Stephen Wilson (2002, p. 18). An eco-fabulous drawing has qualities of both art and science. I created a drawing to explore the aesthetics, knowledge, and understanding of microplastic pollution. The picture incorporates emotional and rational elements and serves evocative visual and narrative text communication functions. The drawing represents my idiosyncratic ideas and forms based on rigorous and scrutinised practice. In terms of similarities between the two disciplines, my eco-fabulous drawing practice has values such as gathering information through careful observation and senses and creativity. It has proposed introducing a change in the awareness of microplastic pollution. This pollution affects the entire world. Likewise, art (myself) and science also aspire to create works relevant worldwide, as Stephen Wilson mentions in his book *Information Arts: Intersections of Art, Science, and Technology* (2002).

As noted earlier, my sympoietic practice involves merging the differences and similarities of art and science instead of treating them as separate entities. This approach has yielded significant results, such as creating a distinctive drawing technique for visualising marine microplastic pollution. This approach goes beyond Wilson's description, and the eco-fabulous drawing method becomes concrete evidence of sympoiesis, which will become more prevalent worldwide.

In summary, this chapter explores the eco-fabulous drawing method as a tool for understanding and communicating issues related to marine microplastic pollution. It highlights this practice's value, including its communicative potential as a visualisation of microplastics that balances imaginative playfulness with scientific seriousness. This approach meets the growing demand for innovative storytelling methods. Drawing offers unique advantages for investigation, allowing for firsthand experiences with subjects that reveal intricate details and a fusion of internal and external worlds, which photography alone cannot achieve. The research emphasises that this method underscores the importance of prioritising waste management.

Furthermore, the chapter extends the field of ecocriticism through the innovative practice of eco-fabulous drawing. This approach connects art, science, anthropology, ecocriticism, and fable-making, resulting in interdisciplinary links. It enhances ecological awareness and encourages audiences to engage with environmental messages through ecocentric imagery and narratives presented in drawings. The method also enriches anthropological and ecocritical studies by serving as visual folklore that addresses the interconnections between humans and non-humans, motivating action towards environmental stewardship.

The research identifies gaps in contemporary ecological art, particularly in drawing and microplastics. It suggests that eco-fabulous drawing can broaden artistic methodologies and inspire further exploration. Additionally, this method contributes to our understanding of the concept of sympoiesis by Donna Haraway. Incorporating speculative fabulation fosters philosophical thinking and enriches discussions surrounding environmental crises through non-anthropocentric narratives.

6. Conclusion

Discoveries and contributions to knowledge

This research developed a unique cross-disciplinary drawing method to raise awareness of marine microplastic pollution by combining concepts and methods from art, science, anthropology, ecocriticism, and fable-making. The study was developed using a methodology that emphasises practice as a means of research, highlighting that valuable knowledge can emerge from thoughtful reflection on practice and the connection between theory and practical application. This approach resulted in the development of drawing practices and a thesis that encapsulates these elements while integrating the findings from the inquiry. Two explorations were rooted in practice to gain insights into methodology through disciplines focusing on marine microplastic pollution.

Engaging with this research resulted in a robust eco-fabulous drawing approach. The method comprises seven steps:

1. Find: exploring recourses
2. Collect: gathering data
3. Look: examining the subject
4. Get: incubating the idea
5. Sketch: conveying the idea

6. Create: making a complete drawing
7. Share: communicating with others

The method has developed from specific methods and concepts involving my artistic and scientific experiences and interests. The core integration composts varied elements, which can be described as the creative process. The method began with exploring primary resources with analysis and synthesis study methods in theoretical and practical, alongside participation in workshops and ecological activities, followed by interdisciplinary fieldwork on selected locations in Thailand and the UK alongside scientific collecting microplastics to be subjects of drawing practice. Scientific examination of the specimens in the studio involved using a digital microscope, taking measurements for precise scales, observing through magnification for detail and accuracy, classifying the types of microplastics, based on scientific research of Valeria Hidalgo-Ruz et al. (2012), and recording information with sketching and note-taking. While examining, I used my imagination and interpretation of what I noticed through the microscope and primary resources from contextual review and fieldwork research with an ecological sensibility, focusing on connecting with humans and nonhumans. In this stage, it became an explanation of sympoietic practice. I then represented microplastics and my ideas with drawing techniques involving my experience in scientific drawing methods and conventions, along with considering the characteristics of fable. The research found that the drawings are non-anthropocentric images showing both positive and negative features to promote environmental awareness by linking humans and nature. Below is a reflection on the insights from this project in response to research questions.

Integrating methods and concepts responds to my first research question: What qualities from different disciplines can be incorporated into drawing practice to address environmental problems, particularly in marine microplastic pollution? This question draws on the explicit core elements to build my drawing method, and the expression results from using this method impact my drawing practices. The integration brought exploring, observing, imagination, interpretation,

conceptual narrative, rigorous examination, noticing, and sympoiesis into the delicate drawing practices. These elements provide distinctive expressions and values for eco-fabulous drawing, with reliable, scientific, information, aesthetic, imaginative, mythic, ecocentric, and philosophical qualities. In total, eco-fabulous drawing hybrids created a sense of simultaneity, existing in two states of being: the imaginatively playful and the scientifically serious in communicating the issue of marine microplastic pollution accessibly and attractively.

This research finding brought us to the second research question: How does eco-fabulous drawing, a cross-disciplinary drawing, serve as a multi-tool for marine microplastic pollution? The insights from the analysis and synthesis of the eco-fabulous drawing practice with theoretical context have supported the functions and values of eco-fabulous drawing as a multi-tool in various ways: communication, investigation, storytelling, philosophical thinking, and reflection on contemporary culture. The research has found that integrating different disciplines contributes to the role of visual narrative communication tools in explicitly identifying microplastics' characteristics that are challenging to recognise with the naked eye. The delicate and precise drawings with questioning can attract audiences with imaginatively playful and scientifically serious senses. This method can assist visual narrative text communication in raising awareness of this pollution. The eco-fabulous drawings serve as valuable visual evidence, helping us better understand their impact and promoting awareness of the crisis caused by this pollution.

The eco-fabulous drawing method has provided more insights into marine microplastic pollution. The number of 51 fieldwork practices have highlighted one of the causes of this pollution: river-borne garbage made up of single-use plastic items from urban areas that ultimately end up in the ocean. The plastic waste I found can indicate its period of penetrating the natural environment. Most of the microplastics in Thailand and the UK were in geometrical shapes and plain colours, including blue, green, red, pink, purple, yellow, white, and black. These shapes and colours of plastic particles assume their origins, such as plastic

bottles, lids, lighters, cups, toys, and product packages. The practice of *RADALAB 5: Is It Gold?* revealed the actual material of the golden specimen. This examination outcome has shown the challenge of distinguishing objects for non-humans and even humans. It also confirmed why some marine animals ingest plastic waste, as approximately 100,000 marine creatures die due to this pollution every year (Darrah, 2023). These findings have highlighted the role of the investigative tool of the eco-fabulous drawing method.

Eco-fabulous drawing practices involved characteristics of fable and fable-making. I presented marine microplastic pollution in a conceptual narrative way. *RADALAB 5: Is It Gold?* and *RADALAB 6: Are They Organisms?* came with questioned text similar to traditional fables that have a lesson at the end. According to William Bascom (1954, p. 337-338), folklore, including fables, is based on our knowledge and has cultural values, especially being a mirror of culture. Similarly, the eco-fabulous drawing practices resulted from research on the current situation of marine microplastic pollution in specific locations, reflecting the contemporary challenges of lives. Moreover, contemporary scholars and writers such as Donna Haraway and Rachel Carson use fables as a philosophical thinking tool for environments. The eco-fabulous drawings play the same role by presenting multimedia installations with hybrid forms, questioned texts and objects to encourage audiences to consider the effects of this pollution, leading to a distinctive way of ecological storytelling. These findings have shown that eco-fabulous drawing can serve as a multi-tool for this pollution so that others can apply the method to their needs.

The final research question was: What does an artist learn from marine microplastic pollution and cross-disciplinary practice—employing interdisciplinary fieldwork, recent ecological writing, ecocriticism, and storytelling? The results and benefits of this research are evident, as it has offered crucial perspectives on the application of drawing across various contexts and its relevance in other fields, particularly in ecological art, ecocriticism, and art-science. The two eco-fabulous drawing installations have demonstrated that

drawing practice serves more purposes than merely presenting visual aesthetics and depicting subjects. Eco-fabulous drawings revealed overlooked details and provided reliable information about microplastics stemming from rigorous and scrutinised research and practice.

The research has found that drawing is an underutilised medium for ecological artists in microplastics. They mostly use microplastics as artistic materials and present them directly with cataloguing and mimicry strategies. The research also has contributed crucial knowledge on ecological art by extending their practice's genres, strategies and eco issues. Drawing for marine microplastic pollution with sympoiesis has not yet been mentioned in the analysis of ecological art by Linda Weintraub. Eco-fabulous drawings with eco-friendly gold-point technique concerned with ecological preservation. Furthermore, the method set out to collect microplastics and other plastic waste on lands and rivers corresponds to ecological action, according to the definition by the Metro Council (2021).

The cross-disciplinary and practice-based research has responded to the calls for collaboration between art and science with ecocriticism as a bridge between these two cultures (Barry and Welstead, 2017, p. 11) and the calls for new stories in response to environmental problems that can encourage empathy and connect between humans and other life forms. The eco-fabulous drawing method took inspiration from theorists and researchers, including Claude Levi-Strauss, Donna Haraway, Anna Tsing, Timothy Clark, Stacy Alimo and Elena Blackmore, leading to concerns about ecocentrism drawing practices. The research has taken further sympoiesis into drawing practice, making this concept visible and practical. *RADALAB 6* presented scientific-imaginative interspecies characters from this concern. This presentation has offered different figures from the Chthulucene concept to respond to environmental crises during the Anthropocene. The drawing method also corresponds to the essential conditions of ecological art by Clive Cazeaux (2017, p. 149-150): to find harmony, sympathy, and symbiosis with nature. Since the method entangled existing marine microplastics on-site, I have gained authentic experience and become concerned with companion species'

values. This contribution of practice-based knowledge can be shared with others and built upon in future.

The limitation of the research

There were timeless, financial constraints, and requirements of pursuing a doctoral degree bound to this research project. The artistic practices in this project have reflected highlights and experiences in this field. While striving for an interdisciplinary approach, the study rooted in artistic and scientific backgrounds, even though I participated in ecological activities with the public sector regarding marine microplastic pollution. Engaging with the audience's perspective will be essential in the future to yield more rigorous results about the audience impact. This will ensure we create an effective drawing tool to tackle marine microplastic pollution. These factors have posed limitations on the outcomes and presentations of the research. The nature of doctoral research, which emphasises practice as a form of inquiry, has led to significant periods spent working independently.

The study necessitates further exploration of engaging with and enhancing the eco-fabulous drawing method within a broader framework. Allocating additional time and creating more opportunities for collaboration across various disciplines yield more significant insights. Nonetheless, the specific implications of this research are substantial for practitioners involved in drawing, ecological art, art-science, storytelling, anthropology, ecocriticism, and marine microplastic research using different methodological approaches. Ecological concepts in eco-buddhism, deep ecology, eco-ethics, and blue humanities, for instance, need to be engaged within a creative framework.

The implications of the research

This research has highlighted its cross-disciplinary nature, making it relevant to various professionals and academics focused on marine microplastic pollution. Artists concerned with environmental issues can apply the eco-fabulous drawing

methods to multiple topics alongside an ecocentric perspective. I used the eco-fabulous drawing method with marine plastic pollution during the pandemic while developing this method. The drawing works with plastic waste were exhibited at Grundy Gallery in Blackpool in 2023 (Appendix). Ecological writers may explore this approach to craft innovative storytelling, particularly by integrating interdisciplinary methods and multimedia that meld imaginative, scientific, and mythic elements. The research has suggested that employing concepts and methods from various disciplines allows for representing the issue without anthropocentrism. This finding has indicated that drawing practices can communicate the impact of marine microplastic pollution while balancing the values of humans and nature. Ecocriticism scholars can use this research as an example of how various disciplines intersect to produce unique artistic expressions in their studies.

The research's discovery that engaging in drawing has fostered a feeling of connection to the natural world could be advanced by individual artists and conservation and environmental science organisations. The drawing method has invited imaginative and scientific engagement with ecological subject matter for artists and audiences. The research has found that the method creates space for a connection between the artist and nature, especially in the creative process's second step (collect: gathering data) and third step (look: examing the subject), and feeling more empathy. I gained more insights into marine microplastic pollution through this method. Additionally, exploring and creating opportunities for the public to engage in the drawing method as ecological action can be a way to address particular ecological challenges that public organisations are looking to involve the general public.

Future work

This study has established a basis for future endeavours that can act as a means of environmental communication for artists and researchers in this areas. In the future, I intend to hold workshops and conduct research on implementing the

eco-fabulous drawing method, collecting participant feedback regarding the effectiveness and satisfaction of this method to develop robust evidence of raising environmental awareness. I aim to collaborate with other fields to tackle different ecological challenges. As an academic, I will emphasise cross-disciplinary drawing to cultivate and share this approach. Furthermore, I plan to use this method to build a community of art practitioners keen on addressing environmental crises.

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Appendix

In my thesis, I have included 5 Appendices to provide additional detailed explanations and evidence to support my research project. These appendices will further elucidate the various aspects of my study:

Appendix 1 Table 4: Summary of Existing Methods

Appendix 2 Two Eco-Fabulous Drawing Installations

Appendix 3 Other Drawing Works

Appendix 4 Fieldwork notes.

Appendix 5 Drawing on-sites

Appendix 1 Table 4 Summary of Existing Methods

Table 4: Summary of Existing Methods

	Scientific Method	Fieldwork Research	Scientific Drawing	Artistic Process	Observation-al Drawing	Creative Process	Fable-making process
Steps or Phrases	(1) Form a hypothesis	(1) Select a field site	(1) Requests information	(1) Inspiration	(1) Decide what to draw	(1) Preparation	(1) Decide on the moral of the tale
	(2) Make observations	(2) Enter the field and establish connections with members	(2) Records information	(2) Research ideas, methods, techniques	(2) Composition-al Gesture	(2) Incubation	(2) Define a conflict and plan a climax and resolution
	(3) Analyse and interpret the data	(3) Establish a role, observe, make friends	(3) Studies specimen	(3) Brainstorm and practice technique	(3) Introduce Value	(3) Illumination	(3) Choose a setting
	(4) Draw conclusions (hypothesis is false or partially true, refine hypothesis)	(4) Watch, listen, collect data	(4) Makes rough drawing	(4) Create		(4) Verification	(4) Choose the characters
	(5) Publish results	(5) Analyse data and generate working hypotheses	(5) Prepares scaled drawing	(5) Reflect and revise			(5) Write, edit, proofread, submit

Table 4: Summary of Existing Methods (continue)

	Scientific method	Fieldwork research	Scientific drawing process	Artistic process	Observation-al Drawing	Creative process	Fable-making process
Steps or Phrases		(6) Focus on aspects of interest, connect with theory	(6) Makes detailed preliminary drawing	(6) Present			
		(7) Conduct interviews, focus groups, or other targeted data collection techniques	7) Corrects preliminary drawing (after approved by scientist or client)				
		(8) Disengage and leave the setting	(8) Produces rendering				
		(9) Complete your analysis and write your report	(9) Labels drawing (after checked by scientist or client)				
			(10) Return specimen				
Process	Linear with some iteration[22]	Linear with some iteration	Linear with some iteration	Linear with some iteration	Linear	Circuitous[23]	Linear with some iteration
Creativity Applied	Steps (2) (3) (4) and (5)	Steps (1) (2) (4) (5) (6) and (9)	Steps (2) (3) (4) (5) (6) (8) and (9)	Steps (1) (2) (3) (4) (5) and (6)	Steps (1) (2) and (3)	Phrases (1) (2) (3) and (4)	Steps (1) (2) (3) (4) and (5)

[22]Jakob Bruhl and Win Bruhl (2020).
[23]Ibid.8

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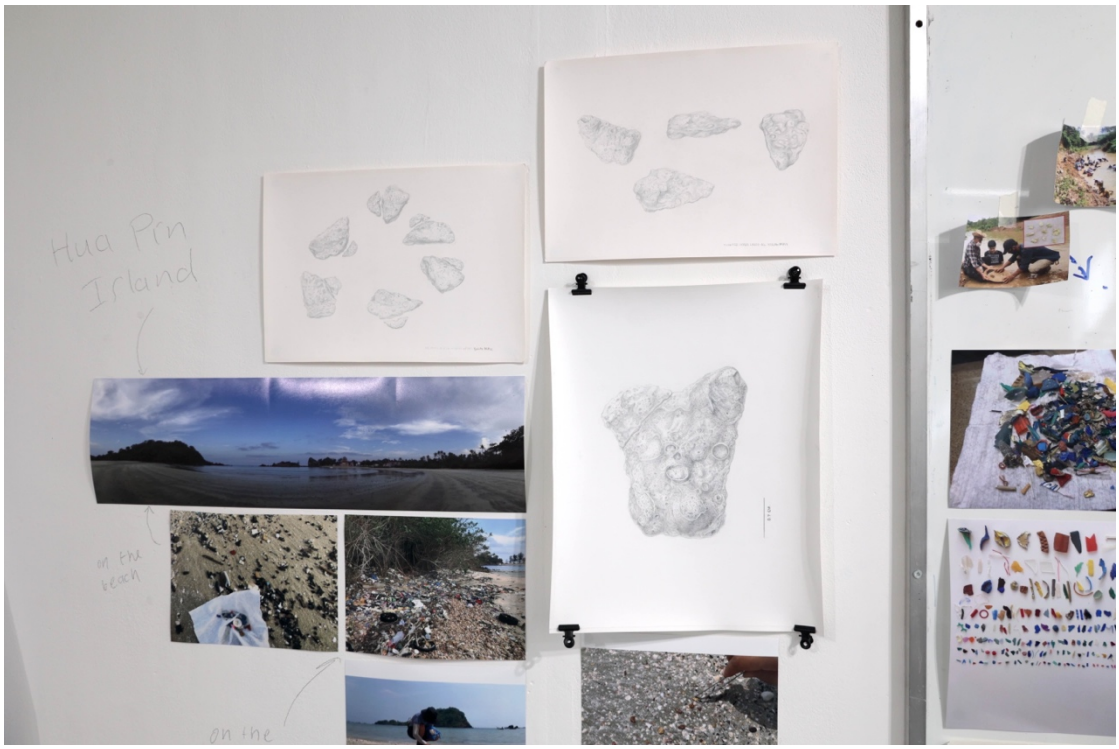
Appendix 2 Two Eco-Fabulous Drawing Installations

This appendix comprises details of the two eco-fabulous drawing installations: *RADALAB 5 Is It Gold?* and *RADALAB 6 Are They Organisms?*, as well as in the following appendix. These installations were developed at LICA PhD Studio and exhibited at the Bowland North Building.

Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?*
Dimension variable.

Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?*

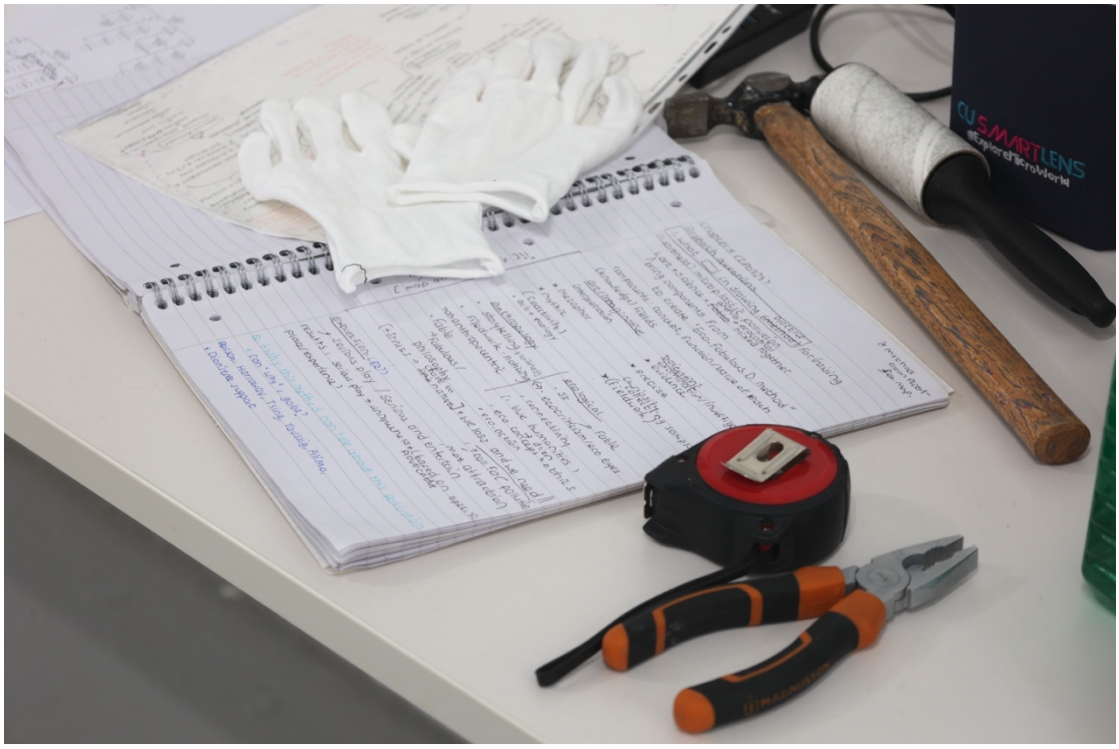
Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?*



Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?* (detail). Dimension variable.

Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?* (detail). Dimension variable.

Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?* (detail). Dimension variable.



Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?* (detail). Dimension variable.

Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?* (detail). Dimension variable.

RADALAB 5 : Is It Gold?

Date: FR261121
Time: 151617
Place: 54.01243108578981, -2.785980285195308
Weather: 5C. Blustery

My story began in April 2021, when I visited Bo Thong Lang Bay to collect microplastics and help clean up its precious beaches. The Bay has an abundance of organisms living there including a large variety of Nudibranch or sea slug that I wanted to try and help protect.

We locals regard the Bay as an unseen place in Thailand. It is not widely known and few tourists visit. When the tide is low, you can walk along the thin sandy path to Hua Pin Island. This is where I found a mountain of plastic waste. Many of the organisms there have been killed after mistaking human waste for precious food.

As I was examining the pools and collecting microplastics, I found a small fragment of gold. There are a number of explanations for why the gold was here. The etymology of the Bay's name *Bo Thong Lang* suggests the area was previously known for gold. "Bo" means "Pond or Pool" and "Thong" means "Gold".

Another explanation is offered by the Thai legend of the "Meung Laplae" (the hidden city) which is believed to be somewhere in Phetchaburi, the neighboring province. According to the myth, only the woman from the Holy city could see pure gold. When a man was banished from the city for telling a lie, his lover gave him a sack to carry back to the ordinary world and forbade him from looking inside until he reached his destination. However, on his journey, the man became curious and looked inside. When he did so, instead of gold, he saw turmeric roots. As the sack was heavy, he began to discard the roots on his journey. Only when he arrived home, with one last gold ingot did he notice that he had been discarding gold, and not turmeric roots. He tried to retrace his steps but could not find the precious gold he had so carelessly discarded.

According to legend, just as a dishonest man cannot see this gold, the Buddhist principles of Karma state that the gold can be seen by anyone who has done good deeds. Perhaps, I have been rewarded with this small fragment of gold for the small difference I have made in recovering microplastics from this bay? Or perhaps this fragment of gold is not something precious but is just another fragment of human waste? Please look carefully. What do *you* see?

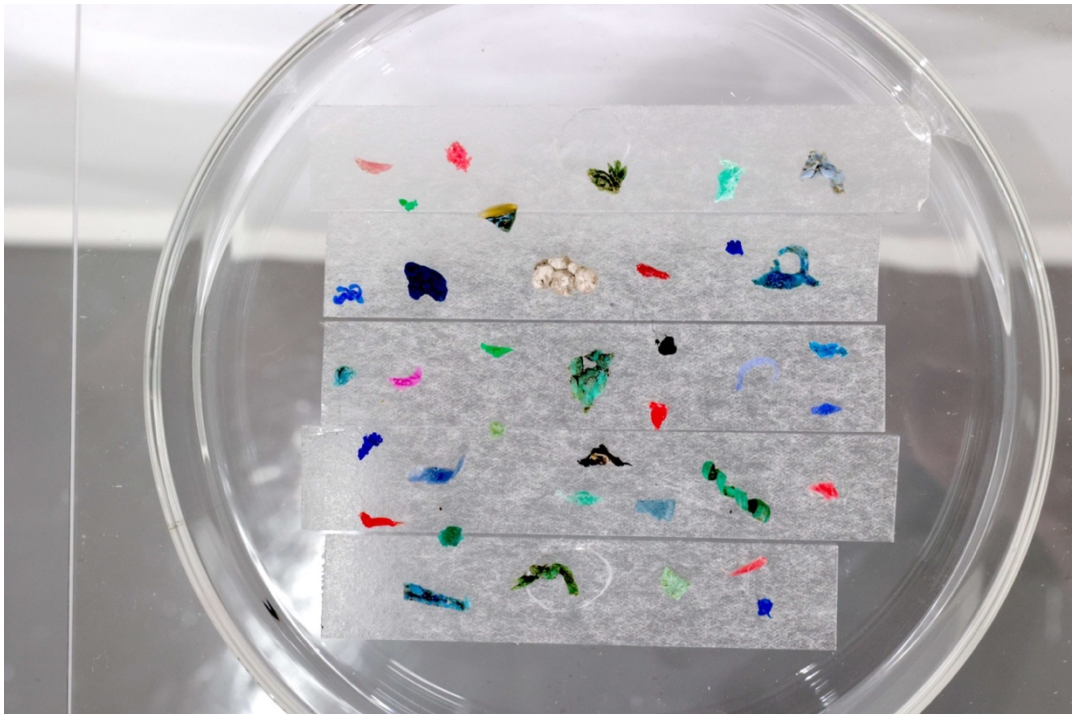
Lalinthorn Phencharoen (2021), *RADALAB 5: Is It Gold?* (detail)
Dimension variable.

Lalinthorn Phencharoen (2021-2024), *RADALAB 6: Are They Organisms?*

Lalinthorn Phencharoen (2021-2024), *RADALAB 6: Are They Organisms?*

Lalinthorn Phencharoen (2021-2024), *RADALAB 6: Are They Organisms?*

Lalinthorn Phencharoen (2021-2024), *RADALAB 6: Are They Organisms?* (left wall). Dimension variable.

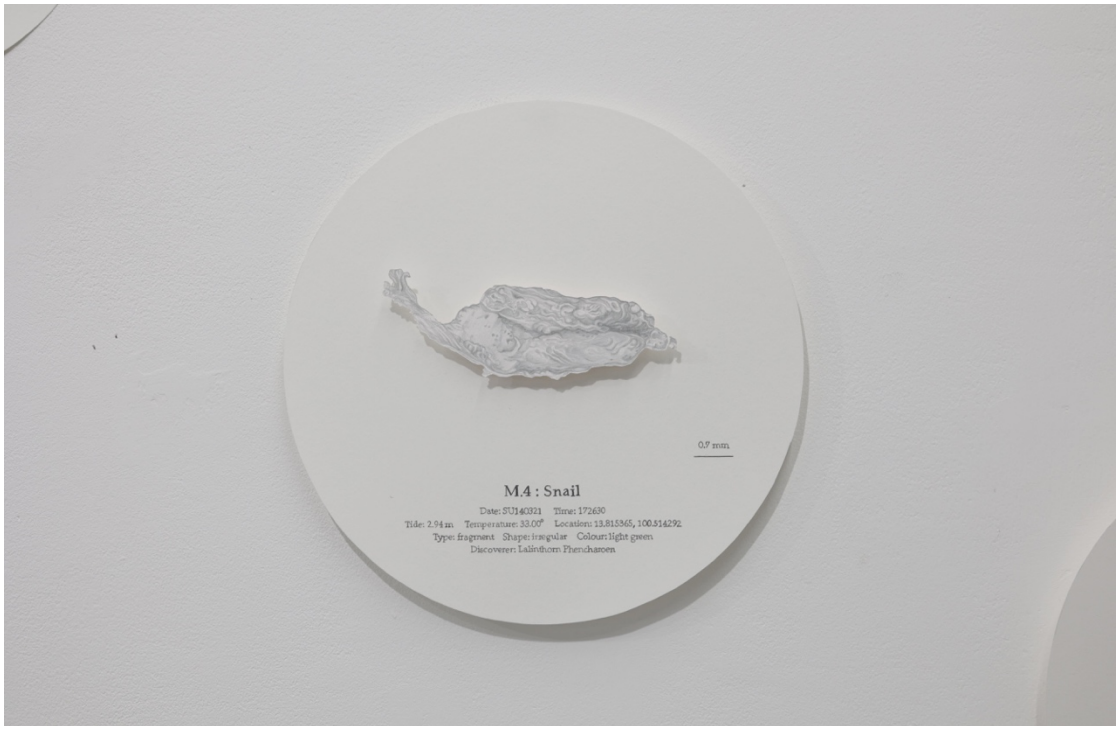


Lalinthorn Phenchareoen (2021-2024), *RADALAB 6: Are They Organisms?* (detail).

Lalinthorn Phencharoen (2021), *M.1: Umbilical*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2021), *M.2: Squid*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

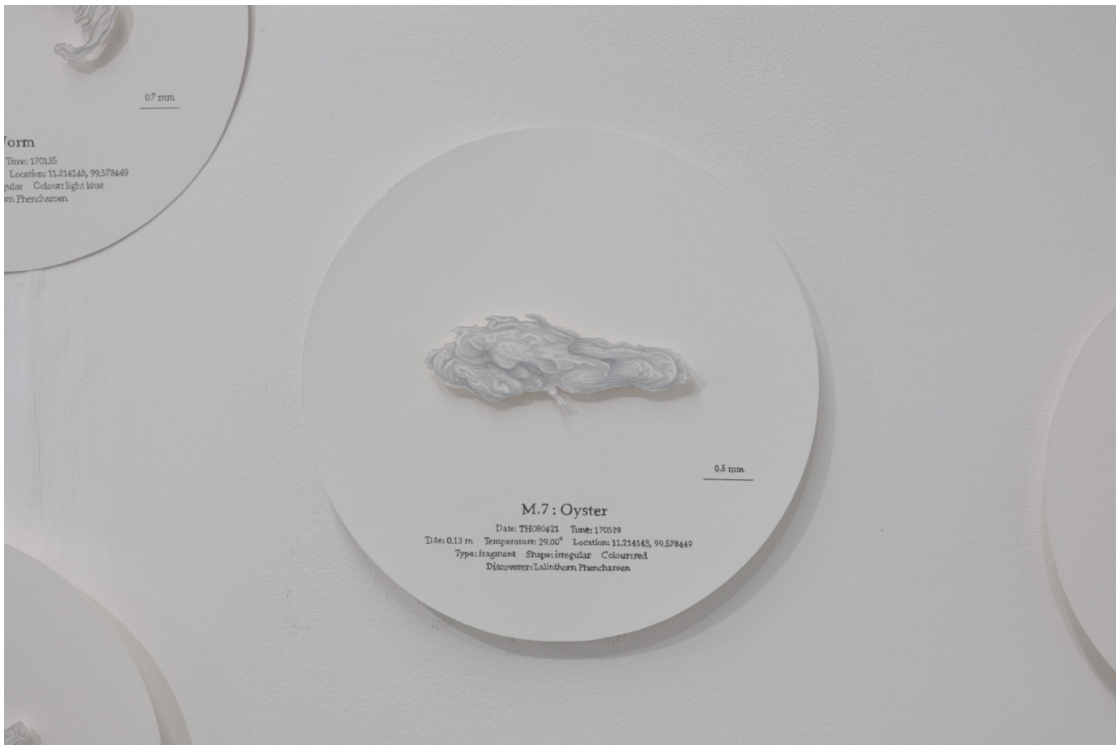
Lalinthorn Phencharoen (2021), *M.3: Crystal*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.



Lalinthorn Phencharoen (2021), *M.4: Snail*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2021), *M.5: Dugong*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2021), *M.6: Worm*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.



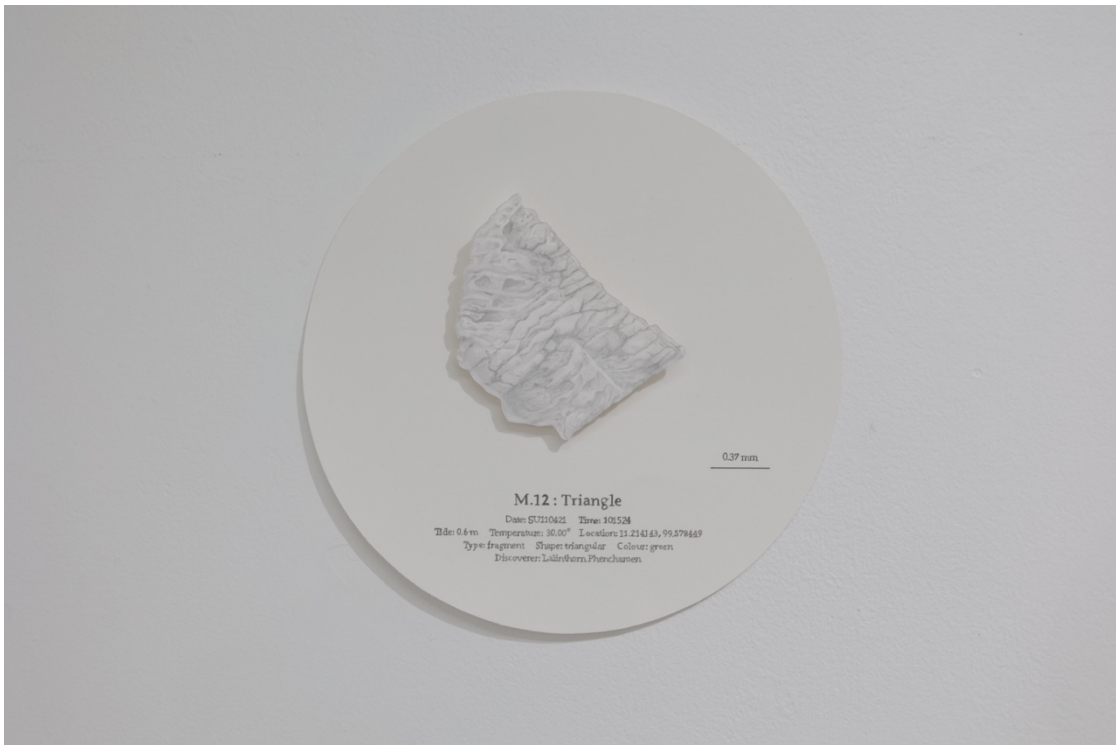
Lalinthorn Phencharoen (2021), *M.7: Oyster*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2021), *M.8: Dove*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2021), *M.9: Broccoli*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2021), *M.10: Gold*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

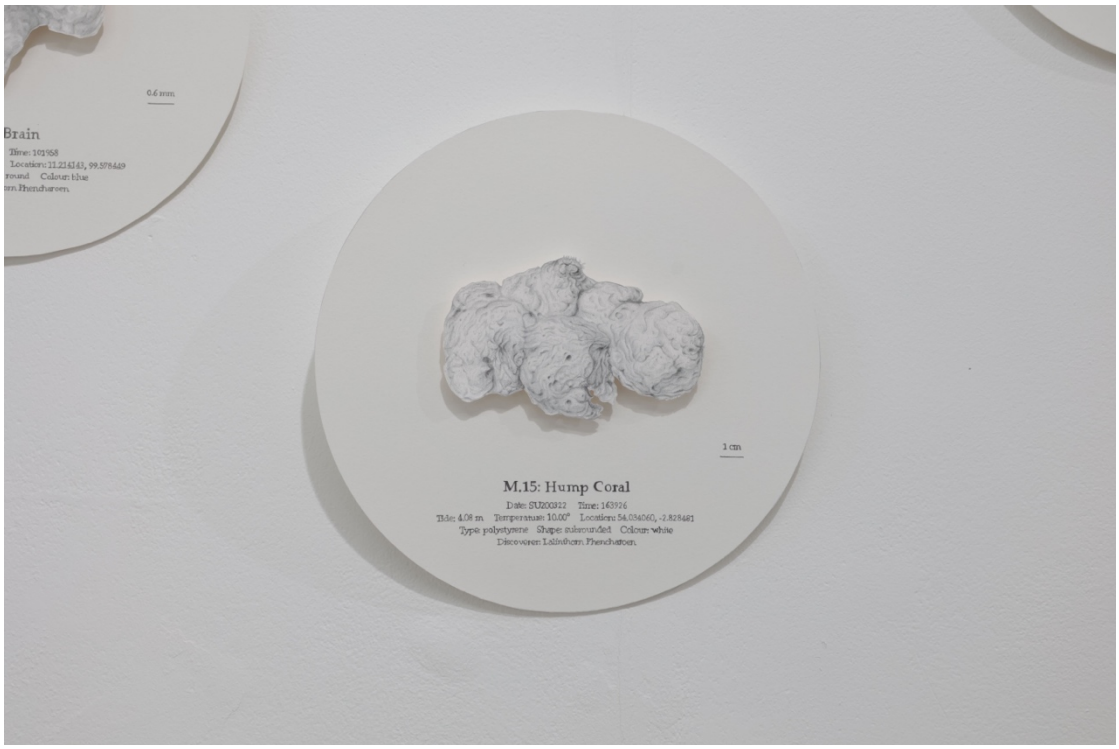
Lalinthorn Phencharoen (2021), *M.11: Penguin*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.



Lalinthorn Phencharoen (2021), *M.12: Triangle*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

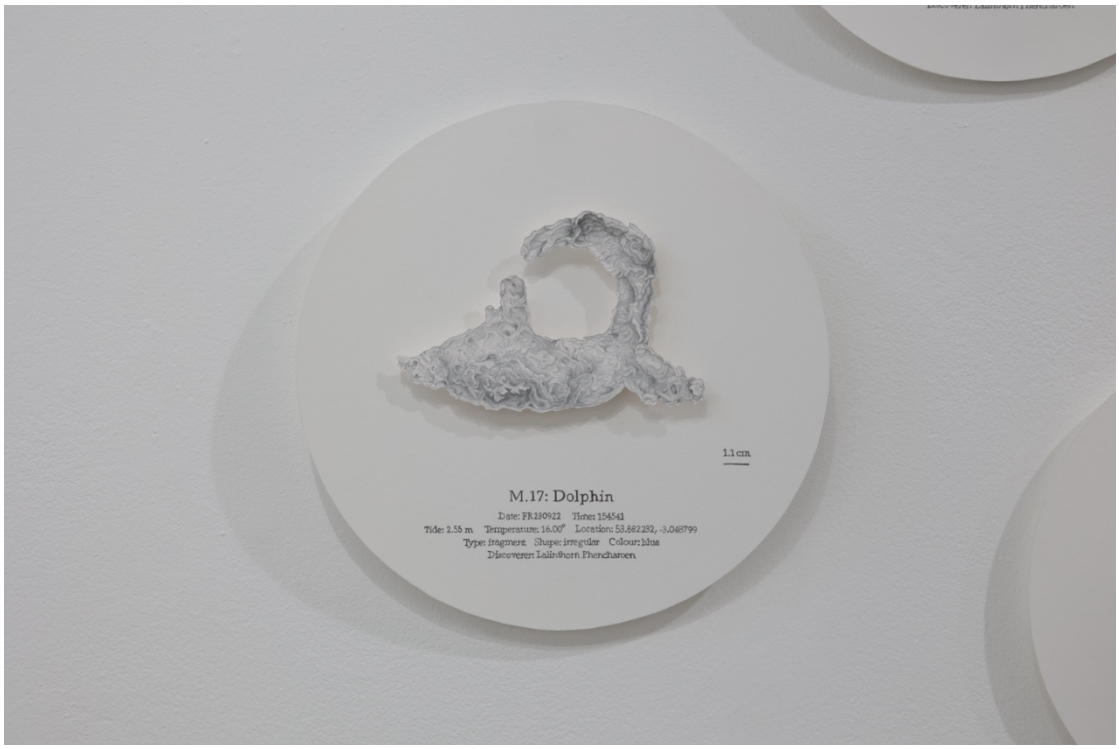
Lalinthorn Phencharoen (2021), *M.13: Fluff*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2021), *M.14: Brian*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.



Lalinthorn Phencharoen (2022), *M.15: Hump Coral*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

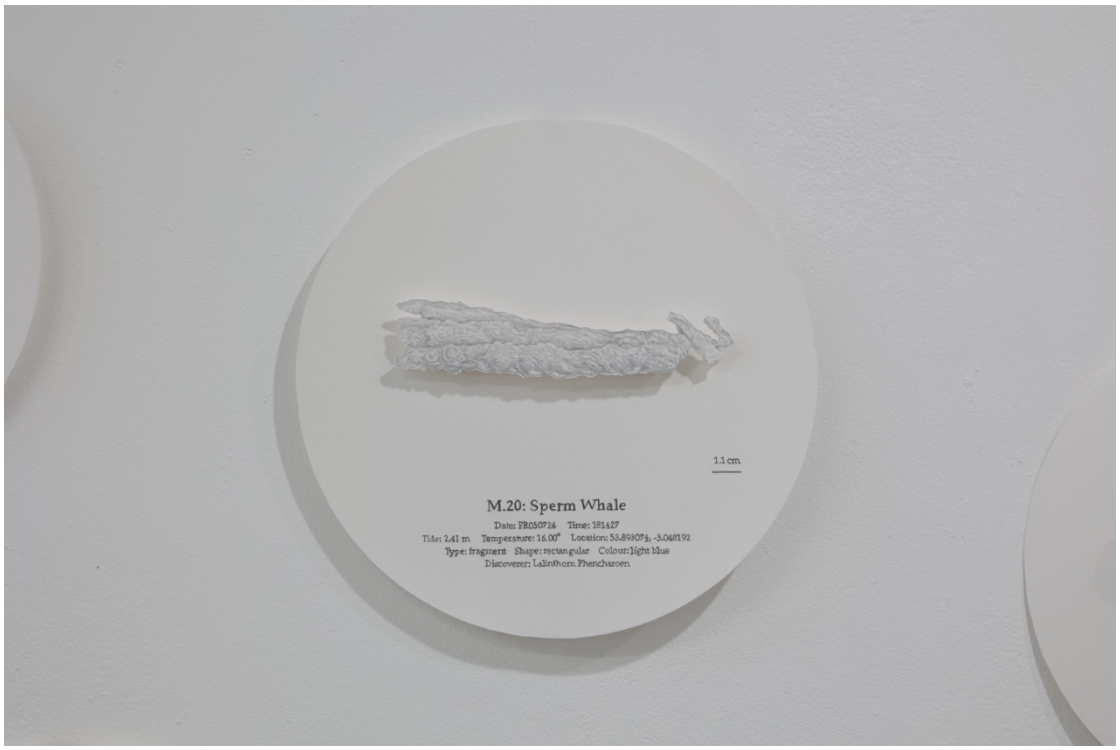
Lalinthorn Phencharoen (2022), *M.16: Heart*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.



Lalinthorn Phencharoen (2022), *M.17: Dolphin*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2022), *M.18: Crab*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2024), *M.19: Bowmouth Guitarfish*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

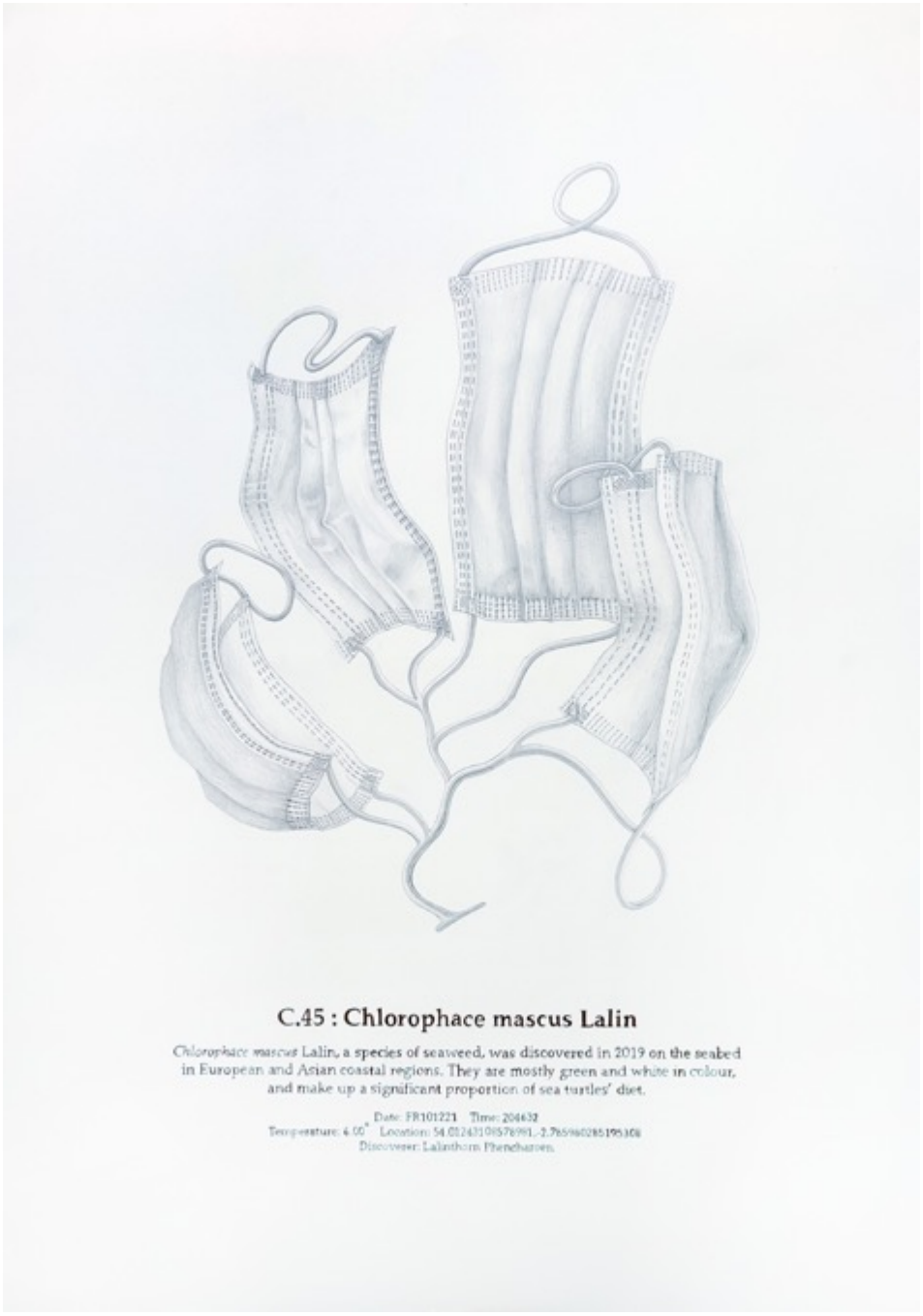


Lalinthorn Phencharoen (2024), *M.20: Sperm Whale*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

Lalinthorn Phencharoen (2024), *M.21: Giant Trevally*.
Part of *RADALAB 6: Are They Organisms?* Gold-point and graphite on paper.

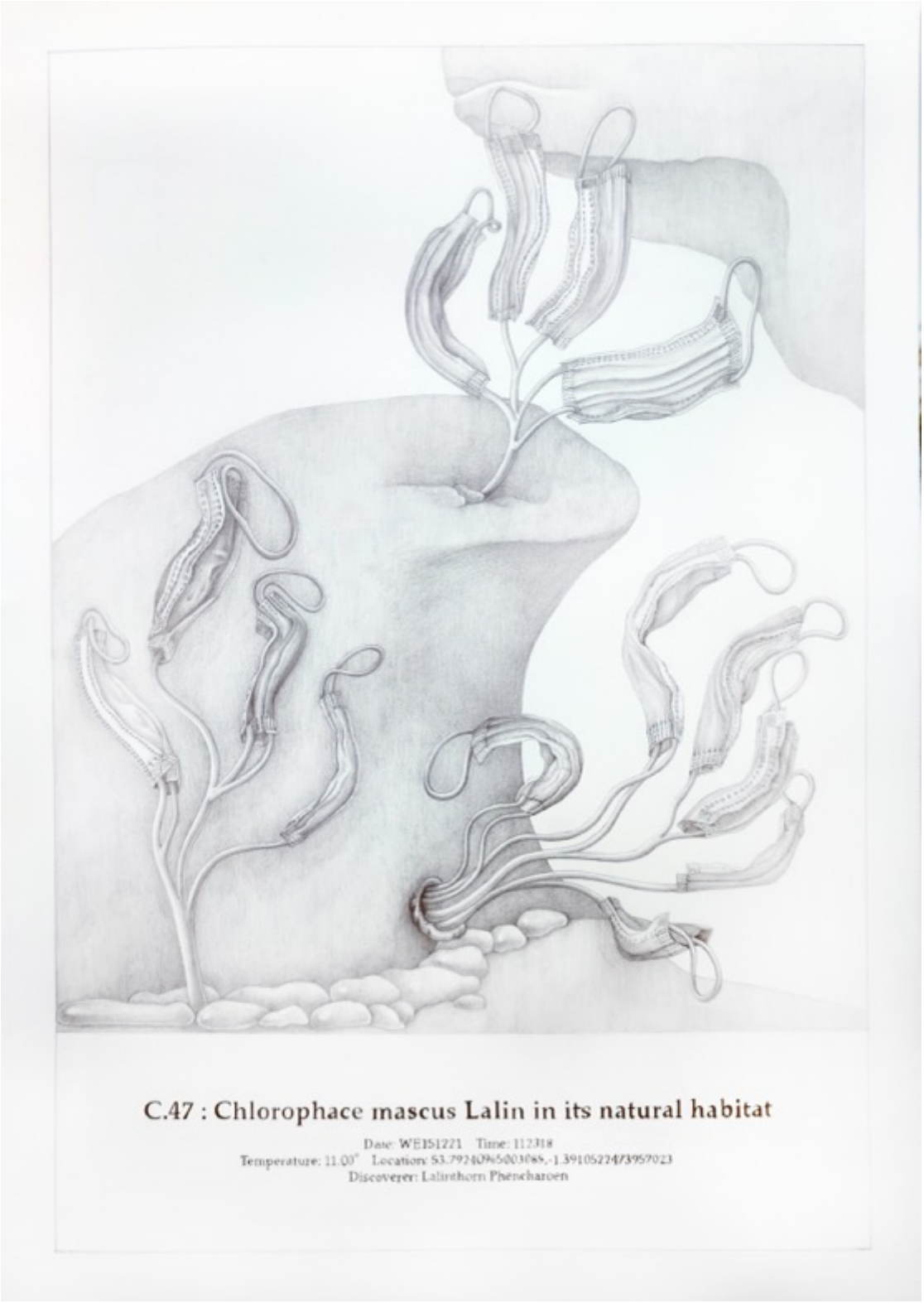
Appendix 3 Other Drawing Works

One of this drawing series was selected to exhibit OPEN 2023 by Grundy Gallery in Blackpool between 14 January – 25 March 2023. The detailed information can be found at https://www.thegrundy.org/whats-on/single/open-2023/#:~:text=Our%20annual%20Open%20Exhibition%20aims,and%20the%20Fylde%20Coast%20today.

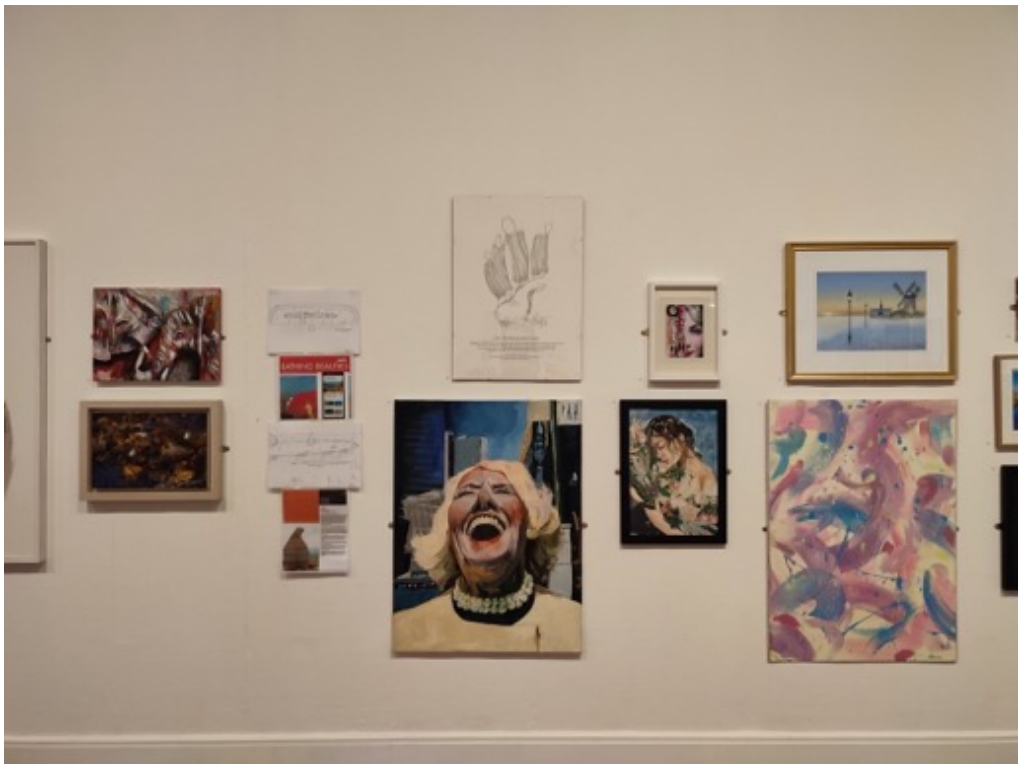


Lalinthorn Phencharoen (2021), *C.45: Chlorophace mascus Lalin*, Graphite on paper.

Lalinthorn Phencharoen (2021), *C.46: Facelassia mascus Lalin*, Graphite on paper, exhibited at Grundy Gallery, Blackpool, 2023.



Lalinthorn Phencharoen (2021), *C.47: Chlorophace mascus Lalin in Its Natural Habitat*, Graphite on paper.



The OPEN 2023 is an exhibition at Grundy Gallery in Blackpool, featuring selected artists from Blackpool and the Fylde Coast.

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Appendix 4 Fieldwork Notes

In this section, I present the fieldwork records from Thailand and the UK between 2021 and 2024. These records comprise 51 field practices, excluding site visits to observe the tides. The recording index here includes only the selected fieldwork that found specimens referenced in this thesis.

Fieldwork in Thailand 2021
(January – September 2021)

No.	Date	Aim	Location	Drawing	
				Studio	On-site
1	22/01	Survey and observation	Rama 7 Bridge Park (Chao Praya River)	-	4
2	24/01	Survey location, start drawing on-site	Rama 7 Bridge Park in both site of the Chao Praya River	-	1
3	27/01	Survey 2 locations	1) Maha Chesadabodindranuson Bridge, Nonthaburi, 2) Rama 8 Bridge, BKK.	-	1
4	28/01	Survey, Drawing	Rama 8 Bridge	1	1
5	31/01	Survey 4 locations	1) The Tha Chin River, Sampran, Nakhon Pathom, 2) Thewes Pier and Thewes Water pump station and Devaraj Market Pier, 3) Thanon Tok Pier, 4) The Khlong Lat Pho Floodgate Project, Phra Pradaeng, Samut Prakan		1
6	04/02	Survey 4 locations	1) Bang Sue Pumping Station, 2) Bang Po Pier (Khlong Prem Prachakon), 3) Khlong Sung Pumping Station, 4) Under expressway next to Rama 7 Bridge	-	-
7	05/02	Survey location	Khlong Bangkok Noi (Anutin Sawat Bridge)	-	-
8	06/02	Survey location	Rama 7 Bridge Park	-	-
*9	10/02	Drawing on-site	Rama 7 Bridge Park	-	4
10	12/02	Survey location	Klong Bang Khen (Bang Sue district) to Rama 7 Bridge	-	
*11	13/02	Drawing on-site	Rama 7 Bridge Park	-	1
*12	14/02	Drawing on-site	Rama 7 Bridge Park	-	2
*13	15/02	Drawing on-site	Rama 7 Bridge Park	-	1
14	19/02	Observation (how trash come to the river)	Rama 7 Bridge Park, next to Rama 7 Bridge	-	-
15	20/02	Observation (how trash come to the river?	Rama 7 Bridge Park, next to Rama 7 Bridge (found traditional fishing and camping)	2	-
16	21/02	Observation (how trash come to the river?)	Rama VII Bridge Park (Chao Praya River), Klong Bang Khen old and new, Pibulsongkram Pier 1	-	-
17	27/02	Observation (how trash come to the river?)	Klong Bangkok Noi (Bang Kruai), Klong Bang Kruai (Wat Chalo), Chao Praya River (Wat Lum Khongkha Ram)	2	-

18	05/03	Drawing on-site	Rama 7 Bridge Park	-	3
19	08/03	Drawing on-site	Rama 7 Bridge Park	-	5
20	13/03	Drawing on-site	Rama 7 Bridge Park	3	2
21	14/03	Drawing on-site	Rama 7 Bridge Park, Drawing process	-	5
22	19/03	Drawing on-site	Rama 7 Bridge Park	2	5
23	24/03	Drawing on-site	Rama 7 Bridge Park		6
24	26/03	Drawing on-site	Rama 7 Bridge Park	4	3
25	31/03	Drawing on-site	Rama 7 Bridge Park (at peak period)	1	5
26	02/04	Collect microplastic	Rama 7 Bridge Park	2	-
*27	08/04	Survey location	Bo Thong Lang Bay, Prachuap Khiri Khan Province	-	-
*28	09/04	Drawing on-site, photo, diving	Bo Thong Lang Bay	-	1
*29	10/04	Drawing on-site	Bo Thong Lang Bay	-	7
*30	11/04	Collecting microplastic	Bo Thong Lang Bay, 1 Drawing in studio	-	-
31	14/04	Observe the trash	Rama 7 Bridge Park	-	-
32	17/04	Observe the trash	Rama 7 Bridge Park	-	-
33	14/09	Survey location	-Wat Bun Tawee (Wat Tumklaeb), Phetchaburi -Bo Thong Lang Bay, Prachuap Khiri Khan	-	-
34	15/09	Drawingon-site, Interview	Bo Thong Lang Bay	-	1
35	16/09	Interview	Bo Thong Lang Bay	-	-

*Asterisks denote days when a significant quantity of waste was found.

Record Number: 2

INFORMANTION

Date: SUN240121 **Time:** 170000-180000 (1hr.)
Place: Survey location, Rama 7 Bridge Park in both site of the Chao Praya River
Temperature: 32c Partly cloudy **Air:** **Wind:**
Tide: Going down
All Day: 84% Waning, Low Tides: 1.4 m @ 20.03 / Hight Tides: 3.1 m @ 09.49

OBSERVATION

-Trash and river. I found trash floating in the river, including plastic pieces, foam, weeds, and elastics. The water is contaminated with oil. Most of the trash is located at Rama 7 Bridge Park, while the opposite bank has only a few pieces or none at all. New trash continues to enter the river before it reaches the ocean, specifically the Gulf of Thailand. As a result, I need to draw as quickly as possible.

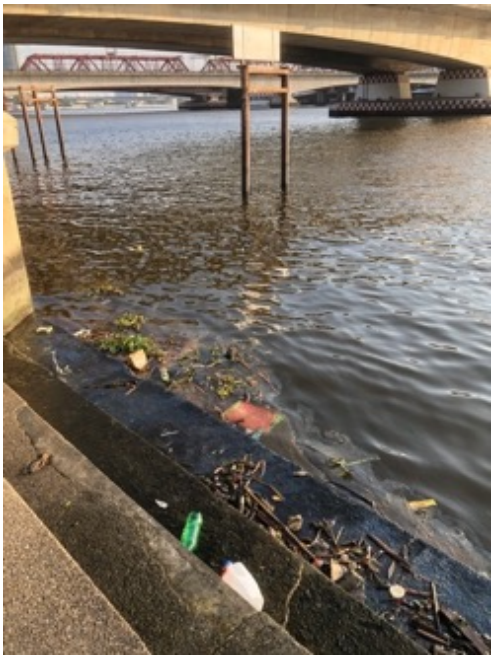
SPECIMEN Y / N

Waste: 1) plastic waste: bottle, bag, seasoning, straw, lid, spoon, pieces, 2) other: snack, cosmetic, glass bottle, drug (Blister lidding foil with PVC), foam, elastic tire, shoe, water plant/weed (water hyacinth), wood.
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Note:

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: drawing with pencil on paper/small sketchbook
Note: This is a starting drawing onsite. Create a drawing of a collection of trash, capturing nearly every type of waste on a single sheet of paper. Approach the drawing from a bird's-eye view, focusing on a full composition. Use an intuitive style, allowing yourself to draw without overthinking or planning the composition, image, perspective, or scale. Simply depict what you observe, filling any empty spaces with suitable objects as you go.

PICTURES




At Rama 7 Bridge Park

Record Number: 5

INFORMANTION

Date: SUN310121 **Time:** throughout late morning to late evening
Place: Survey 4 locations, 1) The Tha Chin River, Sampran, Nakhon Pathom Province, 2) Thewes Pier and Thewes Water pump station and Devaraj Market Pier, 3) Thanon Tok Pier, 4) The Khlong Lat Pho Floodgate Project, Phra Pradaeng, Samut Prakan Province
Temperature: 30c Clear **Air:** 62 Bad **Wind:**
Tide: -
All Day: - 88% Waning, Low Tides: 0.6 m @ 00.27, 2.5 m @ 14.06 / Hight Tides: 3.9 m @ 08.04, 3.0 m @ 17.58

OBSERVATION

-The Tha Chin River generally has little trash. Most of the larger masses of weeds, such as water hyacinth, are found in rural areas and other provinces. Thewes Pier, Thewes Water Pump Station, and Devaraj Market Pier also have minimal trash because debris floats away before I arrive. During my visit, I found a significant number of plastic bottles, which were the most commonly observed item, as well as a dead eel. The reasons for the trash may include animal releases for merit, rising seawater levels, or fishing activities.

I observed an adult man swimming and fishing in the river, while a group of local people, including young children and teenagers, were also fishing due to the low tide. A considerable amount of trash had accumulated at the Khlong Lat Pho Floodgate. I spotted a turtle swimming and trying to escape from this floodgate. This location is quite close to the ocean, specifically the Gulf of Thailand, and serves as an important final stop to retain and prevent trash from floating out to sea.

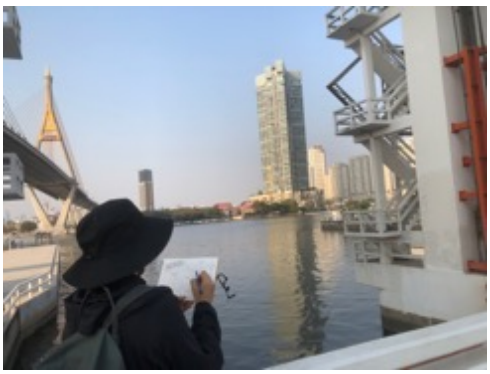
SPECIMEN Y / N

Waste: 1) plastic waste: bag, bottle*, straw, cup, pieces, 2) other: milk, foam*, elastic tire, water hyacinth, leaf, wood
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Note:

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: drawing with pencil on paper/small sketchbook
Note: Draw group of trash

PICTURES



Record Number: 9

INFORMANTION

Date: WED100221 **Time:** 160000-180000
Place: Rama 7 Bridge (Chao Praya River)
Temperature: 30c Partly cloudy **Air:** **Wind:**
Tide: Going down
All Day: 1% Waning, Low Tides: 0.7 m @ 22.22 / Hight Tides: 3.8 m @ 06.18

OBSERVATION

-There is amount of trash floating in the river. I found a dead fish

SPECIMEN Y / N

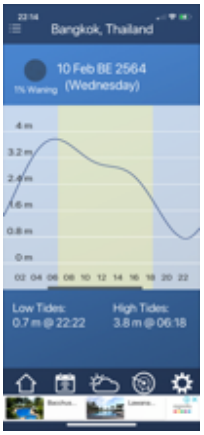
Note:
Waste: 1) plastic waste: bag, bottle, pen, spoon, lighter, chair, lable, cup, lid, piece of pump bottle, 2) other: drug, elastic tire, noodle, shoe, milk, water hyacinth), vegetable, spray can
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste, 4) Hazardous waste: spray can

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: drawing with pencil on paper/small sketchbook
Note: Draw group of trash, begin more closer observation on each trash

PICTURES






Record Number: 10

INFORMANTION

Date: FRI120221 **Time:** 153000-171500
Place: From Klong Bang Khen (Bang Sue district) to Rama 7 (Chao Praya River)
Temperature: 31c Fair **Air:** Bad 65 **Wind:**
Tide: Going up, above 1.5 m. – above 2 m. (but under 2.5 m.)
All Day: New Moon, Low Tides: 2.7 m @ 13.05 0.7 m @ 23.55 / Hight Tides: 3.8 m @ 07.08 2.9 m @ 16.29

OBSERVATION

-I started observing with long canal named “Klang Bang Khen” which is connected to the Chao Praya River, at Bangkok. Because I curious the way that trash floating in the river.
-I found many points about plastic pollution.

1) Local people left the trash on the walk bridge (in front of their houses). It can be drop drown to the canal (canal connected to the river) by the wind. Why they do not use the bin (garbage) and then government services take it (I think reuse collector travel by boat).

2) I also found the good thing is that they have wooden barrier for hold the trash floating to other places like the main river. This is why we can see the little amount of trash floating in the river.

3) There is an old way of living along the canal: building/house, water transportation, gardening/agriculture.

4) Fish died in the canal.

5) I think I can know more about my place and city where I am living in.

-A elderly male homeless take a bath and wash his cloth from the river, drying them on bush in the park.
-Previous days, I found a man who fishing here throw his cigarette to the river.
Noticing / Not noticing: (blue alphabet)

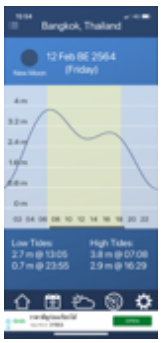
SPECIMEN Y / N

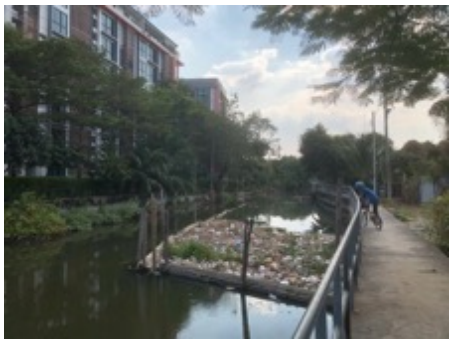
Note:

DRAWING Y / N

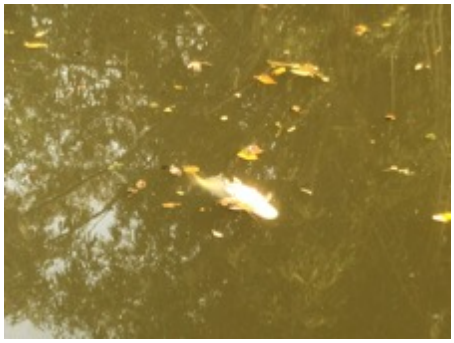
Note:

PICTURES





Trash in canal Klong Bang Khen



A dead fish in the canal

Trash along the canal

Drawing onsite at Rama VII bridge park

Record Number: 11

INFORMANTION

Date: SAT130221 **Time:** 142700-160000 (~1.30 hrs.)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 32c Partly cloudy **Air:** - **Wind:** little
Tide: little High but stable at 2.1 m.
All day: 4% Waxing, Low Tides: -0.1 m @ 00.00, 1.8 m @ 13.30/Hight Tides: 2.9 m @ 07.40, 2.2 m @ 17.34

OBSERVATION

-I found the enormous floating weeds (common water hyacinth) that have many large floating patches of common water hyacinth, which were laden with various types of trash. This situation highlights that aquatic weeds have both advantages and disadvantages. Additionally, I noticed a rancid smell coming from the weeds.
-In the afternoon, the water flows towards the Gulf on the left side, while in the evening, it moves to the right.
-I observed that two fish and one tortoise had died. This may be due to the continuing rise in seawater, which affects the salinity of the freshwater, making it oligohaline.
-The environment was still not busy because of the warm weather, making fishing difficult. Around 3:00 PM, I spotted two men fishing under the bridge.
-Regarding trash, the most common items I found were plastic bottles and pieces of foam. In just 30 minutes, I found a variety of litter, including: four pairs of shoes (most for children), a spray can, a glass bottle, a watermelon, a straw, a plastic bag, a can, UHT milk, foam pieces, a plastic cup, condiment packaging, a plastic box, a drug zip bag, a lighter, a spoon for milk powder, a floating basket (Krathong), a white short plastic spoon, a meal package, a hanger, a clothes peg, a balloon, a pillow, vinegar in a sealed container, a ribbon for a garland, a jelly cup, and a snack pack.

Here are some inquiries I have not yet addressed:
- What items should I keep and what should I draw?
- How do I make decisions regarding this?
- What can be inferred about the age, function, and gender from the trash found? (e.g., toys, food packaging—these could reflect consumer behaviours)
- Why is there trash in the river?
- What is the relationship between the trash and the weeds? What are the benefits and disadvantages of both?
- I started collecting some trash and specimens to take back to the studio. I picked four objects: 1) a ribbon, 2) a balloon, 3) a spray can (for a political campaign), and 4) a packet of Chinese medicine.

SPECIMEN Y / N

Scientific name(s): _____
Common name & family: 1) Walking Catfish (Clarias), and 2) ribbon
Type specimen: Yes__ & locality: _____, No_/__ (onsite)
Specimens will be: live___, unmounted_/__, mounted and how_____
On microscope slides___, in fluid and what kind_____

Note:

1) Catfish is basic food in Thailand and Thai people release this fish to the river. It is easy to buy from the market. This specimen quite decay, seen from its mouth and opened stomach. Not sure for cause of death but I saw this fish before, on 10 Feb 2021. The body is white/light gray. Head and tail are gray.
2) Actually, ribbon has strain of mud or river, which brown and green. The rope made from plastic. Ribbon is light pink colour but the rope is yellow-green. I picked it for drawing because it has meaning, and functions related to Thai culture and religion.

DRAWING (1) Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____

View:

Lateral: _/__Anterior to face right__,left__, top___, bottom ____of page

Dorsal: ___Anterior to face right__,left__, top___, bottom ____of page

Ventral: _/__Anterior to face right__,left__, top___, bottom ____of page

Three-quarter: ___ Anterior to face_____ **Cross section:** _____

Exploded: ____Anterior to face right__,left__, top___, bottom ____of page

Structures to be illustrated: external__/_, internal___

If there is overlap of structures, how should this be indicated? e.g. dotted or dashed lines, layers of tone, other: _____

Technique:

Medium: pencil (clutch-type pencil) Line: cross-hatching/expressive hatching

Continuous tone: monochrome Color: black and white

Note:

-I focus on natural or observational drawing, and I have chosen a subject to draw: a dead fish. I decided to use a larger notebook to provide more space for both drawing and notation, allowing my hand to rest comfortably on the paper.

-I chose to draw a fish because I want to experiment with creating more engaging images of animals, as opposed to still life. While still life can be fascinating when executed with skill, as seen in Renaissance and Baroque art, in my previous on-site drawings, I primarily depicted a collection of trash in the river. This time, I wanted to try something different.

-When drawing on-site in a concentrated and quiet environment, I find that I can connect with my emotions, particularly feelings of mourning and concern regarding the environmental issues surrounding me. Drawing on-site offers a different emotional experience than drawing in a studio; I can reflect on the trash in front of me while considering larger issues.

-I should apply or consider Anna Tsing's approach to my drawing as part of my experimentation.

-My project involves exploring areas impacted by trash and examining the relationships within those environments—how animals survive and how local communities engage with the river and its waste. From this exploration, I plan to write a narrative that serves not as a report, but as a story reminiscent of Anna Tsing's work, which I need to study further.

-My inquiries include:

- What techniques should I use?
- What style should I adopt? How fast or detailed should my drawings be?
- Should I transition from drawing on-site to working in the studio, or is drawing on-site coupled with writing sufficient? Alternatively, could I document my observations on-site and then create a fable illustrated with my drawings?
- Should I incorporate colour into my work?
- Why should I draw rather than take photographs? As mentioned in the drawing book, drawing encourages intensive observation. Photographs sometimes don't allow for the same level of engagement as drawing, which can evoke emotions connected to the environment, such as smell and air.
- Can I integrate digital equipment into my drawing process? This idea intrigues me, as it may help me achieve more realistic results and draw faster.

DRAWING (2) Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____

View: Anterior: _/__

Dorsal (back): _/__Anterior to face right__,left__, top_/__, bottom ____of page

Structures to be illustrated: external__/_, internal___

Technique:

Medium: pencil (clutch-type pencil) Line: feathering

Continuous tone: monochrome Color: black and white

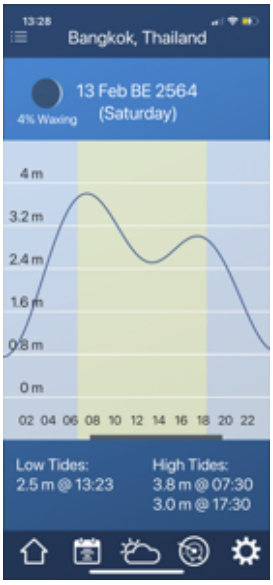
Note:

-I would like to create a scientific illustration of the specimen for my document. I drew both the front and back sides of the object. Instead of using complex rendering, I opted for a softer approach because the ribbon colour is bright. Although scientific illustrations typically do not include shadows, I added some to make the picture more interesting. I wonder why I chose to draw instead of taking a photo, and I realise it's because drawing allows for a closer look and more time spent with the object. I used a pencil since it is easy to draw with and edit the picture.

-I created the illustration life-size and realistic to observe details and document the object accurately. The ribbon is part of a Thai garland, and I feel I can learn English through this image.

-Additionally, I drew a piece of plastic glass and a balloon to experiment with illustrating different objects, reflecting on degradation, usage, and the past. I considered how to represent these pieces to the audience and how they might perceive them. While making observational drawings like this, I often overlook new details; instead, I immerse myself in concentration, which feels calming and brings a heightened sense of awareness. Observational drawing helps me achieve mindfulness, much like meditation does.

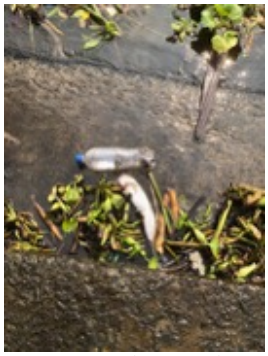
PICTURES



Companion species

Companion species

Collecting trash



Dead walking catfish

Record Number: 12

INFORMANTION

Date: SUN140221 **Time:** 162000-170000 (40 mins)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 30c Fair **Air:** **Wind:**
Tide: Going up, 2.52 m.
All Day: 9% Waxing, Low Tides: 0.8 m @ 00.33 2.3 m @ 13.45 / Hight Tides: 3.7 m @ 07.49 3.0 m @ 18.22

OBSERVATION

-Today I found a little trash near the water barrier. I still found plastic trash, including a bottle and a cup (as shown in my drawing). It is a drinking cup, a jelly cup, a bread package, a foam piece, a plastic bag for food, and of course weeds (common water hyacinth)
-Should the campaign not use disposable plastic water cups (single-use plastic)
-Around two to three years ago (2019), Thailand just started to stop using plastic bags, especially in department stores and convenience stores.
-Companion species: I saw only plant – moss – inside the plastic cup.

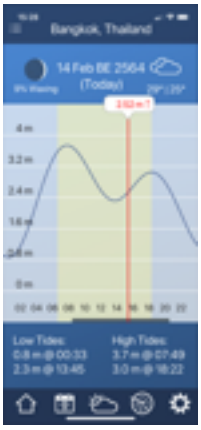
SPECIMEN Y / N

Common name & family: disposable plastic water cup
Specimens will be: live___, unmounted_/__, mounted and how_____
Note:
-Inside the cup has moss because the package did not open yet. There is water I the cup. The object might be thrown for quite a long time, while the logo on top of the cup still has bright colour.
-It is unuse, so why this cup became trash?

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View:
Anterior: _/__ **Inferior:** _____
Lateral: _/__Anterior to face __rounded and top of page_____
Structures to be illustrated: external__/_, internal___
Technique:
Medium: coloured pencils Line: _____ Continuous tone: _____
Color: blue, green, (yellow) brown
Note:
-I drew this plastic cup for drinking water because 1) the most important, and 2) details for the document. Details can help identify the source of the trash—coincidence, the water brand name is the same as my previous village. The trash originated from Pathumtanee province, located next to Bangkok.
-Method: sketch on-site and finish it in the studio. I drew in my studio because it takes time to get the details right. Drawing in the studio will give a feeling/experience different from outside the studio. I also experiment with drawing on an iPad.
-For the colour, I use coloured pencils because 1) experiment (documentary), 2) the object can be seen better, if I use the colour rather than pencil alone.
-For the composition, I did not think much because I hurried to sketch the object onsite. This drawing still lacks the plan. Should plan and think before drawing.

PICTURES




Collecting specimens at Rama VII Bridge Park

Record Number: 13

INFORMANTION

Date: MON150221 **Time:** 130000-160000 (3 hrs.)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 32c Mostly cloudy **Air:** **Wind:**
Tide: Stable (13.00) and Going up, 2.13 m. (at 14.40, low tides but quite fast flow down)
-15.00 pm. water start float backward
All Day: 16% Waxing, Low Tides: 1.0 m@01.08, 2.1 m @ 14.09 / Hight Tides: 3.6 m@ 08.07, 3.0 m@19.10

OBSERVATION

-Around 134600, big groups of trash floated/arrived at the water barrier
-Companion species: (Ecology)
-white birds 1) long neck (egret/bittern), standing on weeds in the middle of the river for hunting, 2) a small white bird hunting on weeds
-one baby turtle (softshell turtle/*Trionyx cartilaginous*), grey colour, on foam for sunbathing
-fish (many kinds) living under weeds and around the weeds, 1) Archer fish/blowpipe fish (*Toxotes chatareus*), 2) Wrestling halfbeak
-aquatic plant/weed "E. Crassipes"
This reflects many species adapted to living/surviving in the current environment. Indeed, how many creatures eat plastic debris because it is unidentified?
Noticing about co-living species.
-Environment/Local:
-One man uses water to clean a motorcycle. He was not aware of/concerned about the trash there. He did not do anything. He just took water only.
-One male homeless person sits for more than two hours on the water barrier, hoping he does not jump into the river.
-2.00 pm Two men arrived for fishing.
-An old couple, around 40-50-year-olds, sitting together and doing something that seems illegal. They sat for around an hour.
-Trash: plastic bottles and cups, elastic tires, shoes, plastic zip pack, plastic bag, TV, helmet, clothes peg, hanger, inhaler, political campaign (No.5 Apirak Kosayodhin), sunshade for car or lunch bag thermal insulation aluminium foil or cooler bag, foam pieces, floating basket (Krathong). Krathong is made from foam. It can indicate that there is usage of the foam, although we campaign to give up the foam materials (polystyrene)
-I sit and observe for a while, around three hours, to see the trash floating, ecology, companion species living, and humans taking benefits from the river.
-Around 3.32 pm, a man (around 25-30 years old) released eels into the river even though he saw a big group of trash in front of him. This is a contradiction. Eel is an alien species here and causes many effects/threatens other species. Many Thai scientists try to ban the release of eels into the river. Animal release for making merit is one of the Thai traditions.
-I have to learn more about ecology, tide, etc.
This project will help me learn about my own culture and city. There are many benefits from fieldwork and this project.

SPECIMEN Y / N

Common name & family: Sticker sign from seafood package
Specimens will be: live___, unmounted__/_, mounted and
how_____

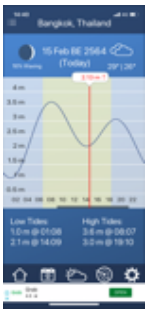
Note:
-Background of this object is white colour but the alphabet is dark blue (almost black). Small 'CP Pacific" logo is shrimp. I found this object is part of seafood package/shrimp. The 'CP Pacific' is Thai food company.

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior: _/__
Structures to be illustrated: external__/_, internal___

Technique:
Medium: graphite and clutch-type pencil Line: feathering Continuous tone: monochrome
Color: black and white
Note:
-I created two drawings: 1) trash in the river and 2) various objects.
Method: 1) On-site, 2) Studio
On-site: I found it challenging to document all the trash, so I had to consider criteria for selecting certain pieces. I chose items that I felt were exciting, important, and meaningful. I aimed to capture more details and fully identify with the chosen pieces. The composition of my drawing emphasises specific subjects while leaving ample negative space. I also collected some trash for documentation purposes in the studio. I am fascinated by what lies hidden beneath the weeds and am eager to explore more about the trash and weeds in this area.
Studio: For the drawing technique, I used pencil on paper. I preferred pencil/graphite because its colour closely resembles that of the subjects I was depicting. The drawing is clean, with plenty of negative space. I wanted to create the illustration in the style of traditional scientific illustration, incorporating space and text below each object.

PICTURES





Rama VII Bridge Park


Dead Fish


Softshell turtle

Sticker CP Pacific

Collecting trash

Record Number: 16

INFORMANTION

Date: SUN210221 **Time:** 15200-165000 (1.40 hrs.)

Place: Rama VII Bridge Park (Chao Praya River), Klong Bang Khen old and new, Pibulsongkram Pier 1

Temperature: 33c Mostly sun **Air:** Bad 68 **Wind:**

Tide: Going down 1.61 m. at 15.50

All Day: 69% Waxing, Low Tides: 2.7 m @ 03.28, 1.5 m @ 17.28 / Hight Tides: 2.8 m @ 00.37, 3.1 m @ 08.58

OBSERVATION:

-I found a few trashes, then I moved forward because I wondered why the trash was not floating as much as before. First place is the small canal named 'Klong Bang Khen Mai' or the new Klong Bang Khen, which connects to the river. There is some trash. The second canal is Klong Bang Khen, the old one, and has a water gate or water pump. Most trash is foam pieces. Third place is a pier named 'Pibulsongkram Pier 1' in the Muslim area. Under old canalsides, a large group of weeds has formed, consisting of trash and emitting a rancid smell. The weeds struck under the houses. This is a reason why some trash does not float to the Rama VII Bridge Park. A dog is living in the weeds. However, local people did not act or notice the community waste. Local people are highly likely to be a factor in the waste problem in the river (water pollution).

I have to sketch a lot and research more about this project: trash, tide, places, about the reading/theories, etc.

SPECIMEN Y / N

Note:

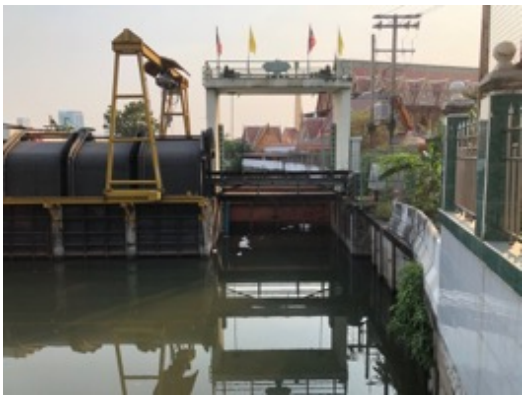
DRAWING Y / N

PICTURES

Pibulsongkram Pier 1

Rama VII Bridge Park

Klong Bang Khen Mai



Klong Bang Khen

Pibulsongkram Pier 1

Pibulsongkram Pier 1

Record Number: 18

INFORMANTION

Date: FRI050321 **Time:** 170000-18300 (1.30 hrs.)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 31c. Mostly sunny **Air:** 64 Bad air **Wind:**
Tide: Going up 1.36 m. from the low level in evening
All Day: 52%Waning, Low Tides: 2.1 m @ 02.51, 1.1m @ 15.23 / Hight Tides: 3.4 m @ 08.23, 3.2 m @ 22.27

OBSERVATION:

-I try not to do scientific observation.
-No big group of trash but few wastes in river.
-When I arrived water going down and then stop for going up.
-The strong wind

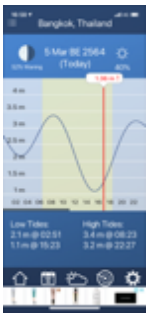
SPECIMEN Y / N

Waste: 1) plastic waste: zip bag, bottle, piece, lable, straw, gardenia, 2) other: snack, elastic tire, water hyacinth, leaf
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Note:

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior
Structures to be illustrated: external__/_, internal___
Technique: drawing with graphite, pen, and coloured pencils
Note:
-Testing drawing object from net directly with various techniques.
-Sketch drawing with style/form of encyclopedia or dictionary
-Bad imagination

PICTURES



Drawing onsite

Record Number: 19

INFORMANTION

Date: MON080321 **Time:** 170000-183000 (1.30 hrs.)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 31c. Thunderstorms **Air:** 57 Moderate air **Wind:**
Tide: Going down 1.21 m. the lowest tide in this evening
All Day: 21%Waning, Low Tides: 3.2 m @ 04.18, 1.1m @ 18.10 / Hight Tides: 3.2 m @ 03.19, 3.3 m @ 07.58

OBSERVATION:

-I try not to do scientific observation and anything for perfect work. It is just following the intuition.
-No big group of trash, but a few pieces of waste in the river.
-An interesting wooden stick floating as a creature appears from the river.
*I got an idea, to draw small plastic pieces that are going to be microplastic and draw with transparent objects, such as a plastic bag and plastic pieces that marine animals will eat and play with. Draw them with pieces (not a completed object) and then create a story about fish eating plastic. This idea will be a combination of Anna's and Donna's ideas.

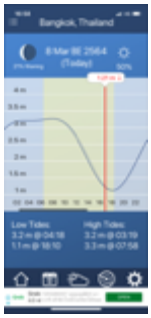
SPECIMEN Y / N

Waste: 1) plastic waste: zip bag, bag*, bottle, straw, piece of toy, lid, piece of basket, cup, pieces*, ice package, soil package, 2) other: glass bottle, elastic tire, snack*, foam, water hyacinth, cosmetic package
Type waste: 1) Recycle waste: plastic waste, glass bottle, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste, 4) Hazardous waste: cosmetic package
Note:
-Mostly plastic pieces especially bag and snack package

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: drawing with ball pen
Note:
-Good idea for expressing yourself without any thinking. It is just drawing what I have seen. It can be a nice technique for fieldwork/drawing onsite. It reminds me of natural drawing. I tried using a simple drawing tool, but it produced good results for me - more emotional lines, more confident lines, and more enjoyable. It does not require an extended period. It helps me to record objects faster than drawing precisely.

PICTURES




Record Number: 20

INFORMANTION

Date: SAT130321 **Time:** 160000-180000 (2 hrs)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 31C. Thunderstorms **Air:** 62 Bad **Wind:** little/breeze
Tide: Going up 2.85 m.
All Day: New Moon, Low Tides: 2.3 m @ 12.27, 1.2m @ 23.49 / Hight Tides: 3.6 m @ 06.26, 2.9 m @ 17.08

OBSERVATION:

-The tide is going to the right. The sun goes into the clouds. Water is high in the evening, to the second step of the water gate.
-I found a companion species, *Varanus salvator*, petite and young. They stand on the step of the water gate, looking for food, then stand in the river (with stones under water) for a while. I guess they disappeared and dove under the water gate.
-I also found a small and swollen (urban) dead rat floating in the river.
-The fisherman got a fish.

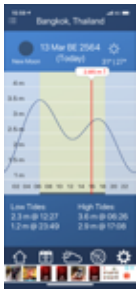
SPECIMEN Y / N

Waste: 1) plastic waste: bag, zip bag, straw, cup, lid, bottle, spoon, lid of container, toy, garland*, cooler, 2) other: elastic, snack, water hyacinth, wood, flower, cosmetic package – recycle and nonrecycled plastic waste
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste, 4) Hazardous waste: cosmetic package
Note:
-Small plastic pieces are floating in the river. Most of them are straws and spoons. I found only three pieces. The biggest one on this day is a broken blue plastic cooler.
-I drew a group of small plastic pieces, and a bigger one is a pen package.

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: colored pencil on graph paper
Color _____
Note:
-I try to draw with colored pencils in order to create a more recognisable image of small plastic pieces. If I draw with graphite, the audience might not understand what I am drawing. It looks like an abstract form with graphite/pencil.
-I use the graph paper in order to create a more scientific image. It is similar to lab drawing/drawing in a laboratory, to note or explain what a scientist or doctor has seen. The graph paper has a size of 0.5 x 0.5 per block/channel. This graph helps me to draw precisely in size and shape, as a ruler does.
-I drew other pieces in the studio.

PICTURES



Record Number: 21

INFORMANTION (important day)

Date: SUN140321 **Time:** 150000-180000 (3 hrs)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 33c. Scattered thunderstorms **Air:** 81 very bad **Wind:** little/breeze
Tide: Going up 2.43 m. (at 14.51 pm.)
All Day: 2% Waxing, Low Tides: 2.1 m @ 12.43 / Hight Tides: 3.5 m @ 06.42, 3.1 m @ 17.58

OBSERVATION:

-Today is similar to yesterday. Today is cooler / less sunlight than yesterday because I went there after the rain stopped.
-I saw one man catch fish with a traditional net in the river.
-The river has a smell. Water levels are rising and then stop for a while.

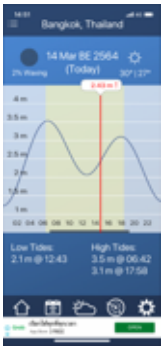
SPECIMEN Y / N

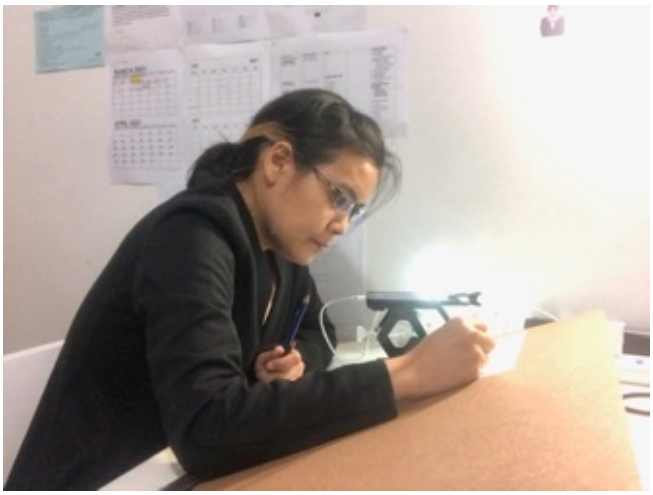
Waste: 1) plastic waste: zip bag, bag, bottle, straw*, lid/cap, KFC cup, piece of basket, pieces,* tiny/microplastic, plastic cub like an egg (found often and has worm? inside, for lucky gift/cast lots), 2) other: elastic, snack*, foam, water hyacinth, leaf, Thai traditional flower decorative on tray/ banana leaf and plastic ribbon
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Note:
-Most are small plastic pieces
-I wonder what size of plastic pieces are call as 'microplastic'.
-Found flower/leaf for Thai traditional activities.

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: colored pencil on plain paper (bigger size), on graph paper
Color _____
Note:
-Test to capture wastes floating in the river. It is pretty tricky because the trash floats quite fast, and sometimes other trash keeps coming and does not stop floating. Sometimes I felt shocked/overwhelmed to draw them. I'm having trouble deciding what to draw because the river is full of trash. I just stood there, taking photos for about an hour. Therefore, the quality of the drawing is bad/rough. They are quick to draw. I wonder if drawing one piece on a single piece of paper would use up much paper, which is not suitable for the environment. Therefore, I try to draw a group of trash on one piece of paper.
-I figure out the drawing process for fieldwork: 1) collecting trash, 2) drawing/observing, 3) taking a photo, 4) throwing it into the bin
-Coloured pencils help me to reduce taking notes about the colours of the object and make it a more recognisable image.
-Quite a challenge to collect microplastics because of the waves. However, I use a plankton net to collect them. Drawing a microplastic can be done in the studio, without the wind.

PICTURES





Drawing with microscope

Record Number: 22

INFORMANTION

Date: FRI190321 **Time:** 171500-180000 (45 mins.)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 32C. Partly cloudy **Air:** 64 Bad **Wind:**
Tide: Going up 1.51 m. (at 16.05 pm.)
All Day: 33% Waxing, Low Tides: 2.1 m @ 02.28, 1.3 m @ 14.35 / Hight Tides: 3.2 m @ 07.48, 3.2 m @ 21.25

OBSERVATION:

-I felt overwhelmed today. I cannot concentrate on observation. My dad visited me at the site. Two older men are exercising next to me. A group of women dances in the evening. Two students (one boy, one girl) are sitting at the water gate. Father and son looking at the view.
-The tide went down, and I saw the stone under water.

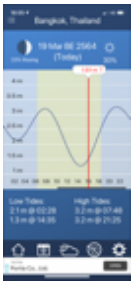
SPECIMEN Y / N

Waste: 1) plastic waste: bag, bottle, straw, lid, pieces*, label, ice package, 2) other: elastic, snack, coffee package, water hyacinth, leaf, seed
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Note:
-Elastic can found everyday/every time I observe.
-Most are small plastic pieces
-Other, shell and *Azolla spp*. (Mosquito ferns) and shell

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: colored pencil on graph paper
Color _____
Note:
-Draw directly the group of trash and individual.
-Test drawing on iPad, felt lazy.

PICTURES





Record Number: 23

INFORMANTION (special day)

Date: WED240321 **Time:** 164500-180500 (~1.20 hrs)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 36C. partly cloudy **Air:** 71 Bad **Wind:**
Tide: Going down 1.72 m. (at 16.09 pm.)
All Day: 80%Waxing, Low Tides: 1.5 m @ 18.47 / Hight Tides: 3.2 m @ 04.47

OBSERVATION:

-Almost everything is normal. Until I found baby fish.
-I can collecting only one net/round.
-This week I cannot water weeds much as normally

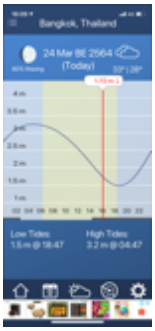
SPECIMEN Y / N

Waste: 1) plastic waste: bag, straw, lid, under lid/pressure sensitive seal, cup*, pieces, spoon, label/package, ribbon, medicine bottle, star, 2) Other: snack, water hyacinth
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Scientific name(s): *Oxyleotris mamorata Bleeker*_____
Common name & family: Sand Goby, Marbled Sleepy Goby_____
Type specimen: Yes_/_ & locality: Middle of Thailand_____, No___
Specimens will be: live_/__, unmounted___, mounted and how_____
On microscope slides___, in fluid and what kind_____
Note: -Plastic cup much more than previous days, variety kinds of plastic cup.
-I found this baby fish in the group of trash from my net (accidentally). I felt shocked when I see the trash can move. I take him to my uncle home for foster.
https://www.fisheries.go.th/if-suratthani/1plaboo.htm

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior and variety of views Structures to be illustrated: external__/_, internal___
Technique: multicoloured pencil on plain paper and graph paper
Note:
-It is more enjoyable to draw with multicoloured pencils. The multicoloured can represent the clear/transparent of objects. It could also represent the colour that animals cannot see with their eyes. I can draw faster and with more confidence using this pencil.
-Draw on graph paper with a smooth surface, less pressure, but the colour is not bright enough and cannot add more value with coloured pencil. Drawing on paper with little teeth produces brighter/stronger colours than graph paper, but it requires more hand strength to draw a picture.

PICTURES






Record Number: 24

INFORMANTION

Date: FRI260321 **Time:** 160000-180000 (2 hrs.)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 33C. Thunderstorms **Air:** 65 Bad **Wind:** Strong
Tide: Going down 2.44 m (at 15.55 pm.), going down 2.13 m. (at 17.34)
All Day: 94%Waxing, Low Tides: 1.4 m @ 21.45 / Hight Tides: 3.5 m @ 05.14

OBSERVATION:

-The water tide is high, reaching the first step of the water gate. The wind is quite strong. Therefore, water exhibits a wave-like behaviour, similar to a sea wave. The trash is also floating far away from the water gate. I can only collect trash once. I waited for a while until I found waste near the water gate. Four men are fishing under the bridge as usual. However, I found a boat moored under the bridge. They are doing everyday activities on their boat, with the female sleeping in a hammock.

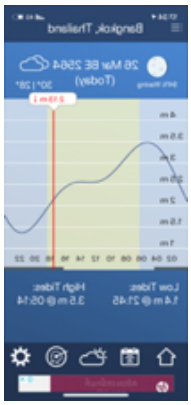
SPECIMEN Y / N

Plastic waste: bag, comb, bottle, white spoon, lid/cap, flower of garland, pieces, red plastic food package in 7/11 store, big plastic glass for Pepsi (big cup), plastic handle glass (7/11 store), big glue tube (for glass?, สีขาว ปากแหลมใหญ่), bathroom cleaner – recycle and nonrecycled plastic waste
Type waste: 1) Recycle waste: plastic waste, 2) General waste: elastic, foam cup for food, snack, 3) Compostable waste: water plant/weeds (water hyacinth), wood, 4) Hazardous waste: big glue tube (for glass?, สีขาว ปากแหลมใหญ่), bathroom cleaner
Note: Most are small plastic pieces.

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe: _____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: graphite and colored pencil on graph paper
Color _multicolor, black and white___
Note: Trash floating quite fast. I should less of drawing tool and equipment
Summary drawing practice:
1.Drawing one picture one net
2.Drawing only plastic piece, clear/transparent – need more develop, and try to more abstract/human and fish cannot recognisable, test with transparency
3.Draw microplastic for mythic forms
4.Digital drawing – 1) draw outline from photo but render by observation, 2) draw every step on digital
I think I consider much of drawing but contrast to the end product.

PICTURES



Record Number: 25

INFORMANTION

Date: WED310321 **Time:** 165000-183000 (~1.40 hrs)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 32C. Mostly sunny **Air:** 68 Bad **Wind:**
Tide: Going up 3.44 m. @ 182100
All Day: 86% Waning, Low Tides: 1.7 m @ 00.54, 1.1 m @ 13.03 / Hight Tides: 3.4 m @ 06.36, 3.6 m @ 19.36

OBSERVATION:

-Water is going to the right hand. After around 17:00, the water moves faster and reaches the second step of the water barrier. At 4.50 pm. Water went down. I can see stones under water. This might be why few men are fishing. There are only two men fishing, and they arrived late, around 16.50. This is unusual; they usually arrive in the afternoon (around 13:00-14:00).
-I got many trash in one net/collecting because the lower tide helped me collect. However, it is the tide again. If the tide goes too low, I cannot collect trash because my handle is not long enough. It is around 1.50-1.90 meters.

Water (moderate, appropriate) low = collecting trash/macroplastic
Water is high = collecting microplastic (with the condition of having not much wave.
The problem-solving is expanding the net. However, it might be challenging to carry out fieldwork.
Another way is to hire a boat to collect the specimens.

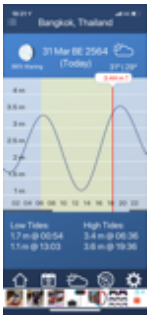
SPECIMEN Y / N

Waste: 1) plastic waste: 2 ribbon of garland, 15 straw, 8 lid, 1 spoon, 2 fork, zip bag, bag, label, piece of basket, microwave food box, cup, 2) other: 19 elastic, snack, wood, leaf, water hyacinth
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Note:
-Starting categorizing specimen/trash from one net/round.
-List of waste above only from my collection

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: multicoloured pencil on paper and graph paper, pencil on paper and graph paper
Color: multicolour, black and white
Note:
-Drawing onsite more confident in the process and systematic.
-Today is the high period/golden state of my drawing onsite. Because I can follow my process without any hesitation. I also note details on the same page of observational drawing.
-I draw rough/quick because of the outside, the amount of trash, and the time limit. I was pretty shocked and tried to draw quickly to collect more trash, but the water was flowing too fast. Then I got only one collection per day.
-One net – 5 pictures

PICTURES



Record Number: 26

INFORMANTION

Date: FRI020421 **Time:** 150000-163000 (~1.30 hrs.)
Place: Rama VII Bridge Park (Chao Praya River)
Temperature: 35c. Partly cludy **Air:** 44 Moderate **Wind:** 17 km/h S
Tide: Going up 0.81 m. @ 14.59
All Day: 67% Waning, Low Tides: 2.3 m @ 02.15, 0.7 m @ 14.08 / Hight Tides: 3.3 m @ 07.011, 3.6 m @ 21.24

OBSERVATION:

-The water tide is very low and stable. I can see stone and wood under water. The weather is very hot. One man is playing with a clone in the water. He brings his cremains (bone ash). 2-3 men are fishing under the bridge. One of them was walking up from the river. The small boat still moors under the bridge. The trash consists of small pieces in a lesser amount.
-I got videos for collecting microplastics. I use only a plankton net (straining cloth) for this collecting, but it is not long enough.
-There are many bubbles from fish.

SPECIMEN Y / N

Waste: Most are small plastic pieces: 1) plastic waste: ribbon, bag, lid, hanger, pieces, toy, 2) other: elastic, star
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste)
Note:

DRAWING Y / N

Entire specimen (habitus): _____ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: colored pencil on graph paper
Color _____
Note:

PICTURES

Collecting microplastic with plankton net

Record Number: 27

INFORMANTION

Date: THU080421 **Time:** 160000-180000 (2.00 hrs)
Place: Bo Thong Lang Bay, Bang Saphan, Prachuap Khiri Khan Province
Temperature: 29c. Thunderstorms **Air:** 37 Good **Wind:** 6 km/h SE
Tide: Going down 0.13 m. @16.58
All Day: 10% Waning, Low Tides: 0.0 m @ 19.31 / Hight Tides: 1.2 m @ 05.29

OBSERVATION:

-I found a big group of trash on the island/bay. Much trash is in the sand and under seawater. The water is very low. I can walk through the middle of the bay. Most of the trash arises from the fishery, for example, rope. Much trash is stuck or shrunk in the sand. Some trash is new, while other is old (covered with shells). Most of the small plastic pieces are flat and rectangular, blue and light blue. There are a few small pieces of plastic in the cube/piece. This place has a variety of shells.

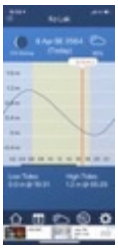
SPECIMEN Y / N

Waste: Most are plastic waste: bottle, pieces, bag, straw, cup, rope*, net*, lid, spoon, ribbon, Other: snack, clothes, elastic, shoes, foam, package, toy, card, glass bottle, wood and etc.
Type waste: 1) Recycle waste: plastic waste*, 2) General waste* (and nonrecycled plastic waste), 3) Compostable waste, 4) Hazardous waste
Note:
-There are both macoplastics and microplastics which I collected for a certain amount.

DRAWING Y / N

Note:

PICTURES






Record Number: 28

INFORMANTION

Date: FRI090421 **Time:** 143000-180000 (3.30 hrs.)
Place: Bo Thong Lang Bay, Bang Saphan, Prachuap Khiri Khan Province
Temperature: 30c. Scattered thunderstorms **Air:** - **Wind:** 11 km/h SE
Tide: Going down 0.51 m. @ 14.11
All Day: 5% Waning, Low Tides: 0.2 m @ 20.22 / Hight Tides: 1.1 m @ 05.54

OBSERVATION:

-The water tide is going down 0.4 m. @ 14.30
-I observed another bay, next to the first bay, yesterday. I spend around two hours diving for plastic waste and observing marine creatures. I found a large amount of trash in the bay/rock/, and shore. Some wastes are struck under the stone. The wastes are new and old. The group of trash is not far from the coral reef, where marine creatures live, including the Nudibranchs or sea slugs.

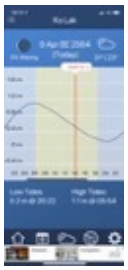
SPECIMEN Y / N

Waste: Most are plastic waste: bottle, pieces, bag, straw, cup, rope*, net*, lid, egg*, spoon, ribbon, basket, lighter, Other: mask*, snack, clothes, elastic, shoes*, foam, package, toy, card, helmet, life jacket, milk, glass bottle, Blister lidding foil, wood, coconut and etc.
Type waste: 1) Recycle waste: plastic waste*, 2) General waste* (and nonrecycled plastic waste), 3) Compostable waste, 4) Hazardous waste
Note:
-A cup for cold coffee is still new I guess it comes from tourists.
-Most are microplastics. Microplastics are mixed with sand and water.
-Underwater: snack (sweet package), cup, bottle, milk, drug package, cigarette butts, bag, pieces, rope, spoon, clothes

DRAWING Y / N

Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior Structures to be illustrated: external__/_, internal___
Technique: multicoloured pencil on paper/small sketchbook
Color: multicolour (red, blue, white)
Note: I drew just one view (capture) in front of me, in full composition. I choose America blue because it is drawing on oceanic site.

PICTURES




Companion species/multispecies

Waste the ocean

Record Number: 30

INFORMANTION

Date: SUN110421 **Time:** 100000-110000 (1 hr.)
Place: Bo Thong Lang Bay, Bang Saphan, Prachuap Khiri Khan Province
Temperature: 30c. (apx.) **Air: -** **Wind: -**
Tide: All Day: 0% Waning, Low Tides: 0.5 m @ 22.00 / Hight Tides: 0.8 m @ 05.53, 0.6 m @ 15.21

OBSERVATION:

-I found most of microplastic/macroplastic from sand. I will be collecting microplastic in water. These microplastics can contaminated in the seawater easily.

SPECIMEN Y / N

Waste: Macroplastic and microplastic
Type waste:
Note:
Microplastic is plastic fragment that has 5.5 millimeters and smaller. There are two main types of microplastic: 1) Primary microplastic and 2) Secondary microplastic. There are also 5 types of microplastic: 1) Fragments, 2) Fibers, 3) Foam, 4) Nurdles and 5) Microbeads. Most of I found are macroplastic. Some are microplastics: 1) fragments and fibers.

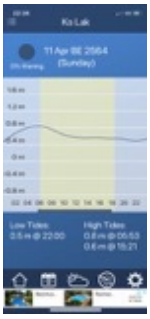
Microplastics Data

	Blue	Red	Transparent/ White	Black	Green	Other colour	total per Filter	total per Liter
ROUND								
FILAMENT								
ANGULAR								
OTHER SHAPE								
TOTAL								

DRAWING Y / N

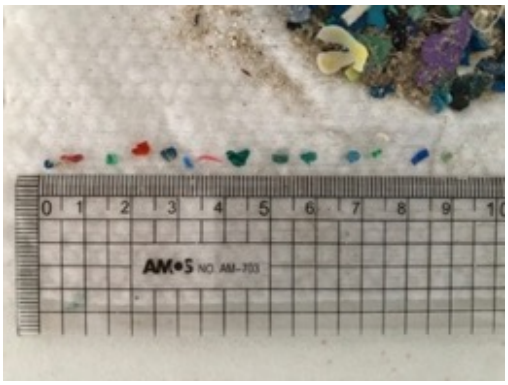
Entire specimen (habitus): __/__ Selected parts, describe:_____
View: Anterior and dorsal Structures to be illustrated: external__/_, internal___
Technique: colored pencil on graph paper
Color: blue, pink, turquoise
Note: -using micro lens X20 (microscope)

PICTURES









0 1 2 3 4 5 6 7 8 9
AMOS NO. AM-703

Record Number: 33

INFORMANTION

Date: TUE140921 **Time:** at morning and afternnon

Place: 1) Wat Bun Tawee (Wat Tumklaeb), Phetchaburi Province, 2) Bo Thong Lang Bay, Prachuap Khiri Khan Province

Temperature: **Air:** **Wind:**

Tide: Going up 0.97m (at 12.34 pm.)

All Day: First Quarter, Low Tides: -0.2 m @ 03:44, Hight Tides: 1.2 m @ 16:08 2.9 m

OBSERVATION:

-I interviewed with a Thai nun at Wat Buntawee (Wat Tumklaeb), a Buddhist temple in Thongchai, Phetchaburi, Thailand.

-She told the story of a mythic town which relates to Buddhist doctrine on precept. Her name is “Uthai Pojchanawiset” (อุทัย พจนวิเสย).

-The story is shown at the temple. It relates to gold. The lesson is that if we do well, the good things will stay with us. The lesson seems to be “As you sow, so shall you reap” or “You reap, What you sow”, “What goes around, comes around” (ทำดีได้ดี ทำชั่วได้ชั่ว)

-In the cave, there are lots of women sculptures.

SPECIMEN Y / N

Note:

-The trash seems to be a smaller collection

DRAWING Y / N

Note:

PICTURES






Record Number: 34

INFORMANTION

Date: WED150921 **Time:** 100000-120000 (2.00 hrs.)
Place: Bo Thong Lang Bay, Prachuap Khiri Khan Province
Temperature: 28 C Cloudy **Air:** 13 Excellent **Wind:** 8 km/h WSW
Tide: Going up 0.41 m. at 10:09 am.
All Day: 71% Waxing, Low Tides: -0.3 m @ 04:40 / Hight Tides: 1.3 m @ 16:46

OBSERVATION:

-The trash seems to be collected in smaller amounts.
-I interviewed with a Thai monk, a restaurant and a receptionist of the hotel, about trash and the name of the location.
-The trash comes from two primary sources: 1) local people who live near the beach, and 2) tourists.
-There are no public services for collecting trash. The restaurants along the beach and some volunteer events respond.

SPECIMEN Y / N

Note:
-I collect some macro plastic waste. It is plastic toy.

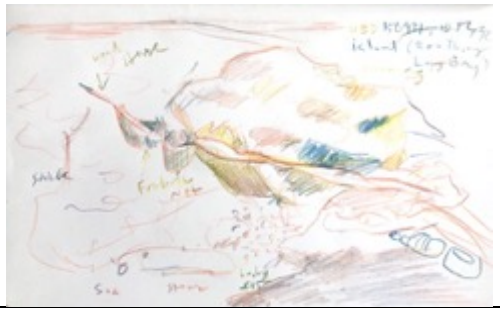
DRAWING Y / N

Technique:
Medium: _multicolor colored pencil__ Color: _red, yellow, blue__
Note:
-I drew roughly due to the rain.
-I realise that the brushwood has moved a little from the previous location. Most trash on the island consists of general waste and fishery waste. When the tide is low, the trash under the sea will appear. Some might feel it is not so long, others are old. You can see the shell and barnacle on the trash.

PICTURES





Fieldwork in The UK 2021-2024

(October 2021 – July 2024)

No.	Date	Aim	Location	Drawing	
				Studio	Onsite
1	9/10/21	Survey location	Lune River	-	-
2	20/10/21	Survey location	Morecambe	-	-
3	25/10/21	Survey location, Collecting	Lune River	-	-
4	20/03/22	Collecting microplastics	Lune River	-	2
5	25/03/22	Collecting microplastics	Morecambe	-	-
6	28/03/22	Survey location	Blackpool beach	-	-
7	01/04/22	Survey location	Halfmoon Bay, Heysham	-	-
8	02/04/22	Survey location	Fleetwood Beach	-	-
9	25/04/22	Collecting microplastics	Halfmoon Bay, Heysham	-	-
10	21/05/22	Collecting microplastics	Cleveleys Beach	-	-
*11	27/05/22	Collecting microplastics	Rossall and Cleveleys Beach	-	-
12	24/06/22	Collecting microplastics	Fleetwood Beach	-	2
13	10/09/22	Collecting microplastics	Cleveleys Beach	-	-
14	23/09/22	Collecting microplastics	Cleveleys Beach	-	2
15	07/02/24	Collecting microplastics	Knott End-on-Sea	-	-
*16	05/07/24	Collecting microplastics	Rossall Beach	-	-

*Asterisks denote days when a significant quantity of waste was found.

Record Number: 3

INFORMATION

Date: MON251021 **Time:** 153000-161300 (43 mins)
Place: Survey location, Lune River (Aldcliffe Hall Lane, Lancaster)
Temperature: 15 C **Air: -** **Wind: -**
Tide:
All Day: 66% Waning, Low Tides: 2.9 m @ 08.57, 2.7 m @ 21.31 / Hight Tides: 7.7 m @ 02.26, 7.8 m @ 14.45

OBSERVATION:

-Trash or debris came with the tide.
-River Lune connects to the sea. So, what is Sea?
-High tide in spring and when there is much rain
-This place might be challenging to find microplastics.
-There are dead animals, such as crabs (mixed fresh and seawater), fish eggs, and seashells.
-Grass under water is so amazing
-This location is next to the Lune Estuary path and the Bay Cycleway.

Questions:
-We walk on the ground of the river?
-Where did the Lune come from? Is it the long river?
-History of Lune Estuary
-What is the name of the sea?

https://www.streetlist.co.uk/la/la2/la2-0/aldcliffe-hall-lane

SPECIMEN Y / N

Waste: 1) plastic waste: lid, straw, lighter, can, snack, toys, bottle, shoes, pieces, 2) other: glass bottle, foam, cloth, wood
Type waste: 1) Recycle waste: plastic waste, 2) General waste (and nonrecycled plastic waste), 3) Compostable waste
Note:
-Most of the trash could be divided into two types: 1) daily products, especially packages of food/eating/consumption, such as lids (the most common), straws, cans, snacks, lighters, and other glass bottles, and 2) entertainment, especially toys. Minority is everyday objects, such as shoes and debris (unrecognisable objects). These are example specimens that show similar findings in Thailand.
-I got small plastic pieces, which are a plastic flower and a plastic burnt piece.
-There are some pieces of foam. This means that foam is still being used in this country

DRAWING Y / N

PICTURES







Record Number: 4

INFORMATION

Date: SUN200322 **Time:** 153000-173000 (2 hours)
Place: Collecting, Lune River (Aldcliffe Hall Lane, Lancaster)
Temperature: 10 C (Mostly sunny) **Air: -** **Wind: -**
Tide: going down 4.08 m. at 16.19
All Day: 92% Waning, Low Tides: 0.7 m @ 07.00, 0.5 m @ 19.23 / Hight Tides: 9.3 m @ 00.30, 9.7 m @ 12.46

OBSERVATION:

-Lower tides in the evening
-Trash or debris came with the tide.
-Macroplastics and other trash found there, such as bottles, lids, lighters, and shoes.
-Natural objects include animal skeletons, seaweed, and wood.

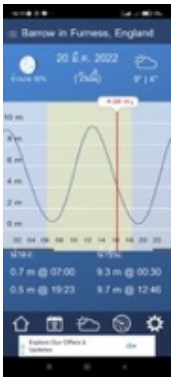
SPECIMEN Y / N

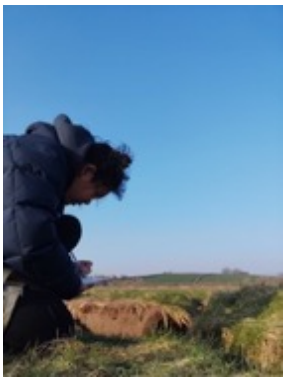
Note:
-I found microplastics in blue, red, purple, gray, green. Most are flat and angular.
-They are sticked into the debris which come with the tide.

DRAWING Y / N

Note:
-Trash sticked in mud. Drawing it with rough sketch with pencil

PICTURES





Record Number: 9

INFORMATION

Date: MON250422 **Time:** 150000-151500 (15 mins)
Place: Collecting, Haft Moon Bay, Heysham
Temperature: 12 (Mostly cloudy) **Air: -** **Wind: -**
Tide: going up 2.60 m. at 15.32
All Day: 25% Waning, Low Tides: 2.9 m @ 01.48, 2.3 m @ 14.36 / Hight Tides: 7.2 m @ 07.36, 7.1 m @ 20.31

OBSERVATION:

-Some trash might come from the sewer under the ground, from local people and visitors. They came here for walking and dog walking.
-Burning trash without waste management harms the environment and causes plastic pollution in the ocean. In contrast, the trash might come from the wave/the tide.

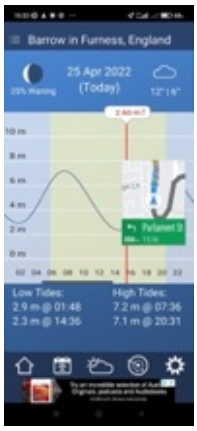
SPECIMEN Y / N

Note:
-I found some microplastics, but they came from burning grasses and rubbish on the beach. However, it looks like the microplastics are on the strandline or tideline, which iss similar to Alcliffe and Fleetwood

DRAWING Y / N

Note:

PICTURES



Record Number: 10

INFORMATION

Date: 210522 **Time:** 170000-173000 (30 mins)
Place: Cleveleys Beach, Cleveleys, Lancashire
Temperature: - **Air: -** **Wind: -**
Tide: 7.9 m. (high, going down)
All Day: 60% Waning, Low Tides: 1.7 m @ 10.39, 2.4 m @ 23.04 / Hight Tides: 8.8 m @ 03.45, 8.2 m @ 16.21

OBSERVATION:

I found large pieces of waste on the strandline, including microplastics and a dead ray. The seawater on that day was filled with bubbles and had a terrible smell – similar to pollution, the water was not clear.

SPECIMEN Y / N

Note:

DRAWING Y / N

Note:

PICTURES






Record Number: 11

INFORMATION

Date: 270522 **Time:** 170000-173000 (30 mins)
Place: Rossall Beach, Cleveleys, Lancashire
Temperature: - **Air: -** **Wind: -**
Tide: 1.8 m. (Low, going down)
All Day: 6% Waning, Low Tides: 2.3 m @ 04.34, 1.8 m @ 17.01 / Hight Tides: 8.4 m @ 10.16, 8.3 m @ 22.43

OBSERVATION:

Microplastics on strandline. The water was low, and the wave left microplastics on the beach, revealing the extent of microplastics in the sea. Feeling overwhelmed and cannot collect all of them.

SPECIMEN Y / N

Note:

DRAWING Y / N

Note:

PICTURES






Record Number: 14

INFORMATION

Date: FRI050724 **Time:** 180000-193000 (1.30 hours)
Place: Collecting, Rossall Beach
Temperature: 16 C (Cloudy) **Air: -** **Wind: -**
Tide: going up 2.41 m. at 19.00
All Day: new moon, Low Tides: 1.8 m @ 06.06, 0.5 m @ 18.27 / Hight Tides: 8.6 m @ 11.42

OBSERVATION:

-Lower tides in the evening
-More than 30 jellyfish are dead on the beach.
-The amount of microplastics did not change from two years ago.

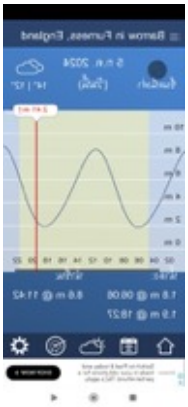
SPECIMEN Y / N

Note:
-Microplastics on strandlines, mixed with seaweeds, surely animal can digest them. It is everywhere, again overwhelmed.

DRAWING Y / N

Note:

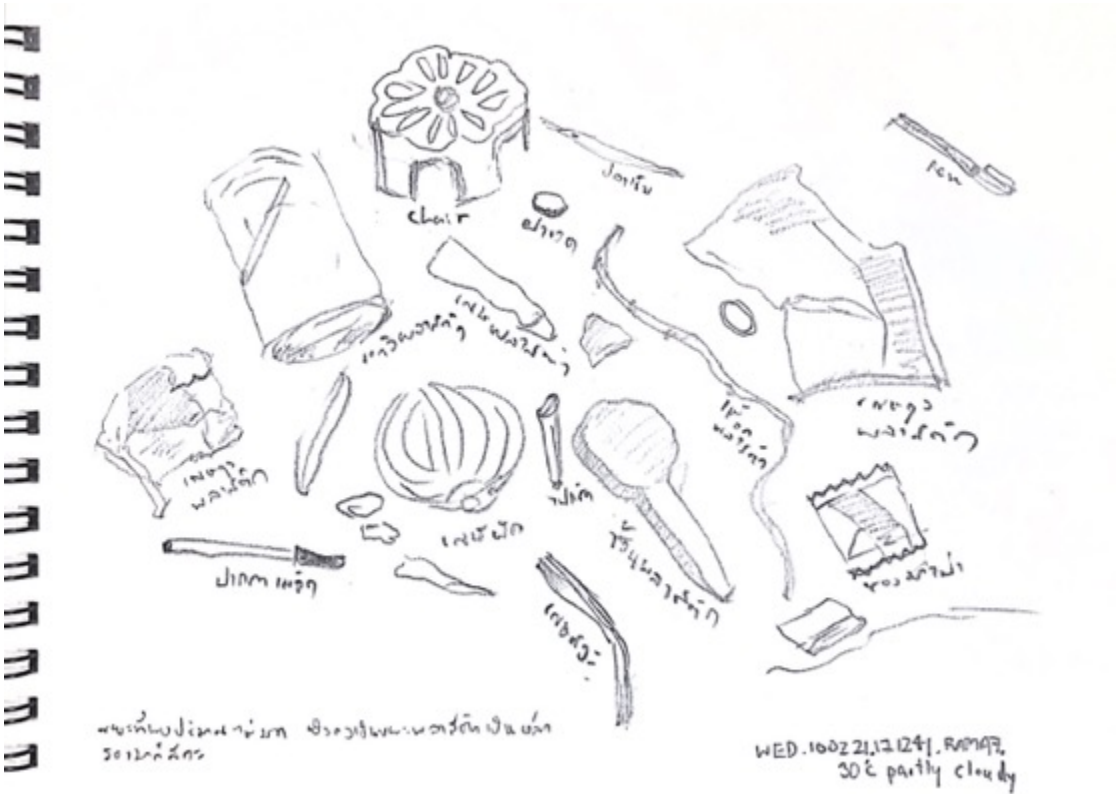
PICTURES





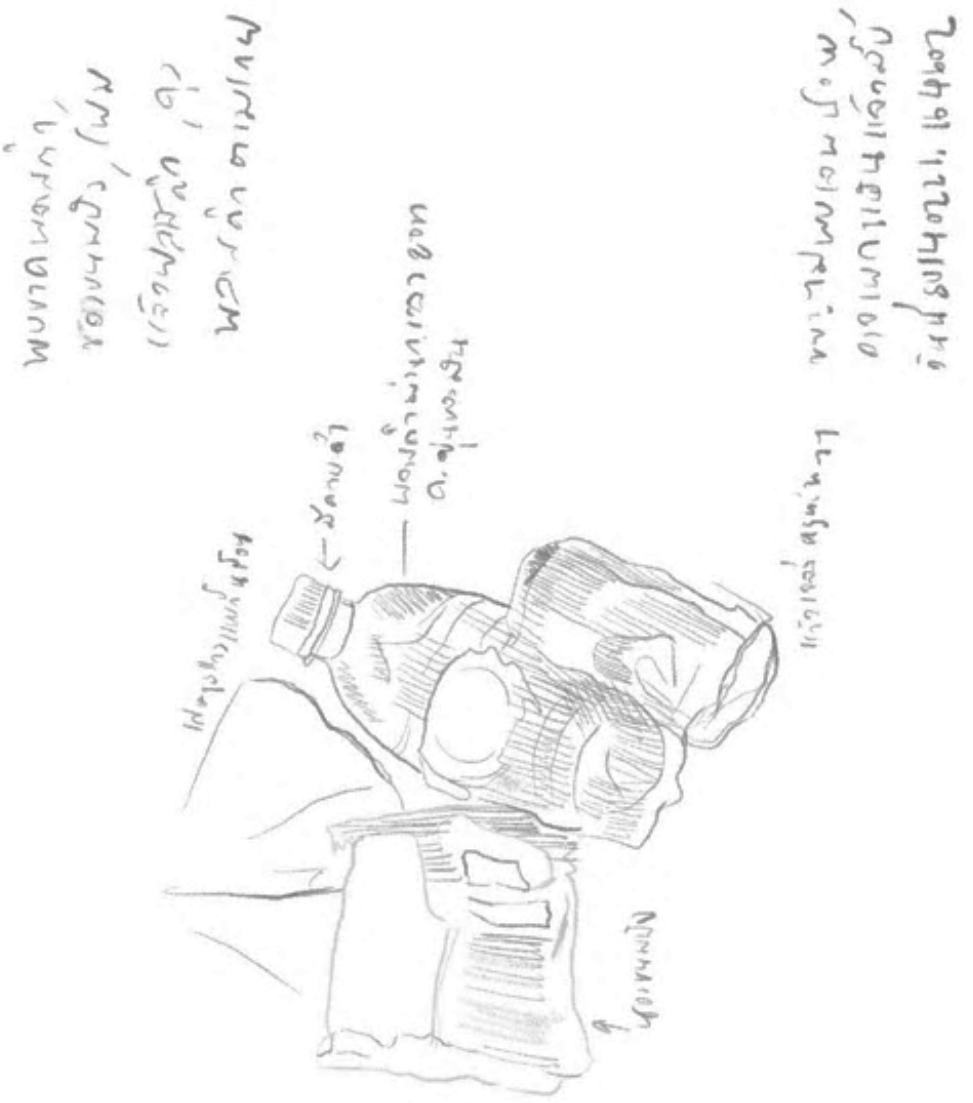
Appendix 5 Drawings on-site

A variety of drawings here includes works created on-site and in the studio in Thailand in 2021 and in the UK in 2022 and 2024, totalling 96 drawings across various techniques. I reviewed these drawings to develop the eco-fabulous drawing method, encompassing subjects for drawing, visual composition, and technique. I decided to use graphite and multicoloured pencils for on-site drawing. I also employ these drawings for analysis and synthesis in response to the research questions, mainly what I observe from fieldwork while tracking the information gathered from this practice.

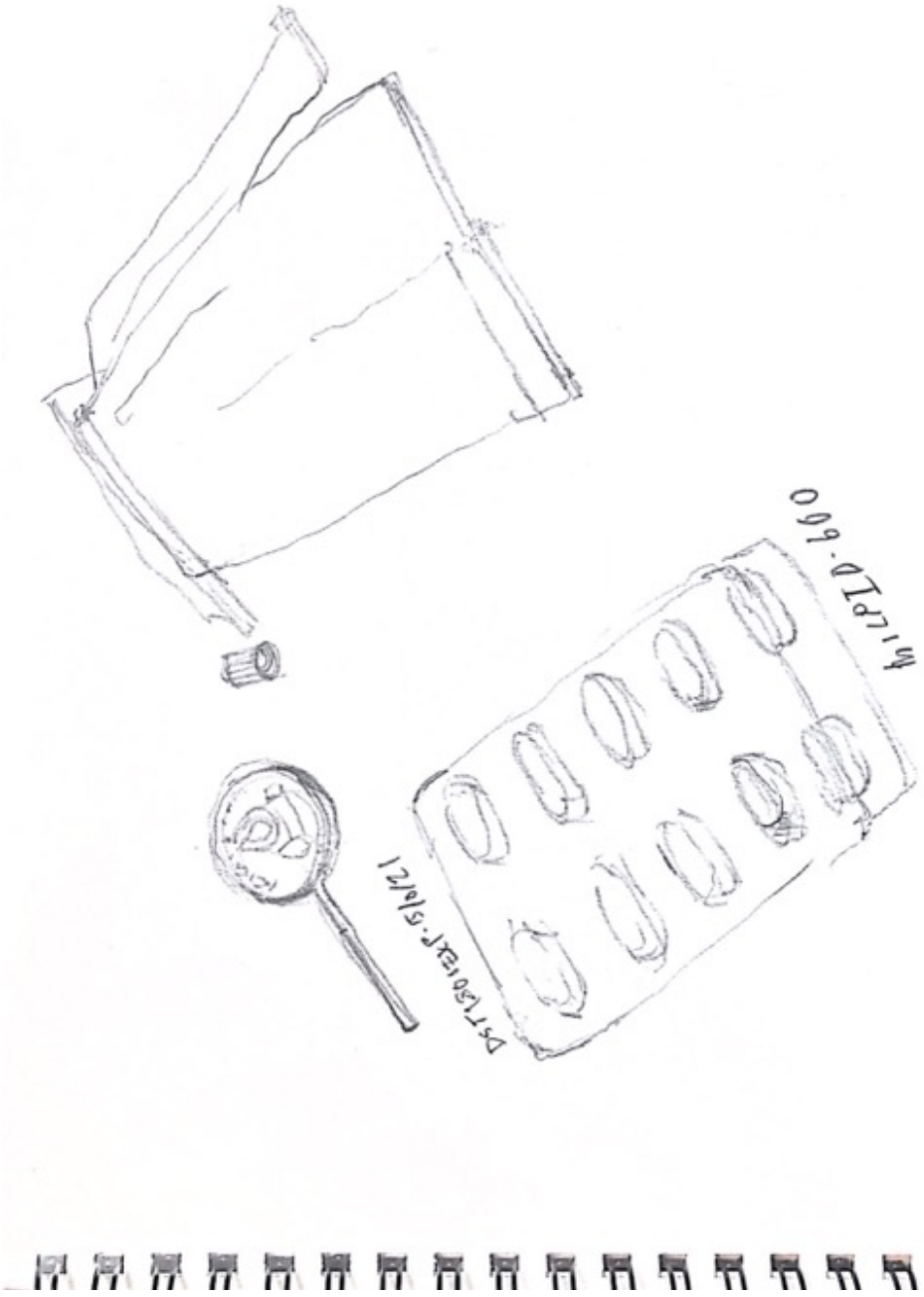


Drawing on-site with graphite on paer, 12 February 2021.

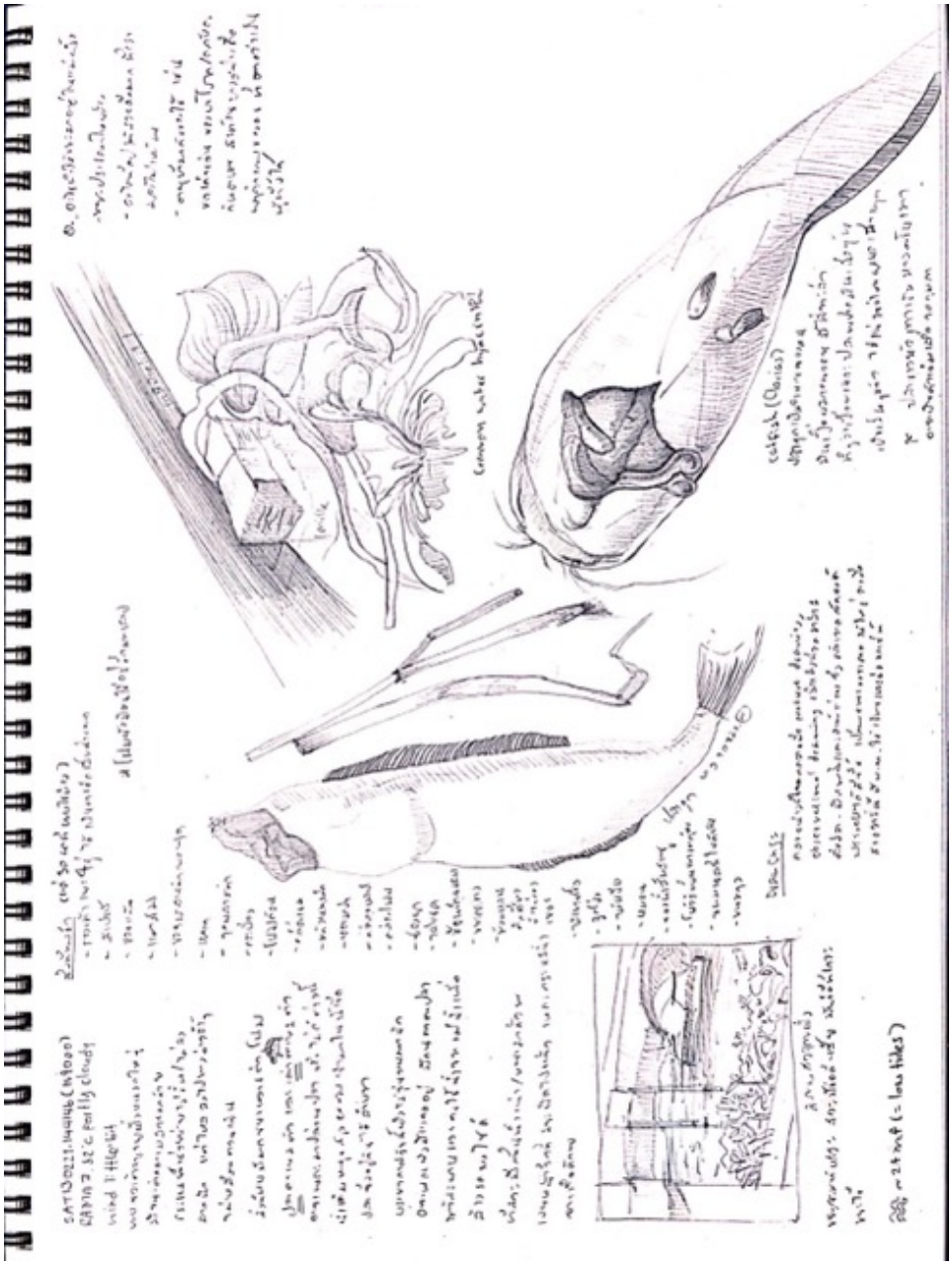
Drawing on-site with graphite on paper, 12 February 2021.



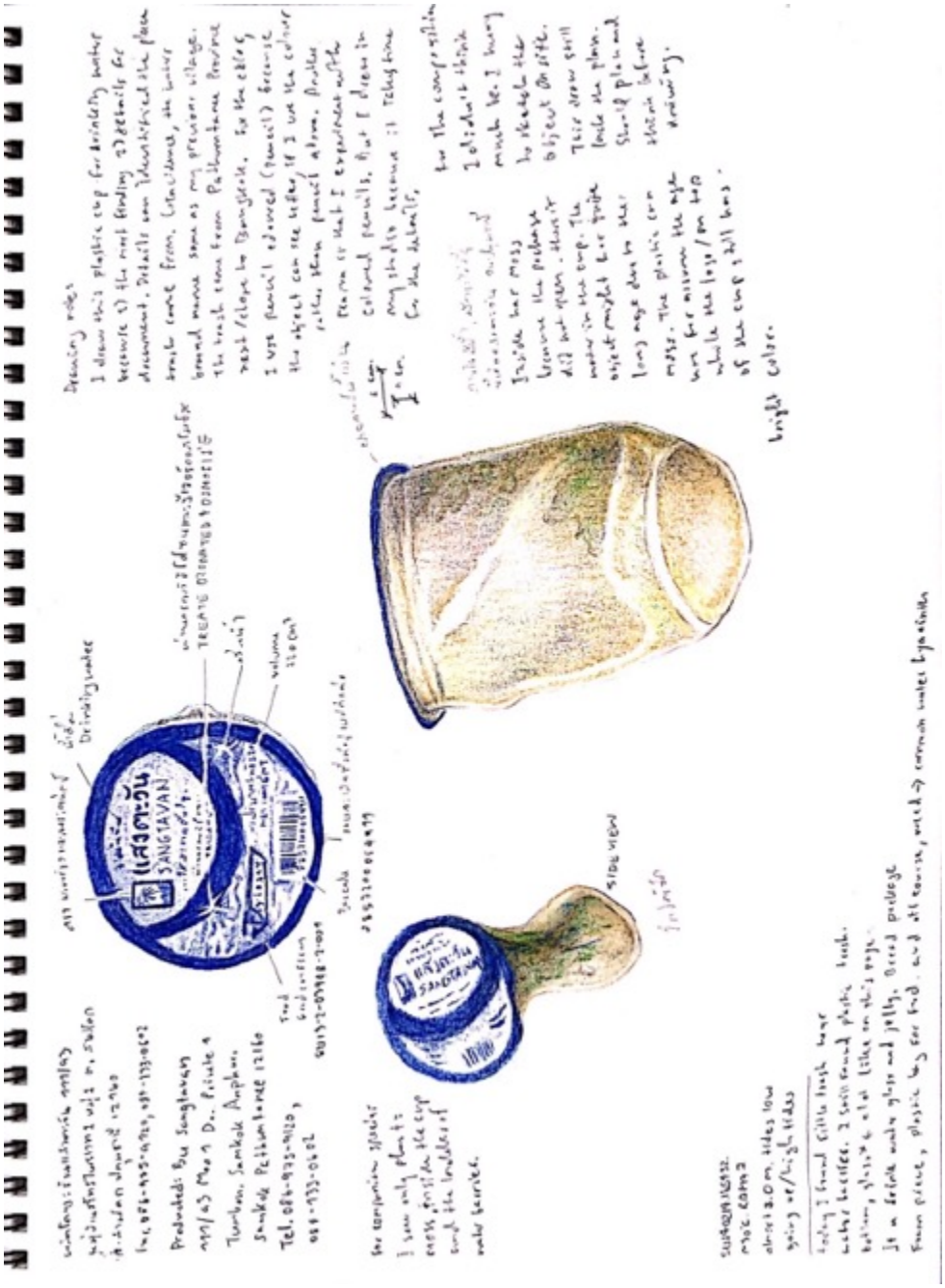
Digital drawing on-site on iPad, 12 February 2021.



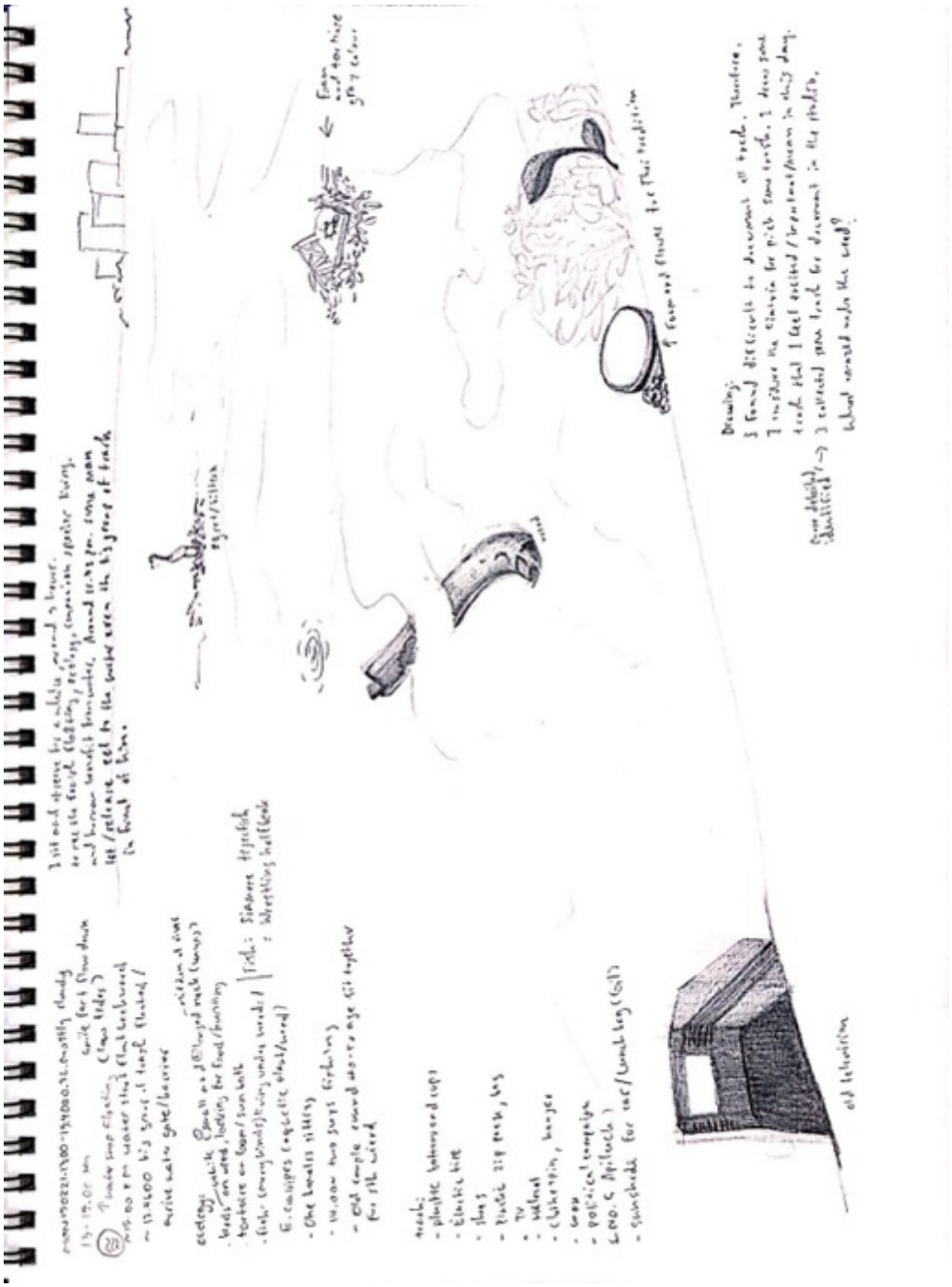
Drawing on-site, 2021.



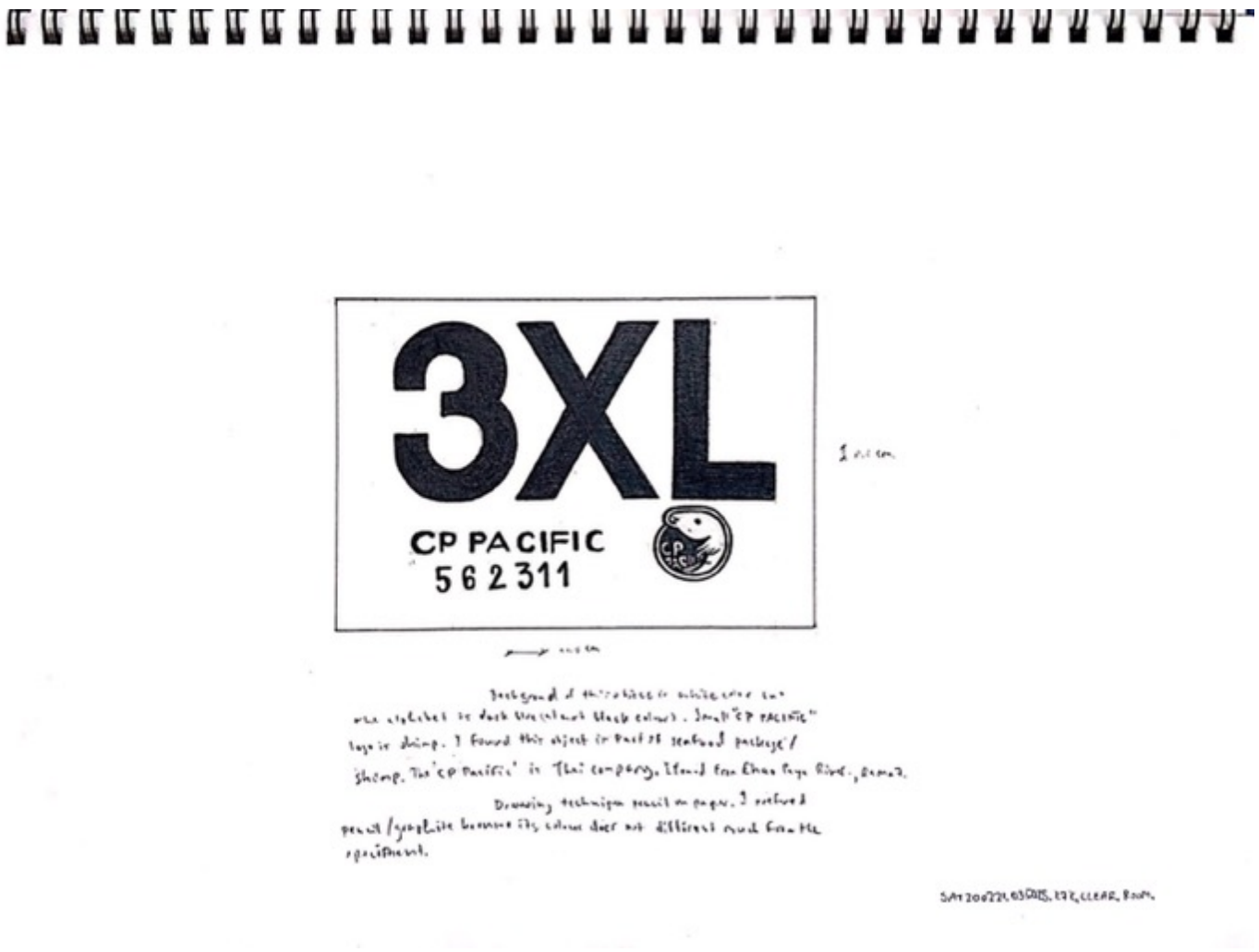
Drawing on-site with graphite on paper, 13 February 2021.



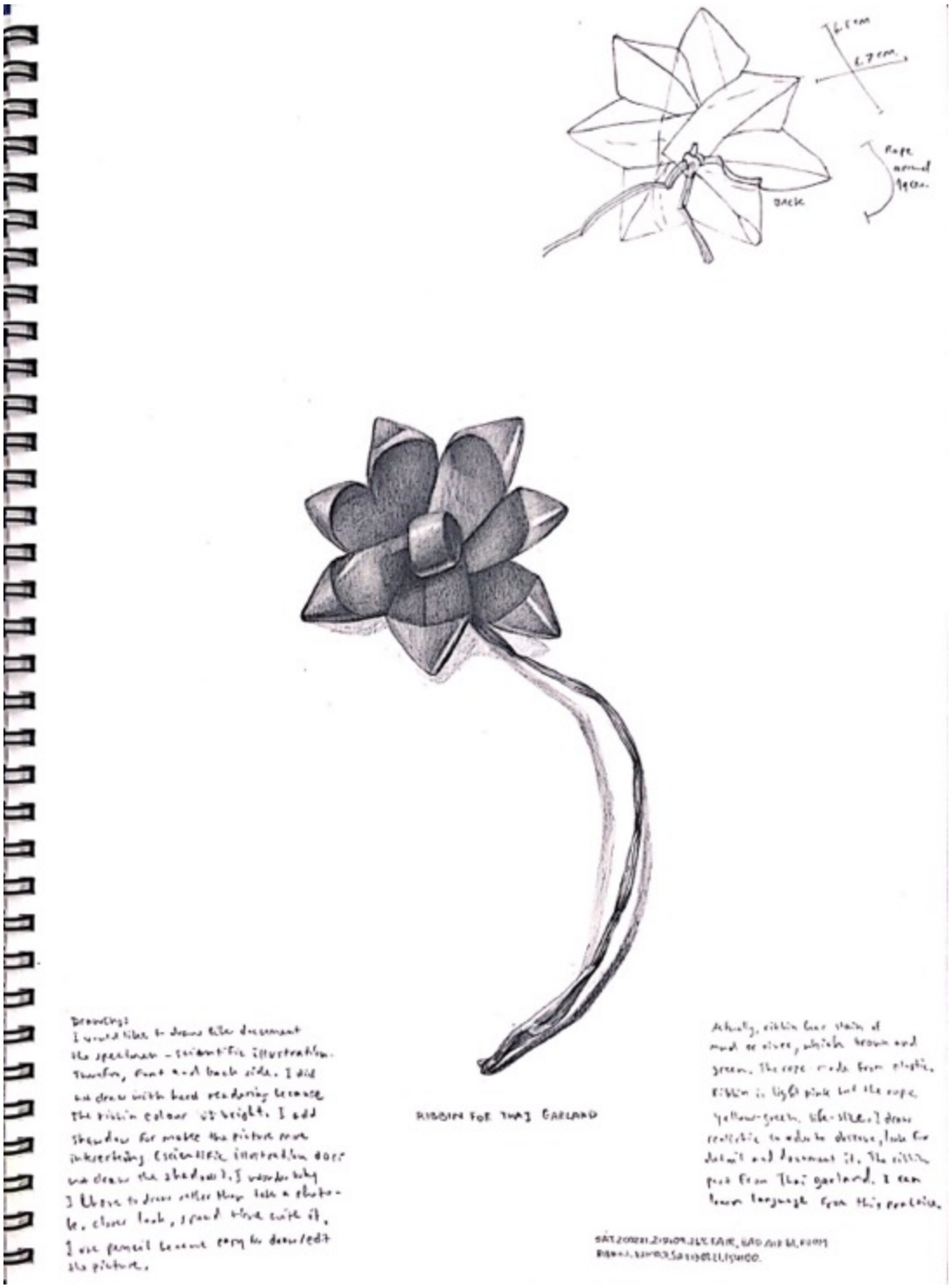
Drawing on-site with coloured pencils on paper, 14 February 2021.



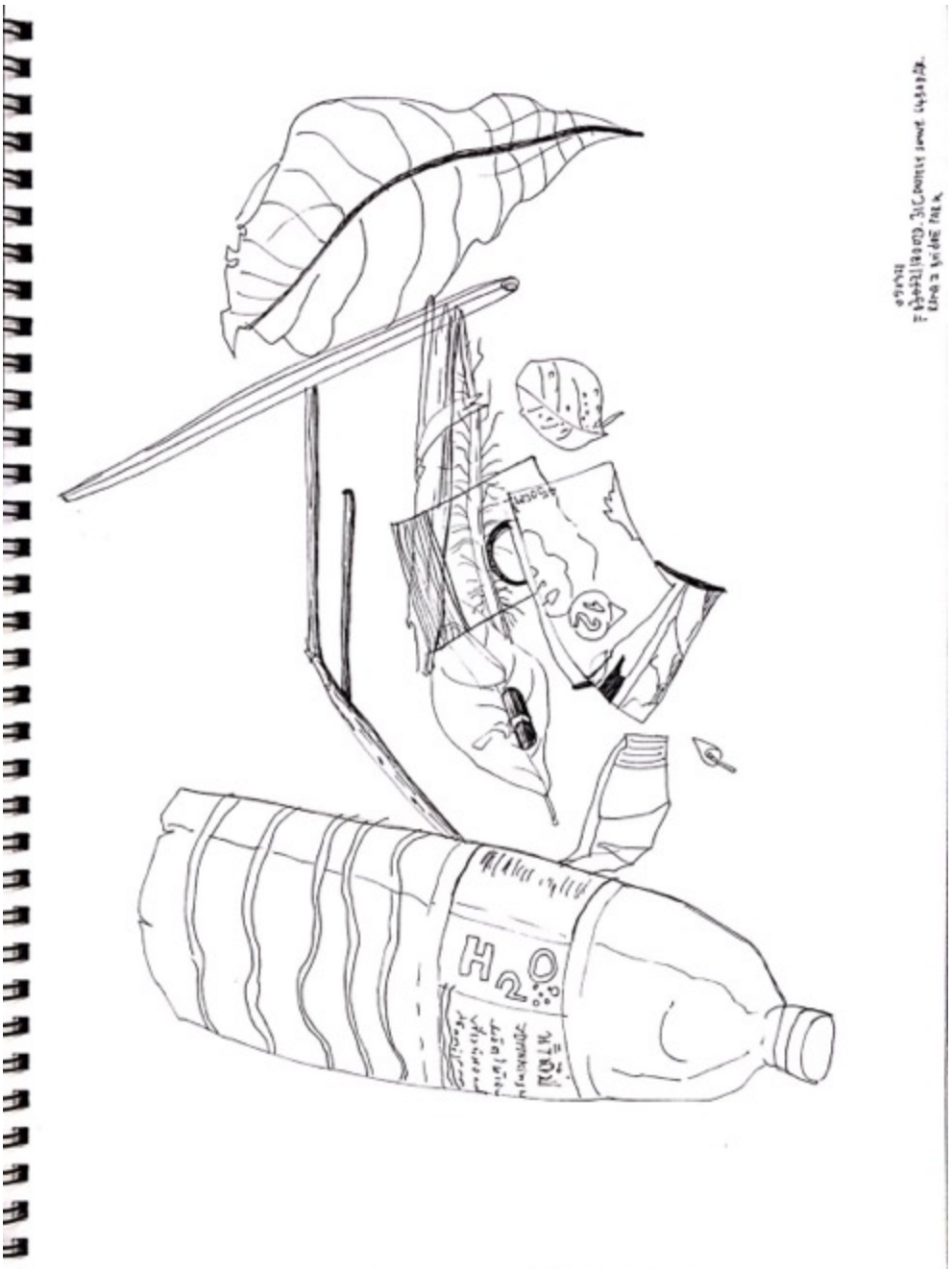
Drawing on-site with graphite on paper, 15 February 2021.



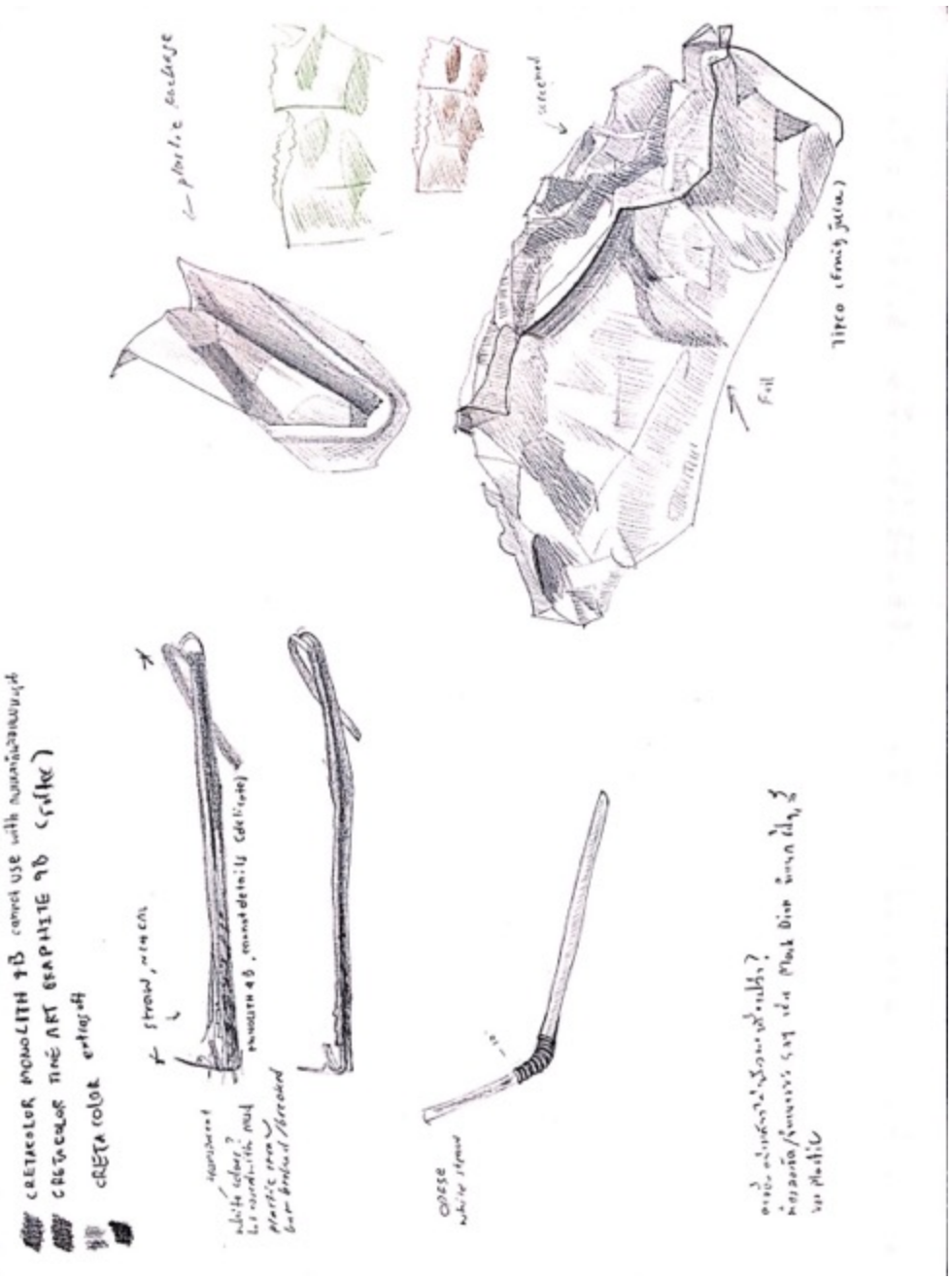
Drawing in studio with graphite on paper, 20 February 2021.



Drawing in studio with graphite on paper, 20 February 2021.



Drawing on-site with graphite on paper, 5 March 2021.

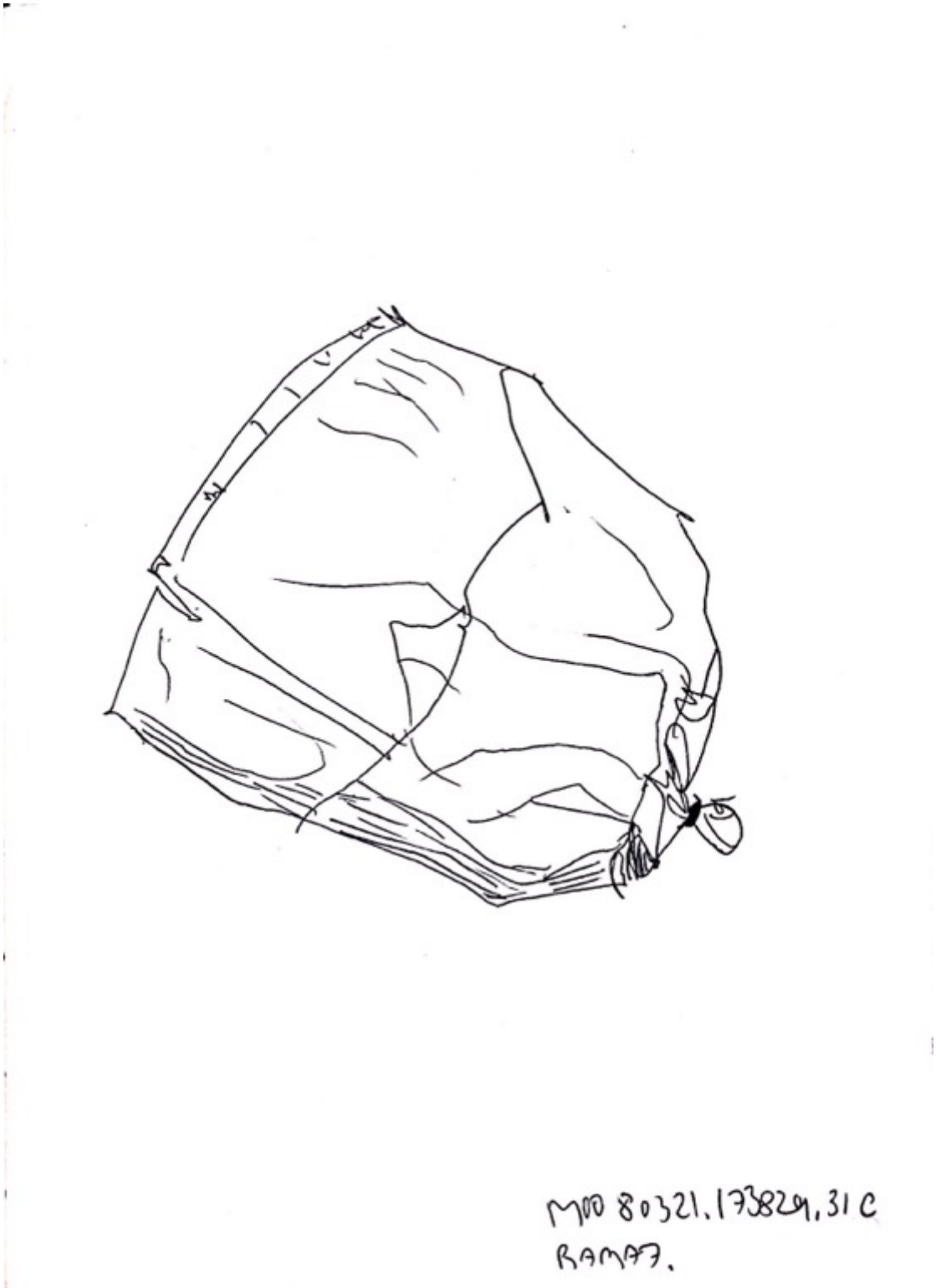


Drawing on-site with graphite on paper, 5 March 2021.

Drawing on-site with graphite and coloured pencils on paper, 2021.

Drawing on-site with graphite and coloured pencils on paper, 5 March 2021.

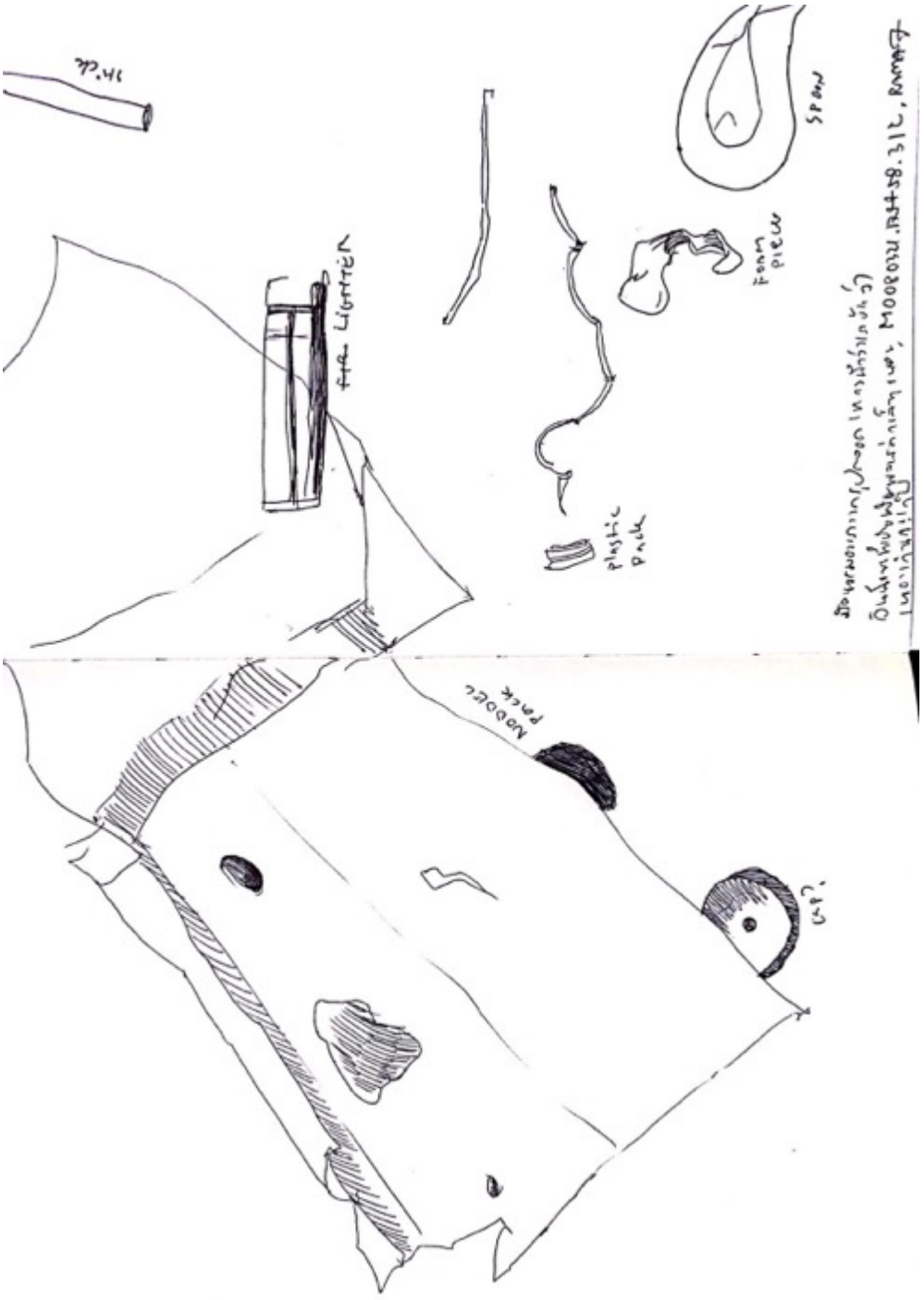
Drawing in studio with coloured pencils, 7 March 2021.



Drawing on-site with ballpoint pen on paper, 8 March 2021.

Drawing in studio with ballpoint pen on paper, 8 March 2021.

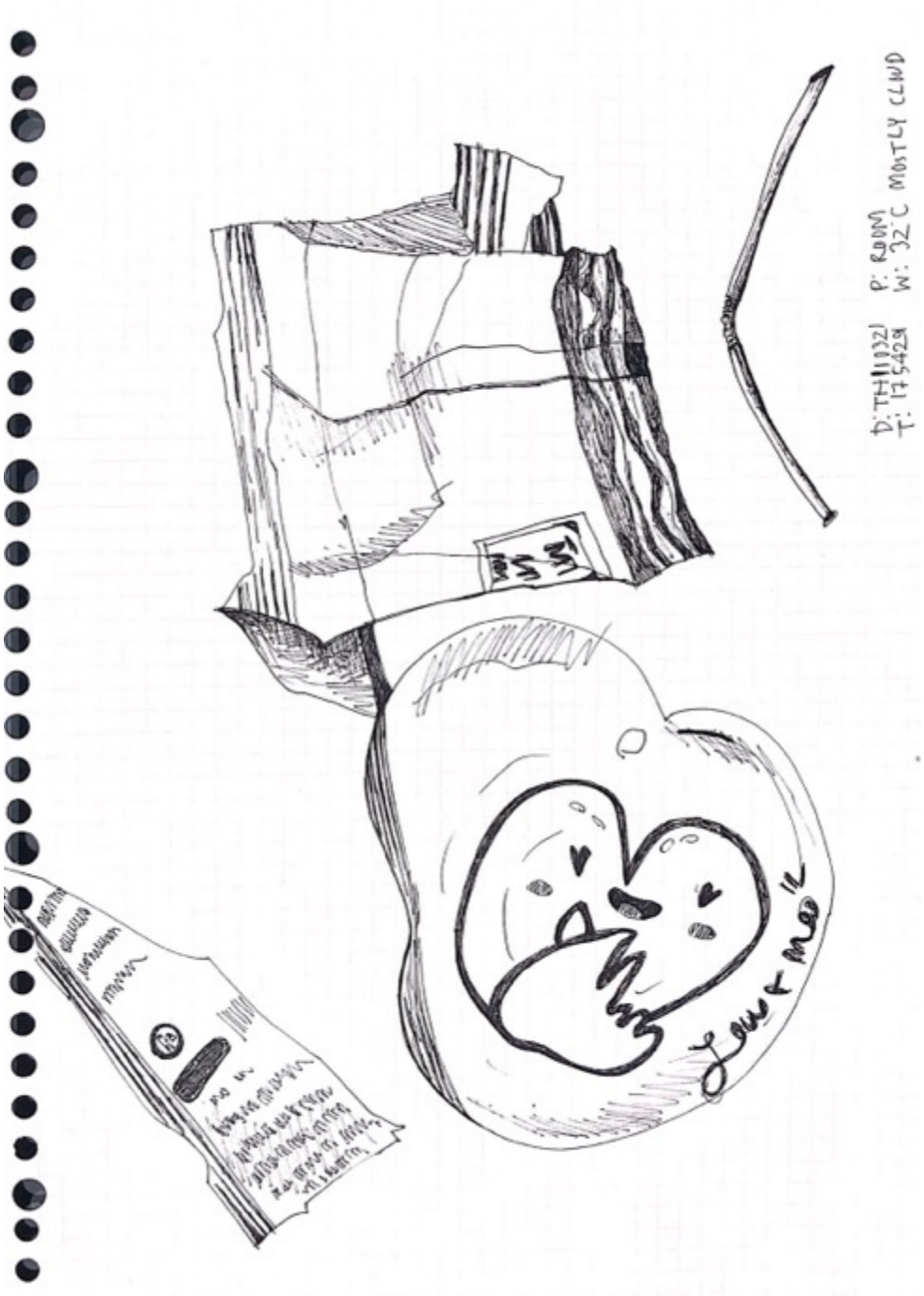
Drawing on-site with ballpoint pen on paper, 8 March 2021.



Drawing on-site with ballpoint pen on paper, 8 March 2021.

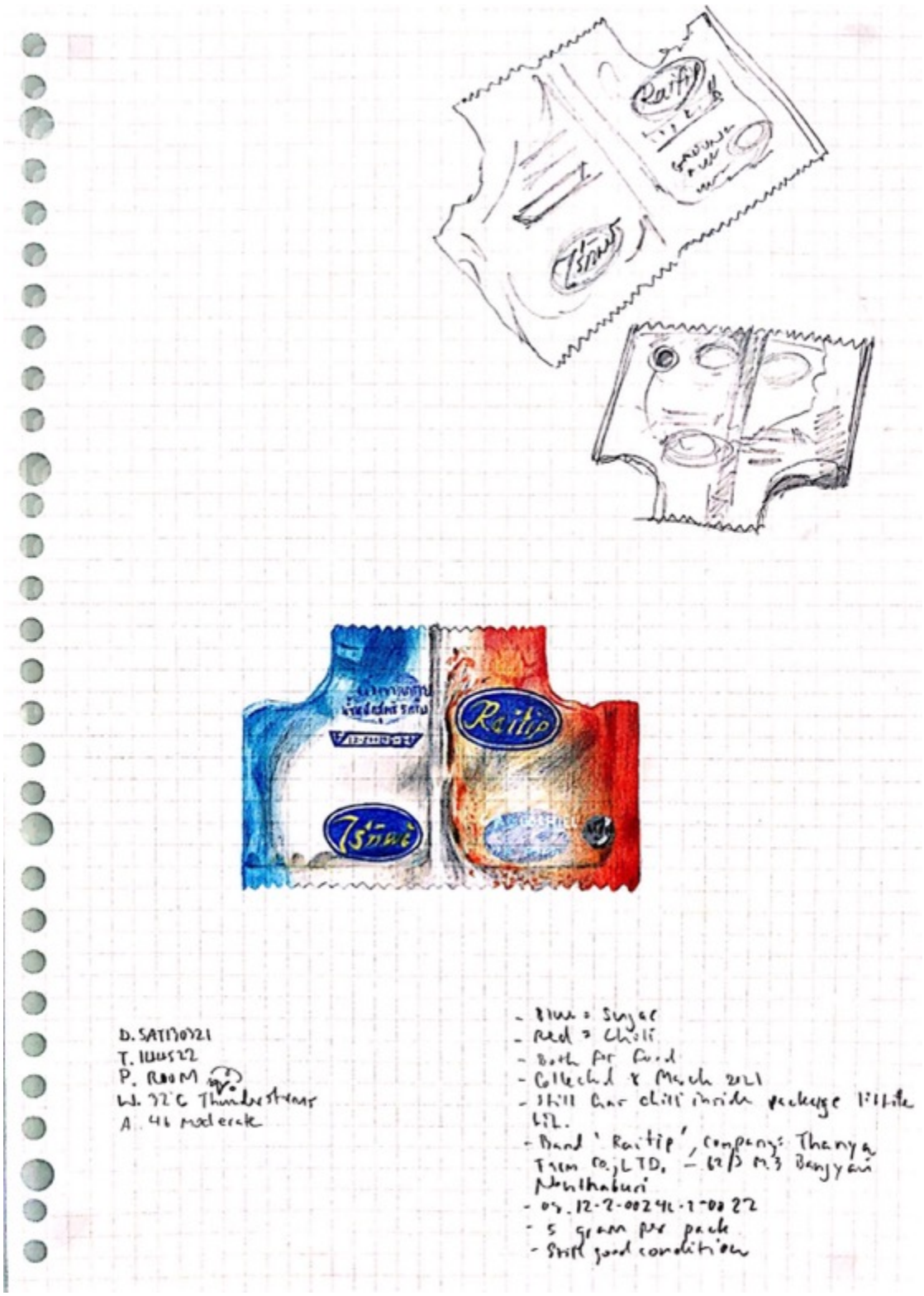
Drawing in studio with coloured pencils on paper, 9 March 2021.

Drawing on-site with ballpoint pens on paper, 11 March 2021.

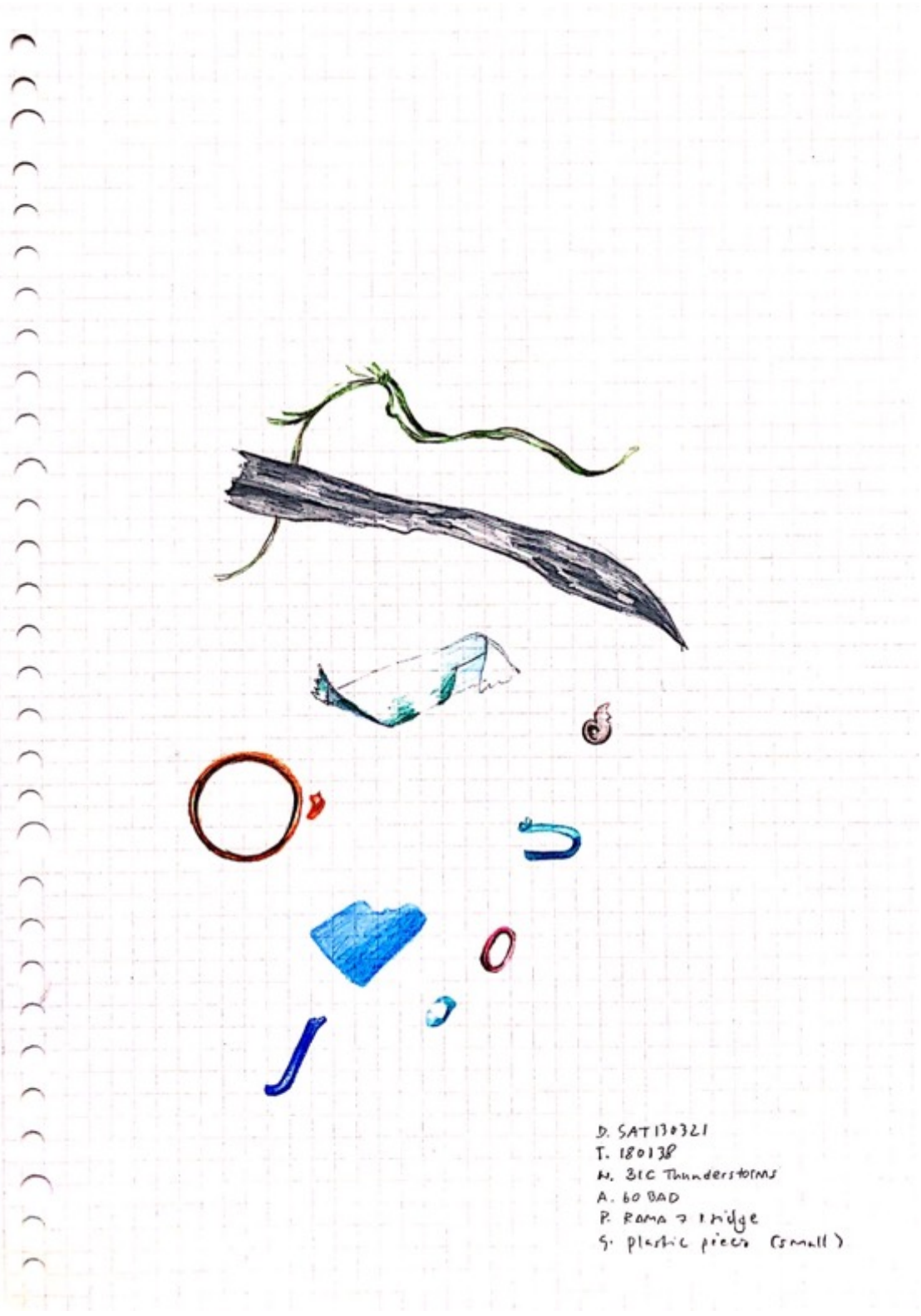


Drawing on-site with technical drawing pen on paper, 11 March 2022.

Drawing in studio with coloured pencils on paper, 13 March 2021.

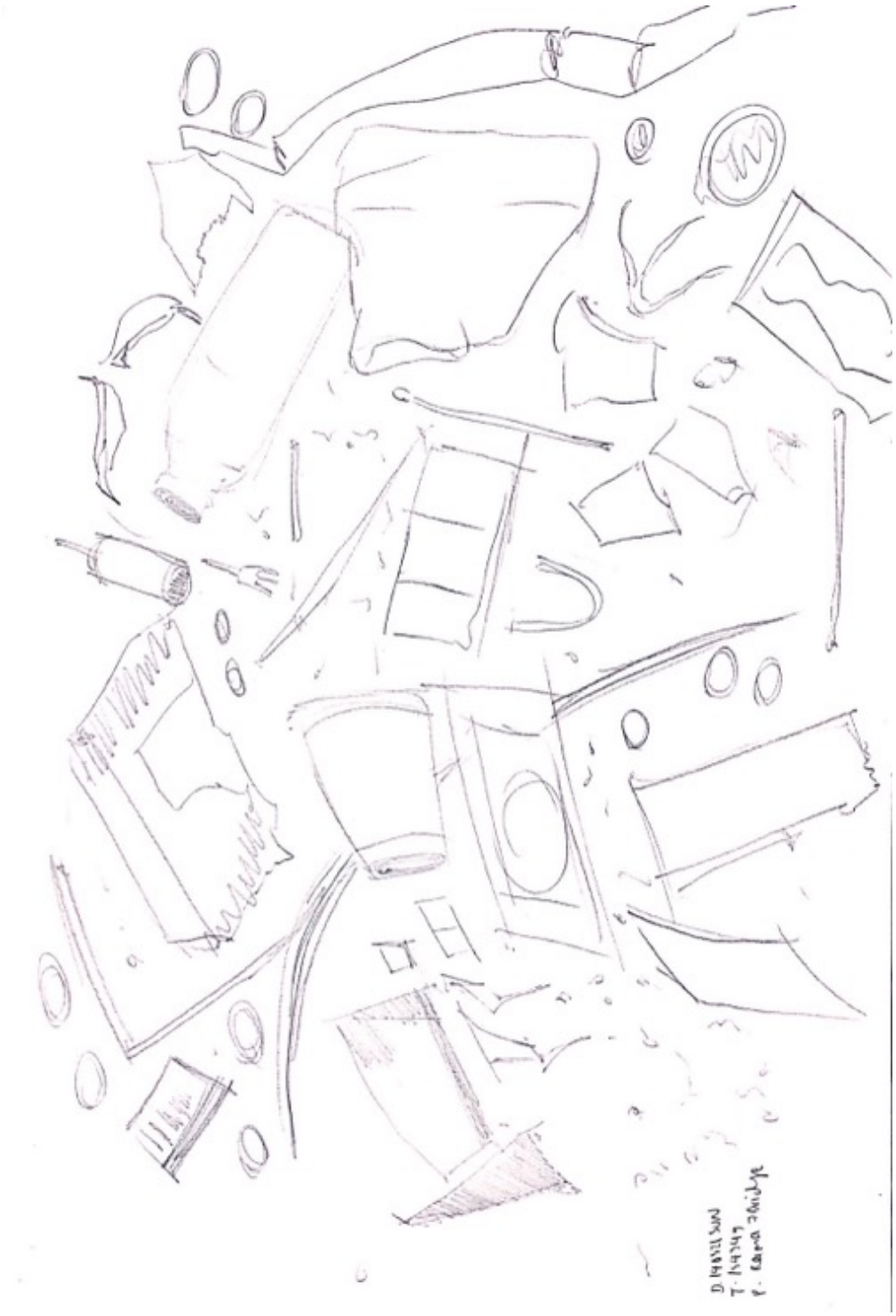


Drawing in studio with coloured pencils on paper, 13 March 2021.

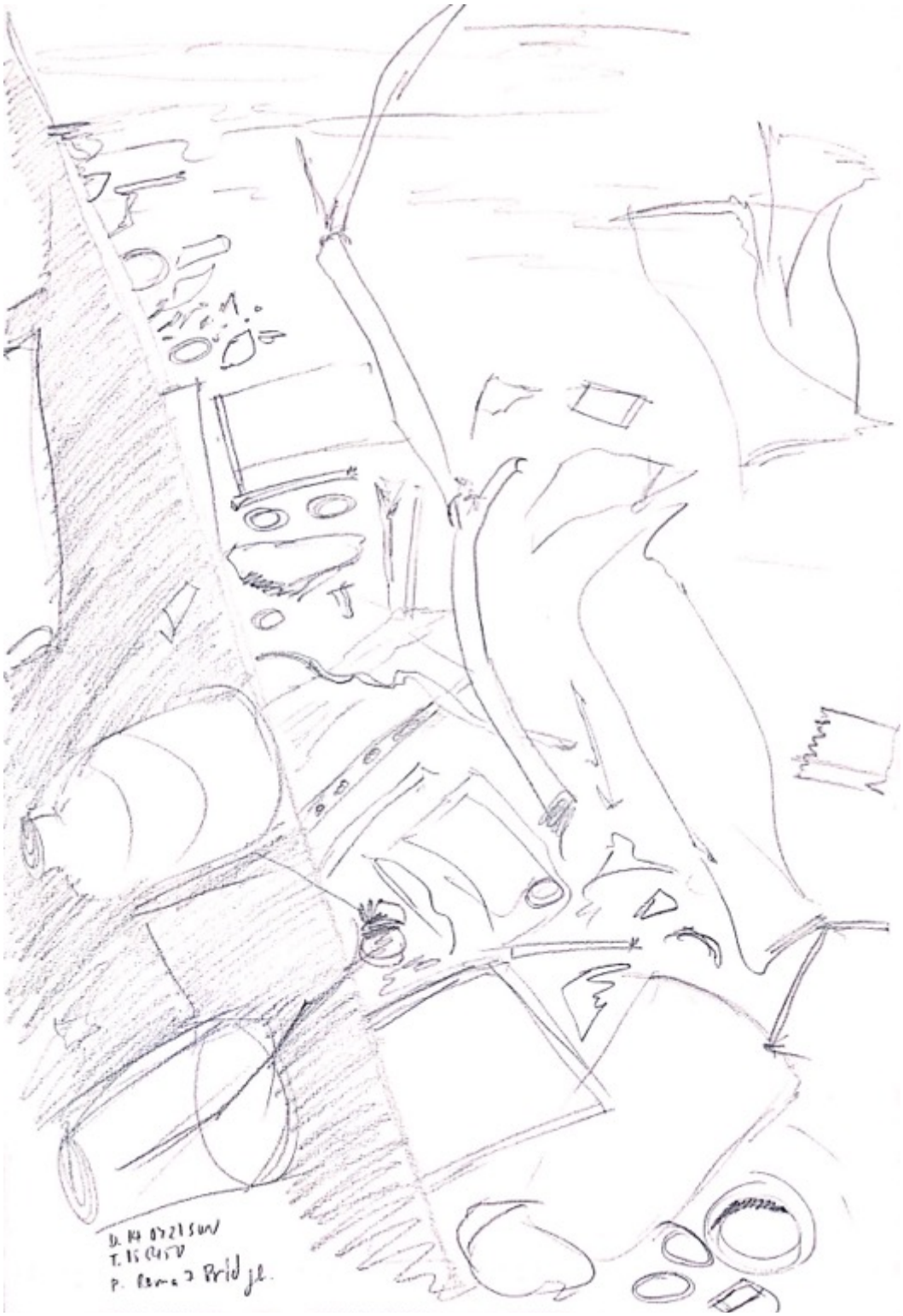


Drawing on-site with coloured pencils on paper, 13 March 2021.

Drawing on-site with coloured pencils on paper, 13 March 2021.

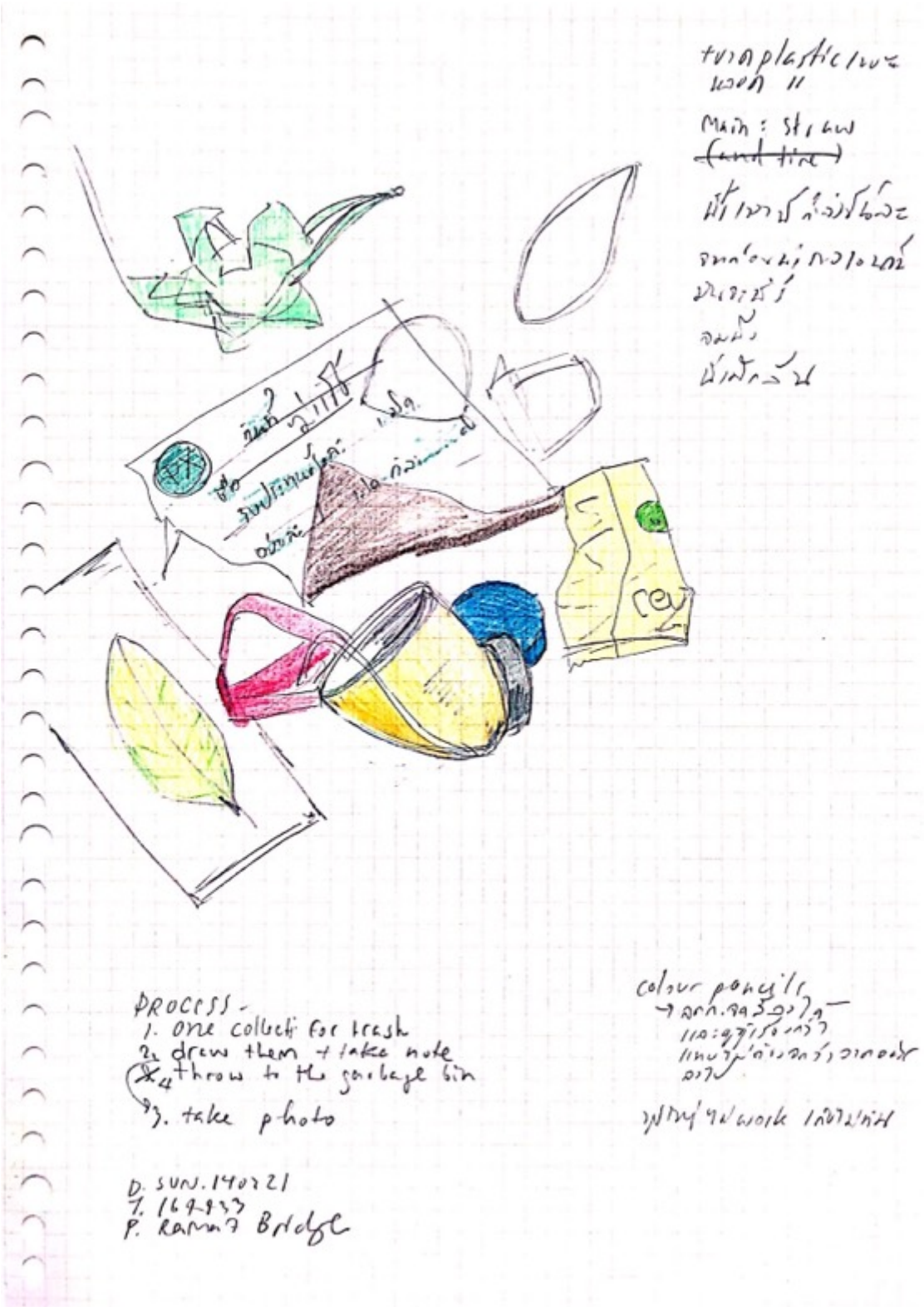


Drawing on-site with graphite on paper, 14 March 2021.

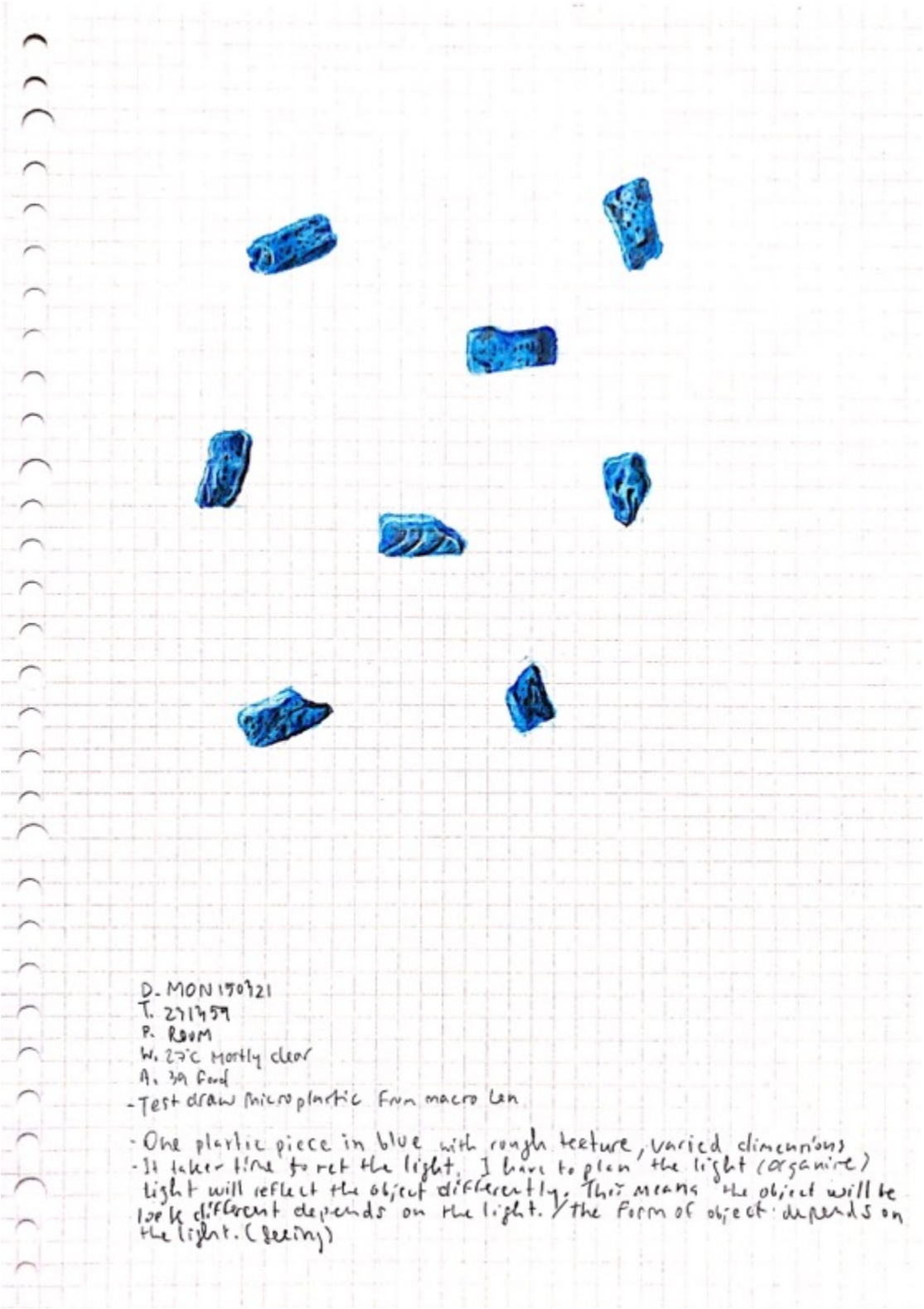


Drawing on-site with grahite pencil on paper, 14 March 2021.

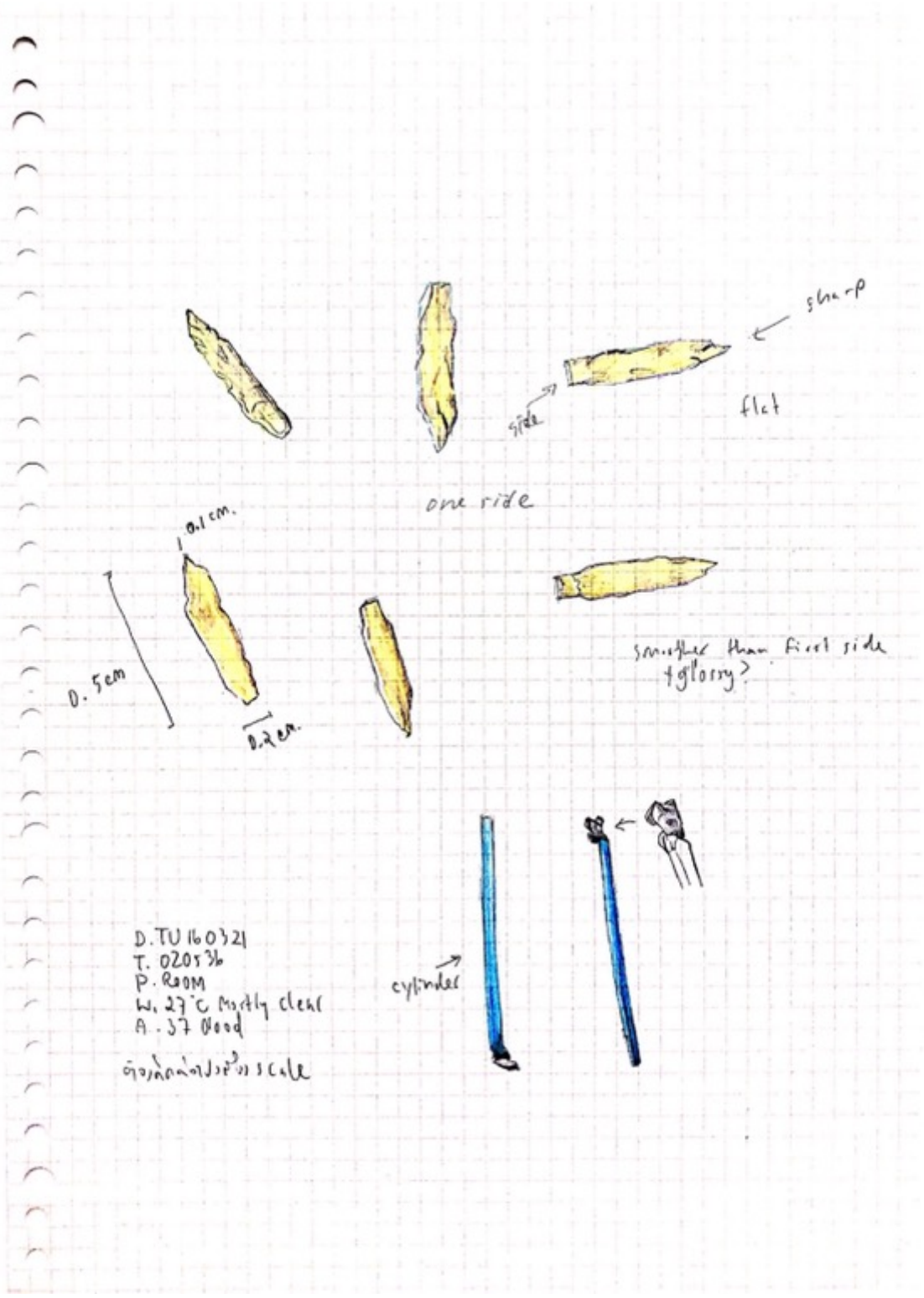
Drawing on-site with coloured pencils on paper, 14 March 2021.



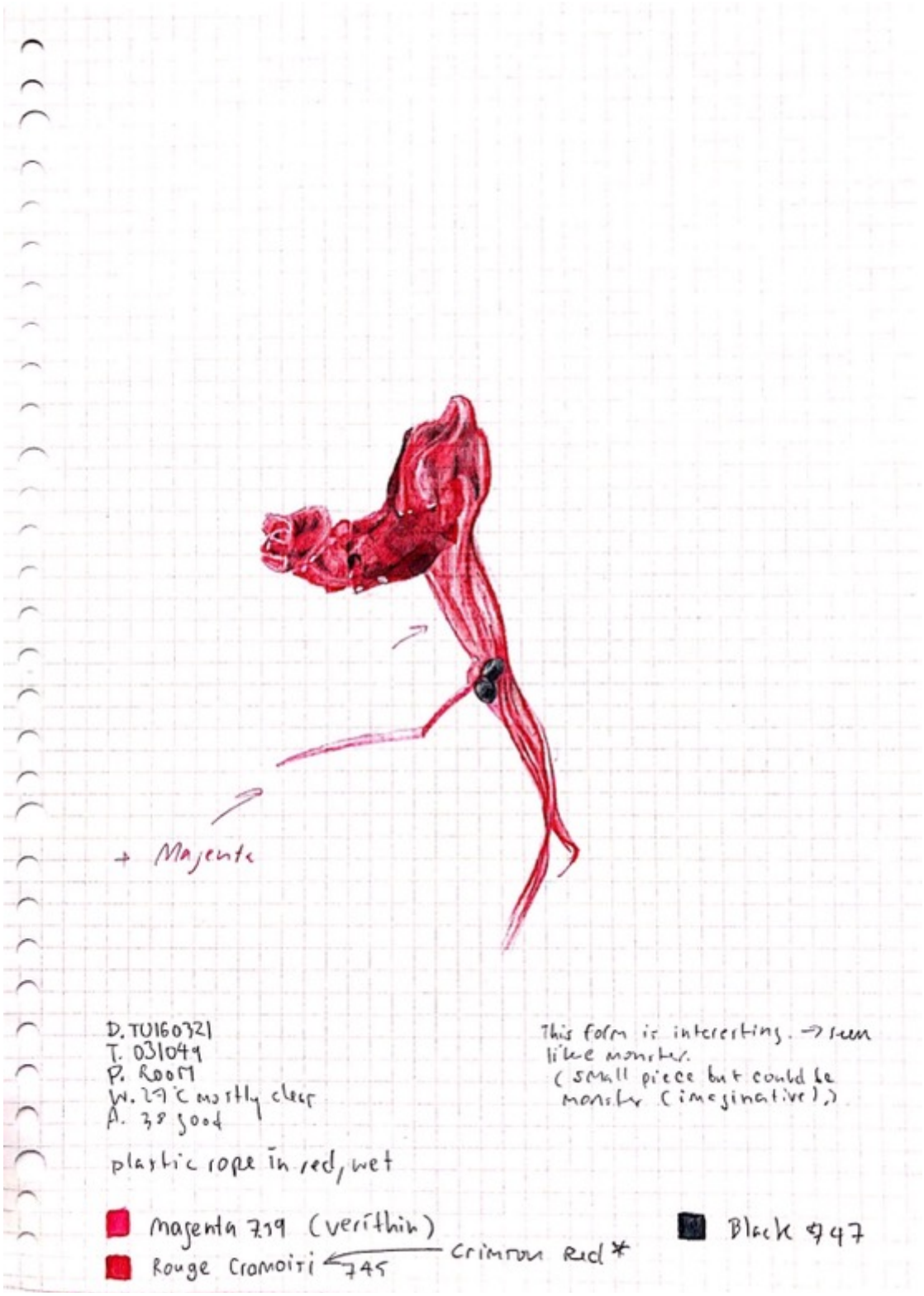
Drawing on-site with coloured pencils on paper, 14 March 2021.



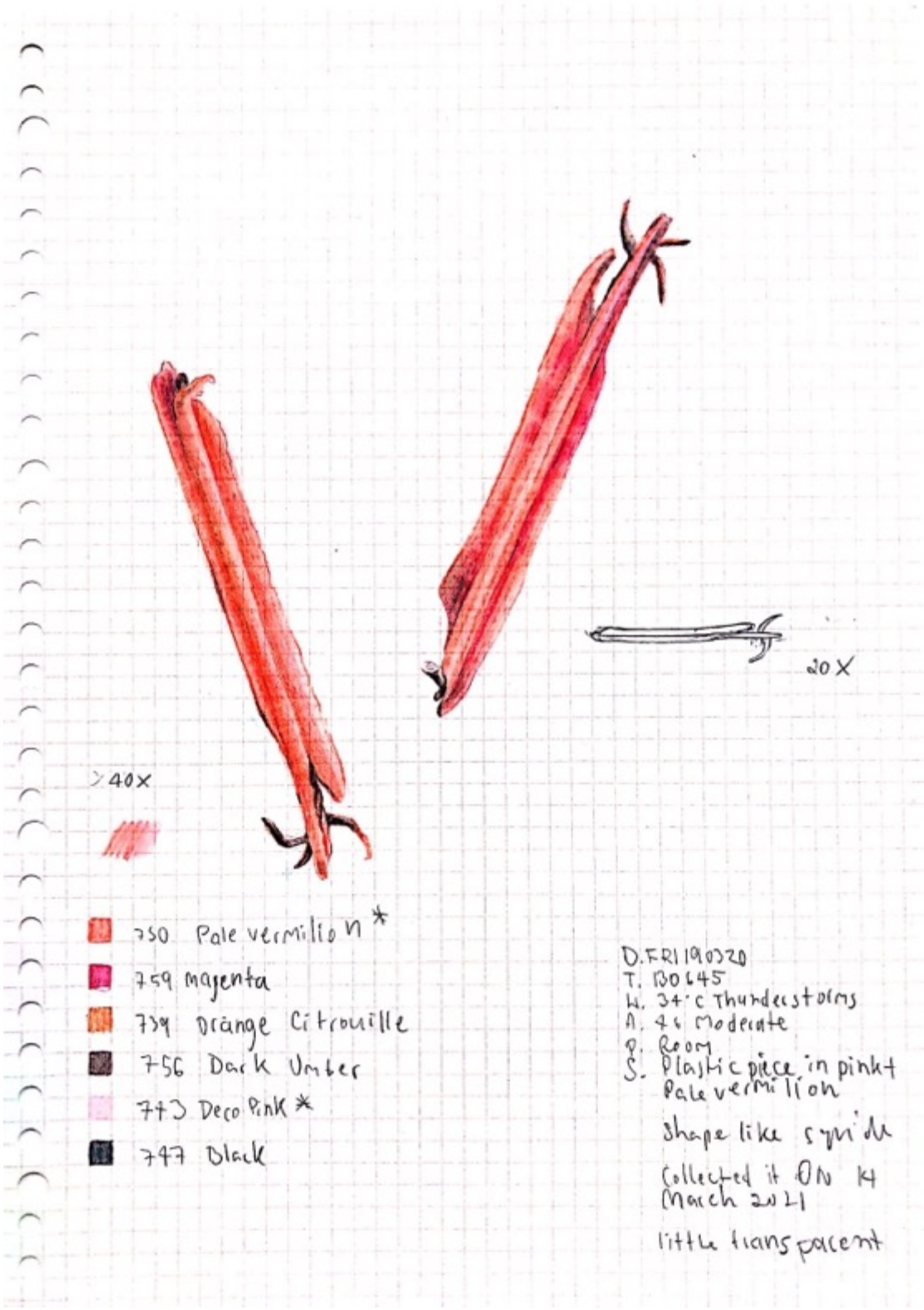
Drawing in studio with coloured pencils on graph paper, 15 March 2021



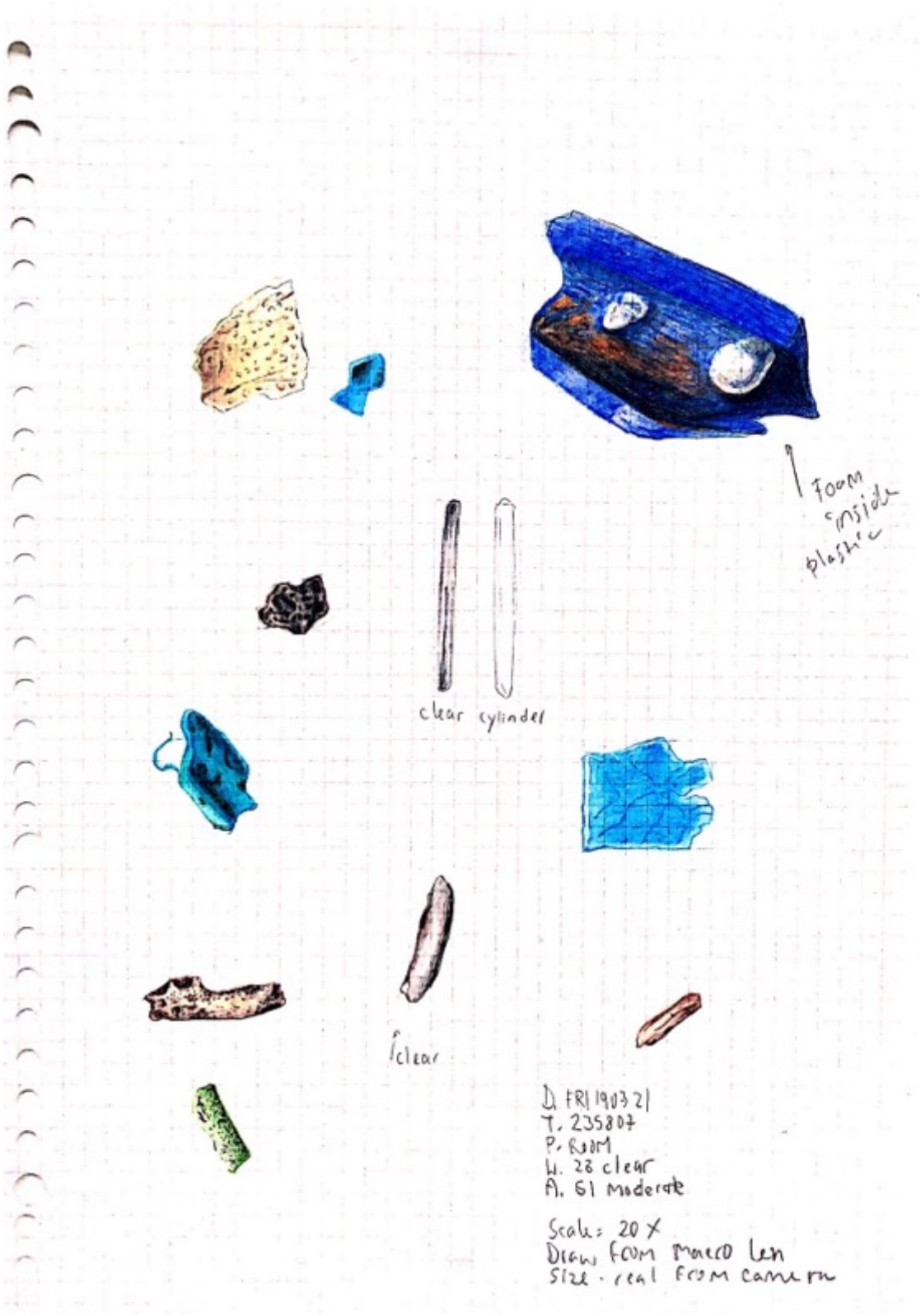
Drawing in studio with coloured pencils on graph paper, 16 March 2021.



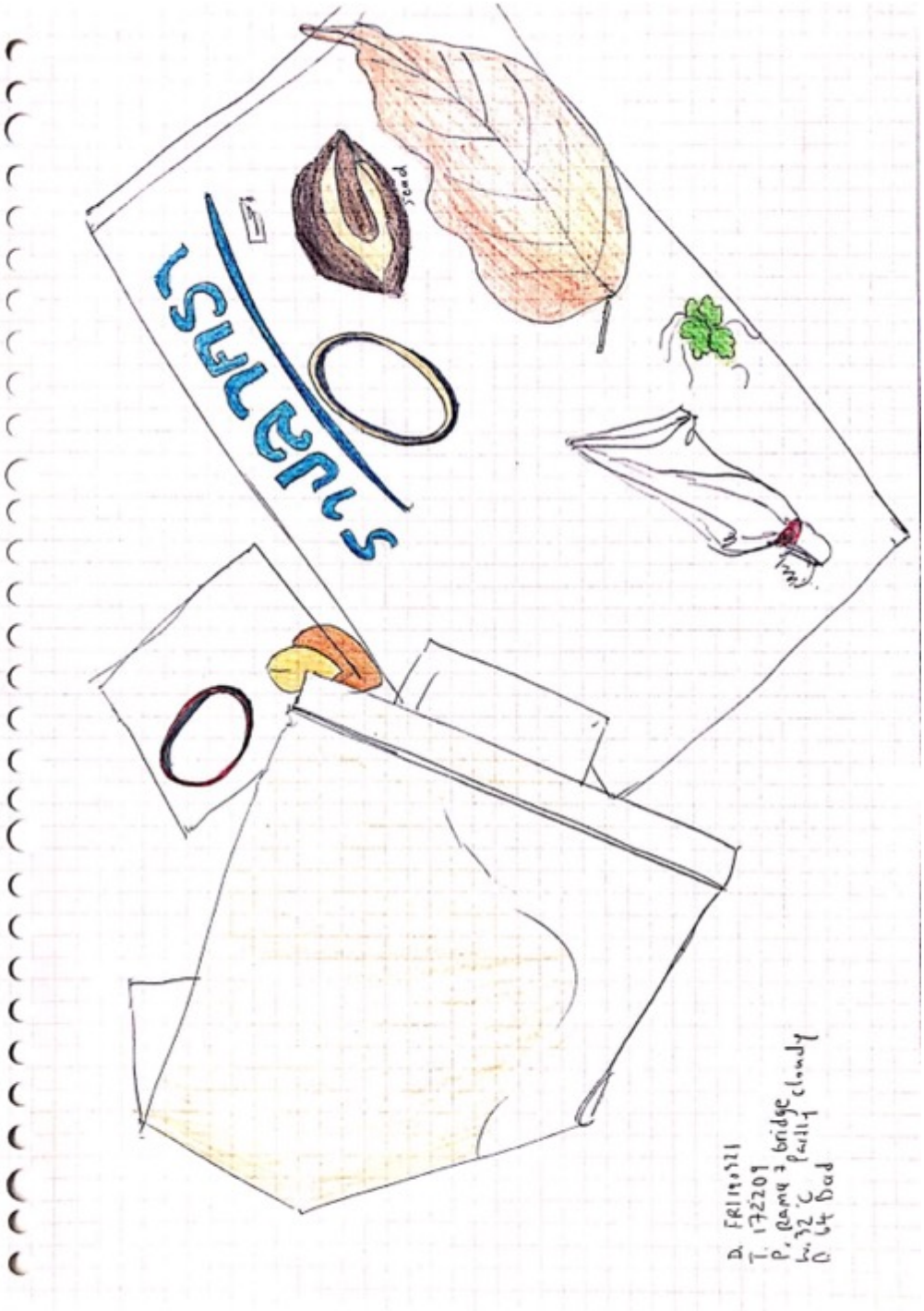
Drawing in studio with coloured pencils on graph paper, 16 March 2021.



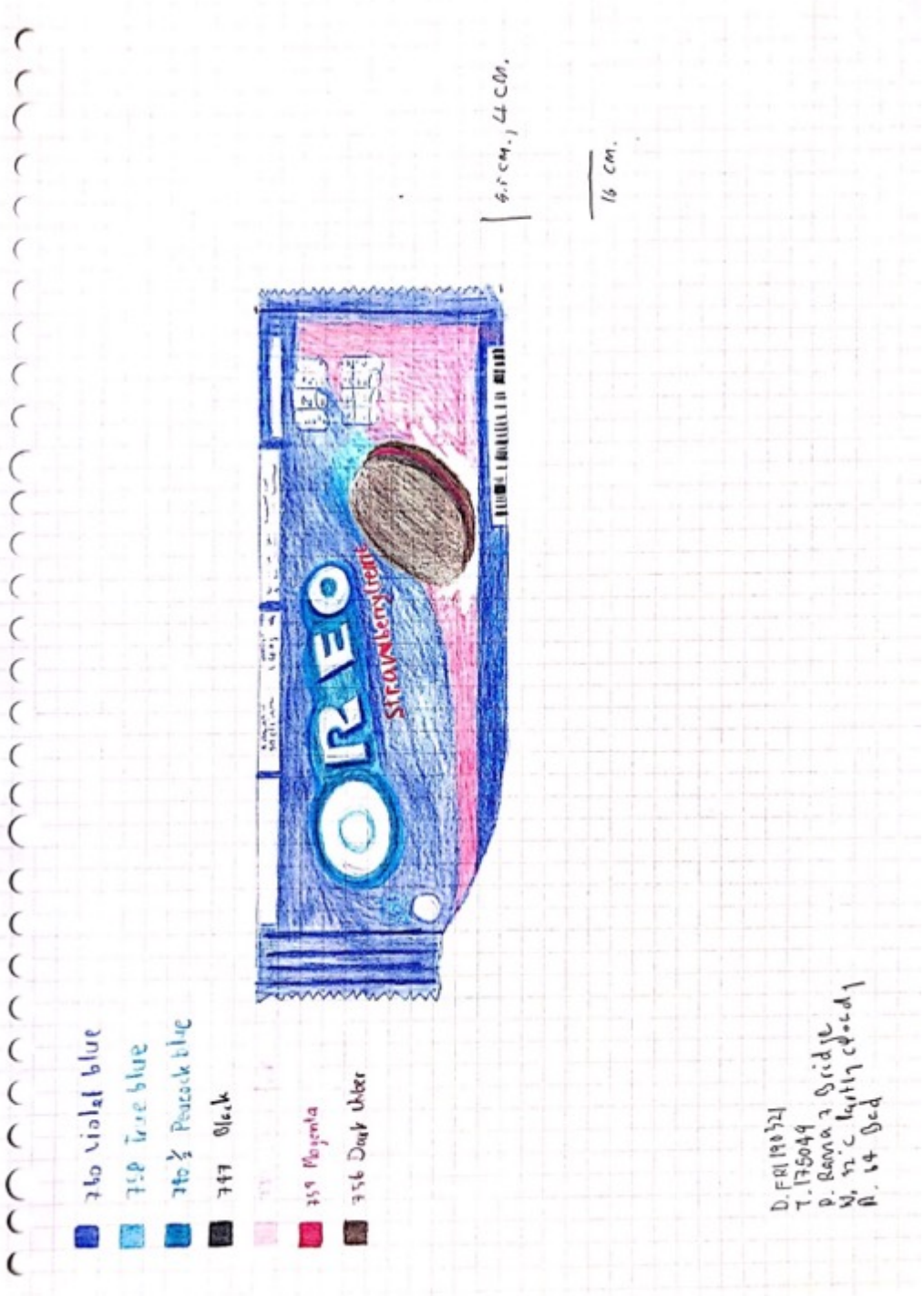
Drawing in studio with coloured pencils on graph paper, 19 March 2021.



Drawing in studio with coloured pencils on graph paper, 19 March 2021.



Drawing on-site with coloured pencils on graph paper, 19 March 2021.

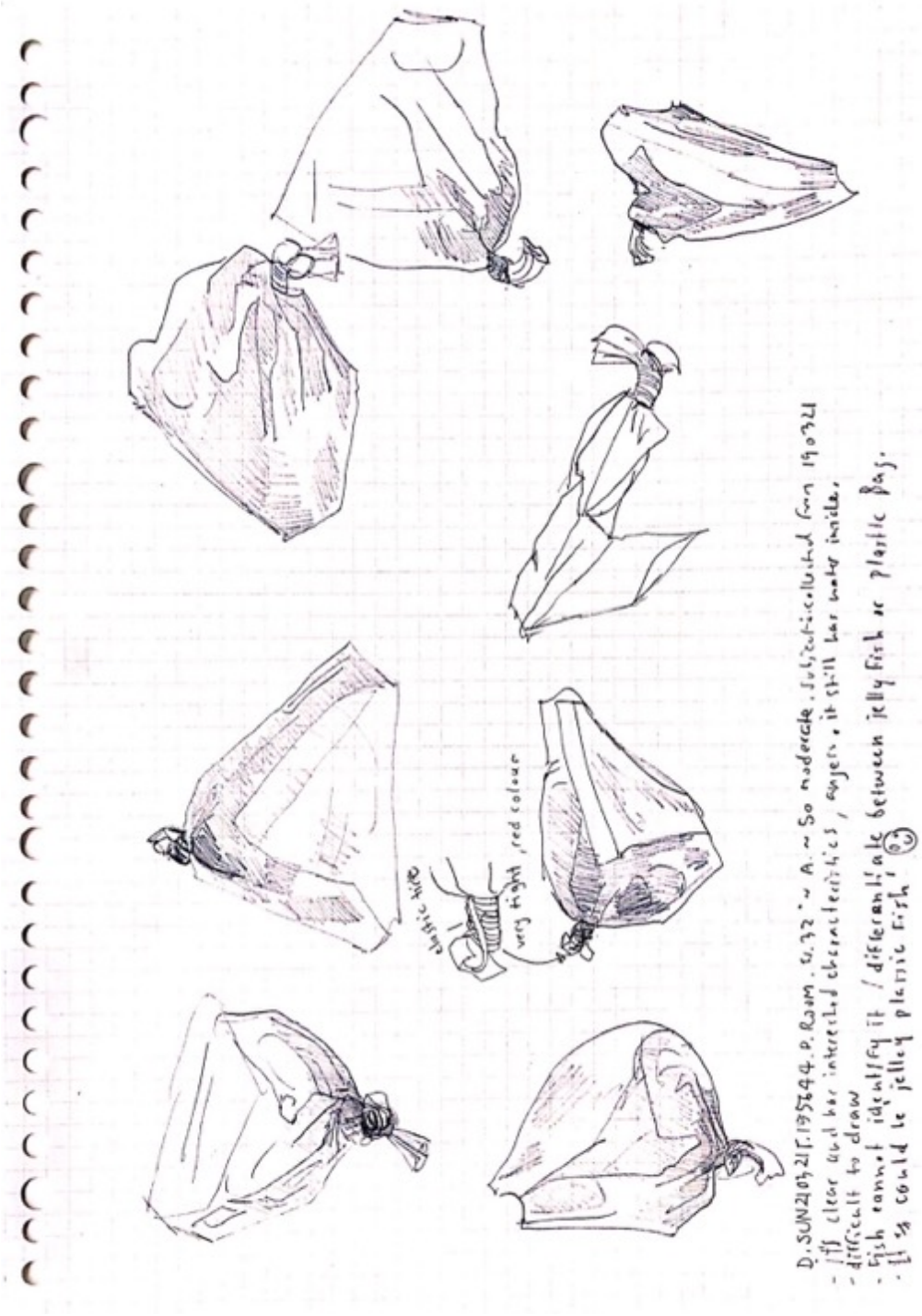


Drawing on-site with coloured pencils on graph paper, 19 March 2021.

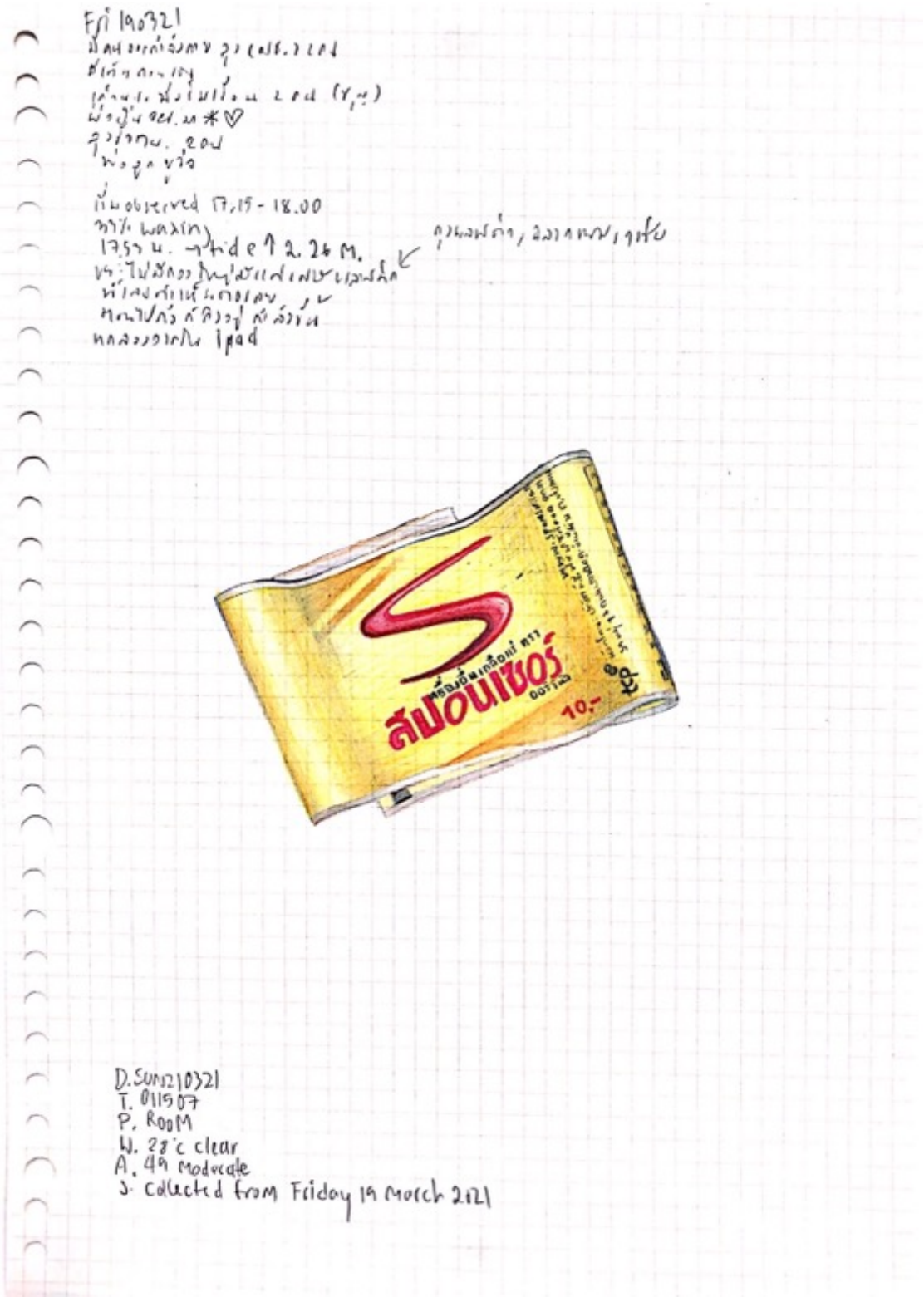
Digital drawing on-site on iPad, 19 March 2021.

Drawing in studio with graphite on paper, 20 March 2021.

Drawing in studio with coloured pencils on paper, 20 March 2021.

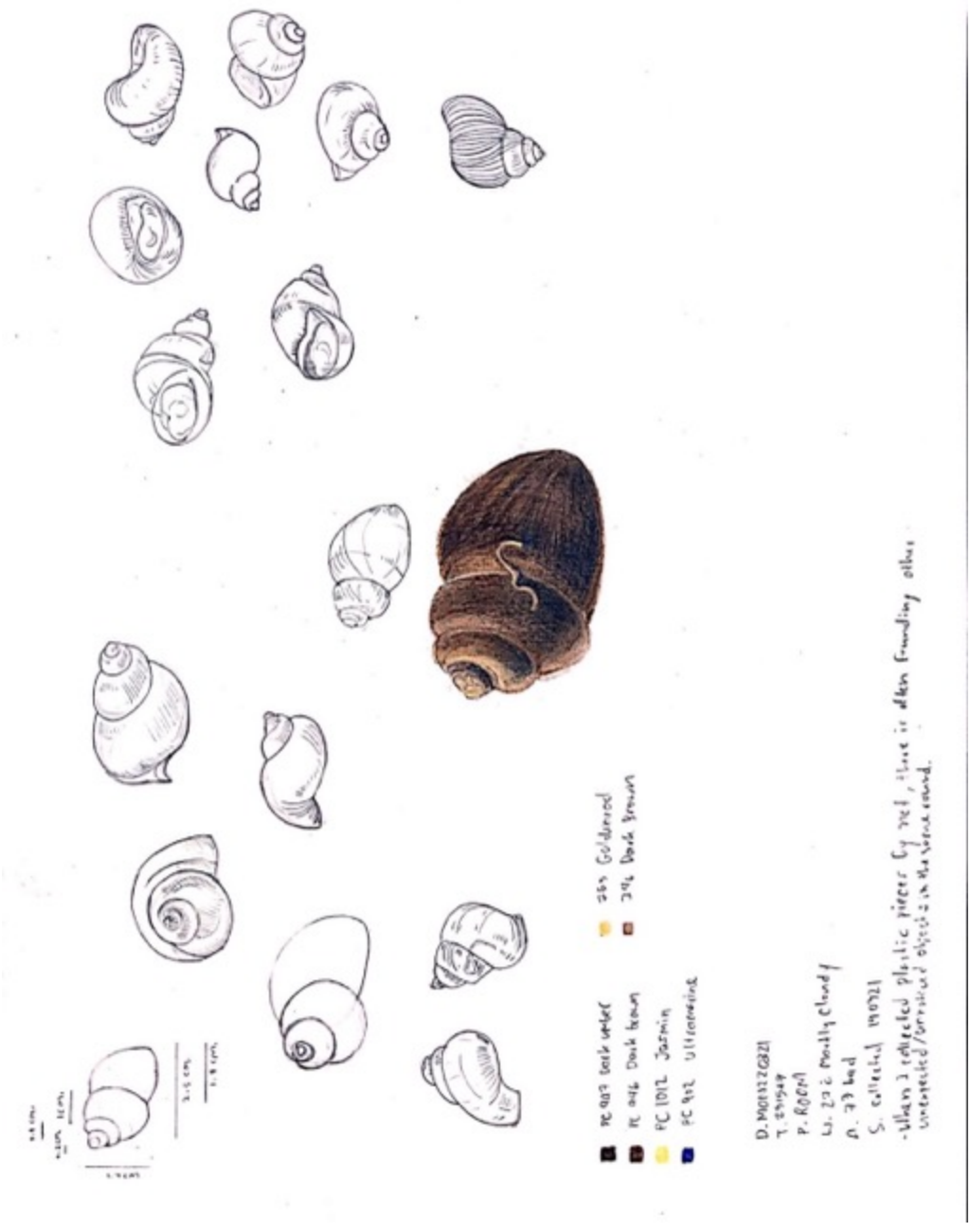


Drawing in studio with technical drawing pen on graph paper, 21 March 2021.

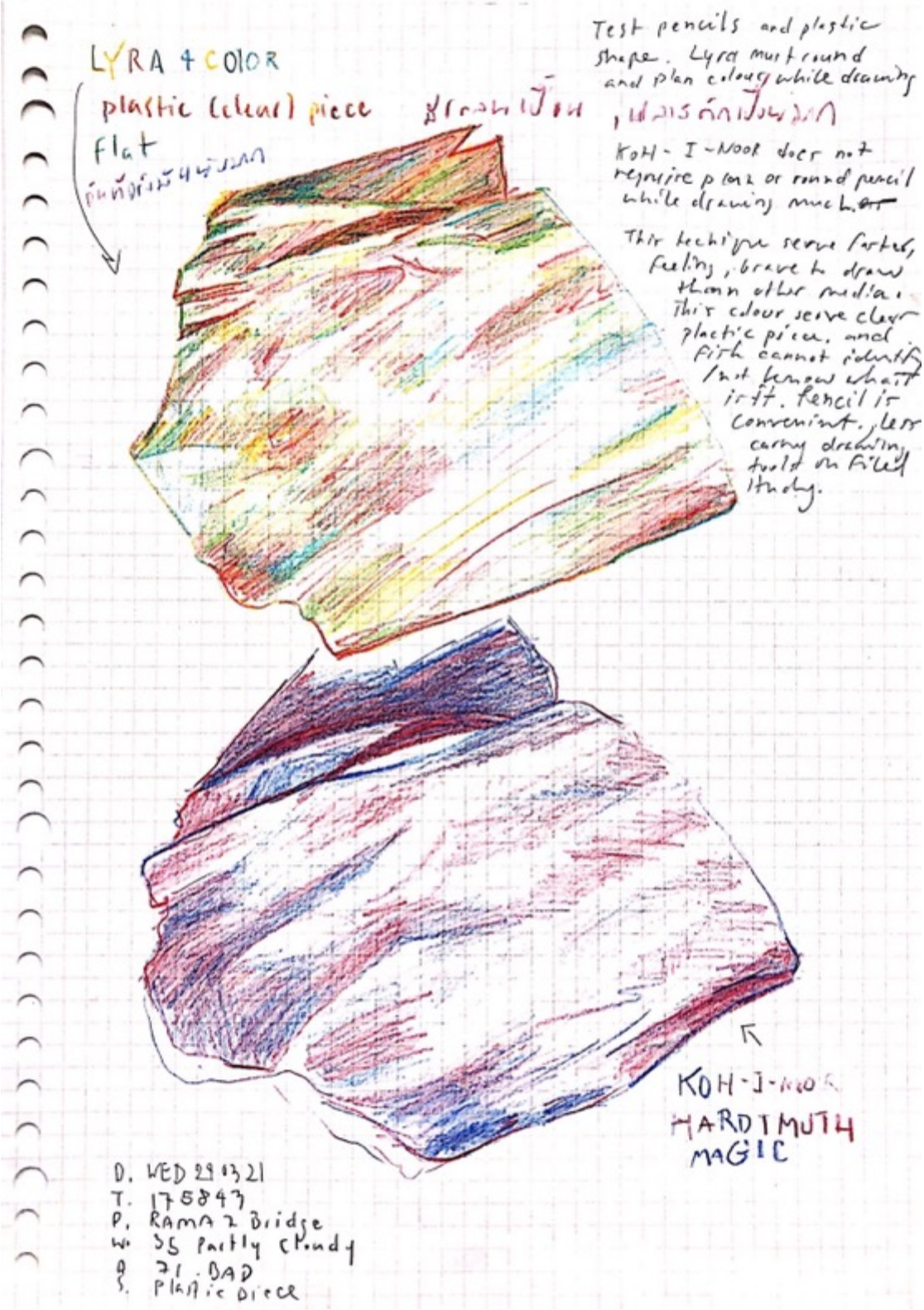


Drawing in studio with coloured pencils on graph paper, 21 March 2021.

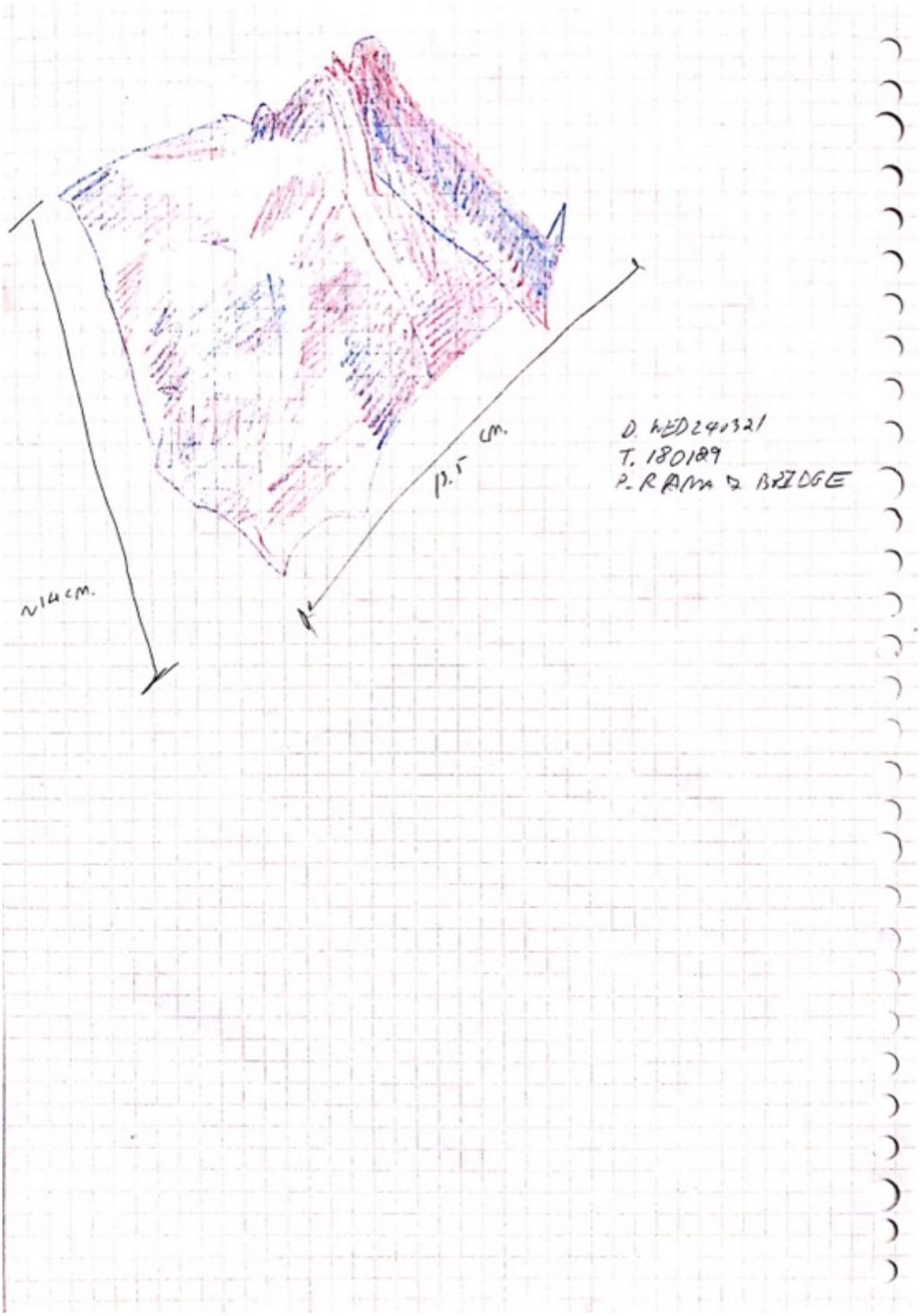
Drawing in studio with coloured pencils on paper and a specimen, 22 March 2021.



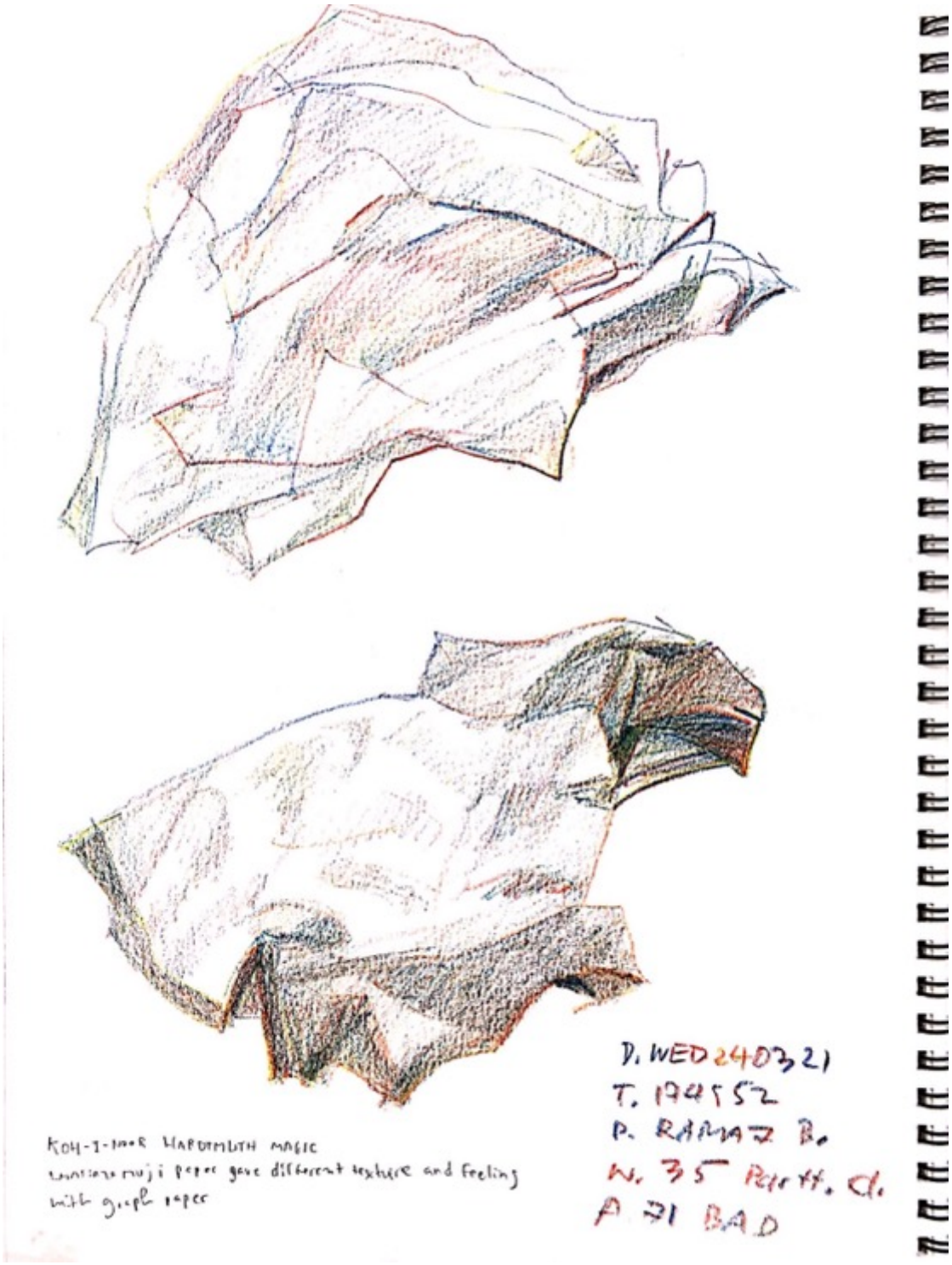
Drawing in studio with coloured pencils on paper, 22 March 2021.



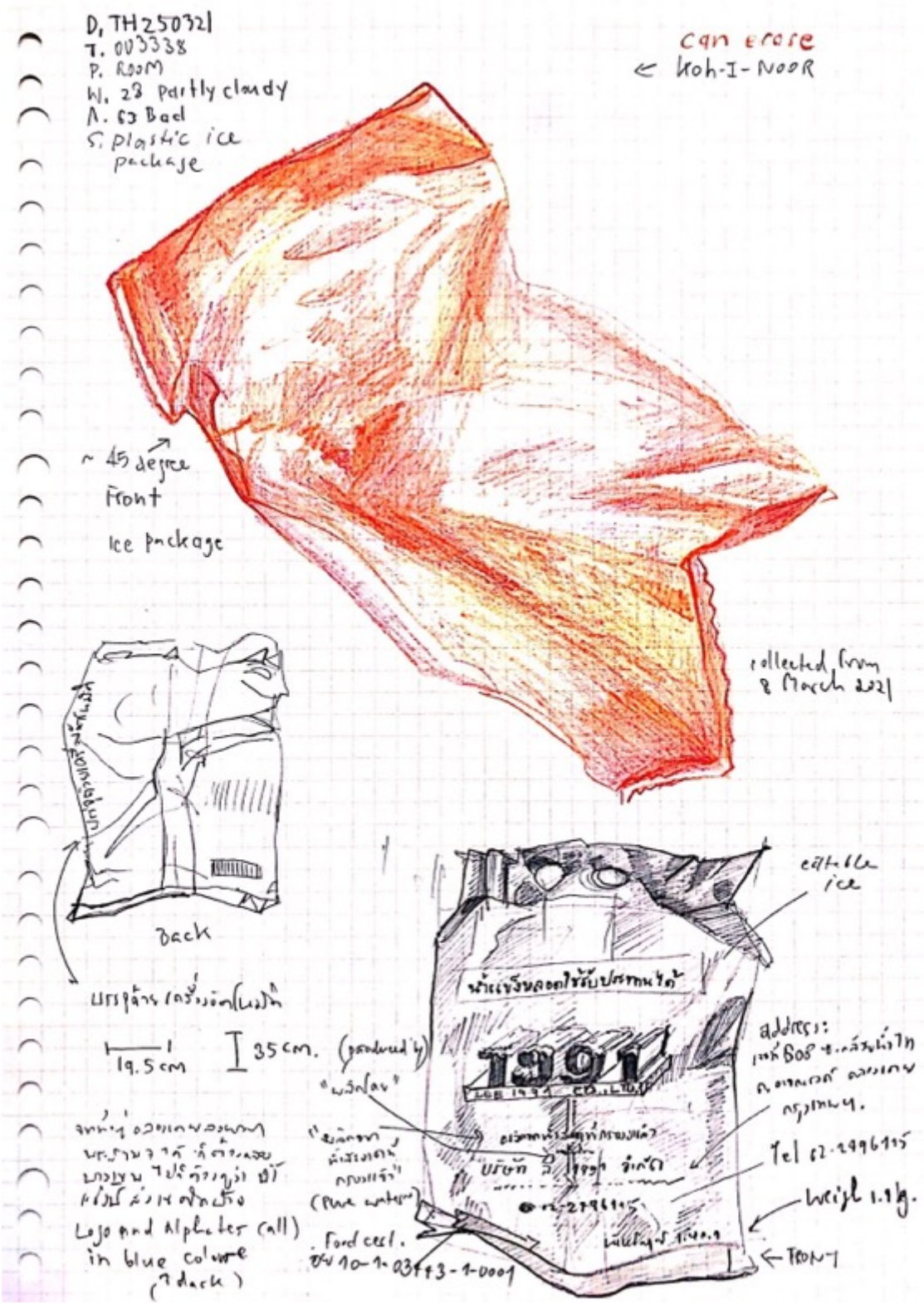
Drawing on-site with multicoloured pencils on graph paper, 24 March 2021.



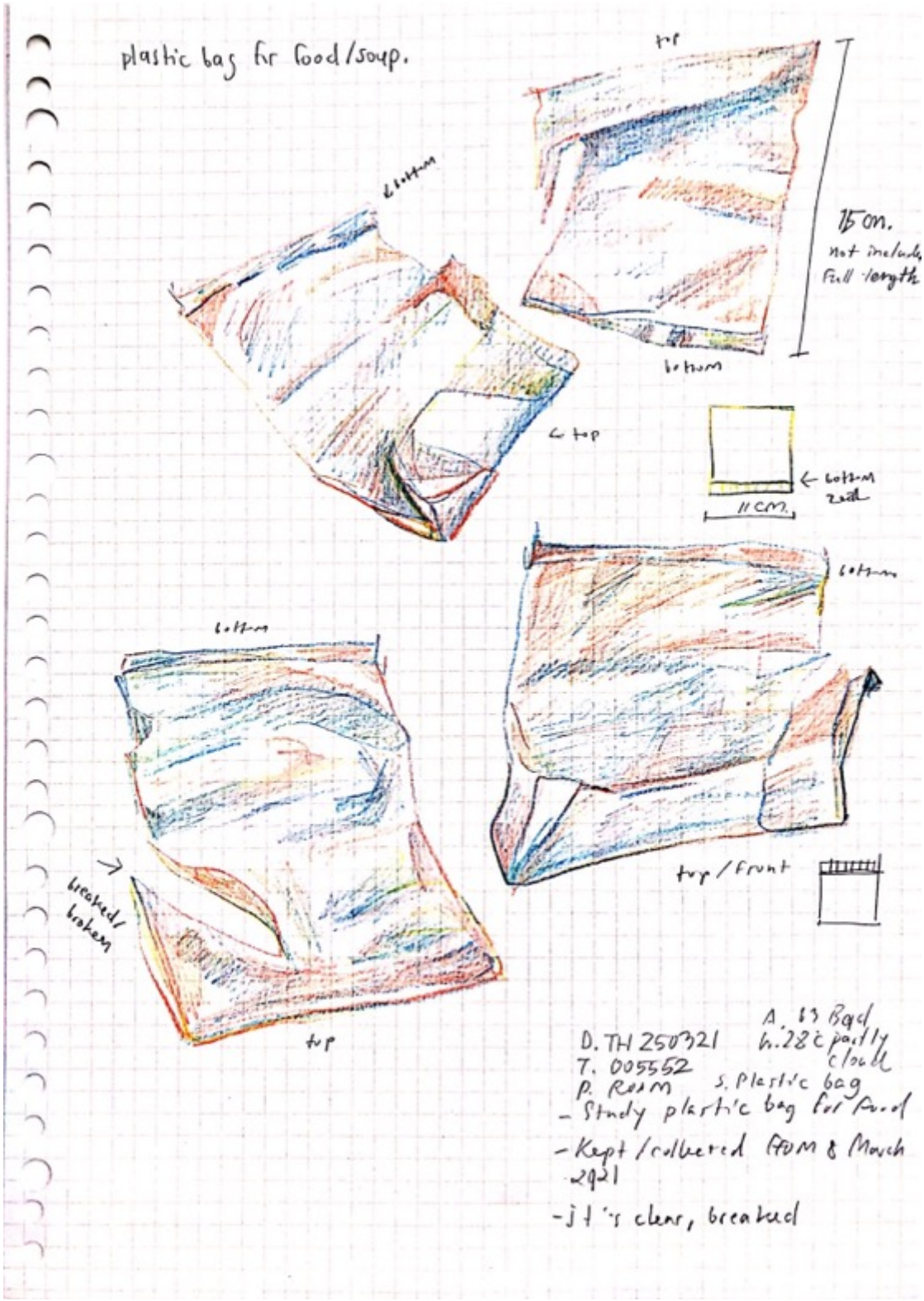
Drawing on-site with multicoloured pencil on graph paper, 24 March 2021.



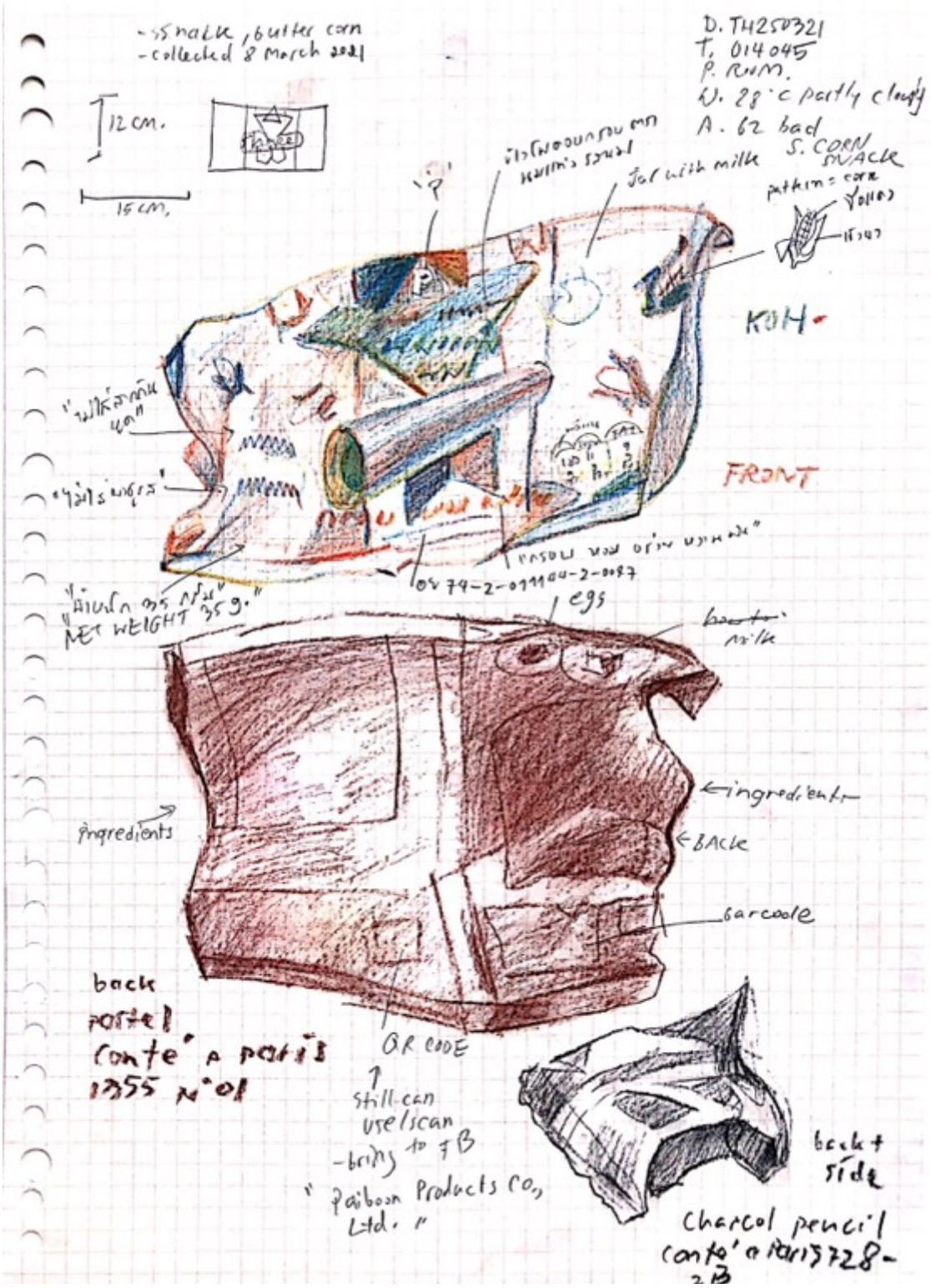
Drawing on-site with multicoloured pencil on paper, 24 March 2021.



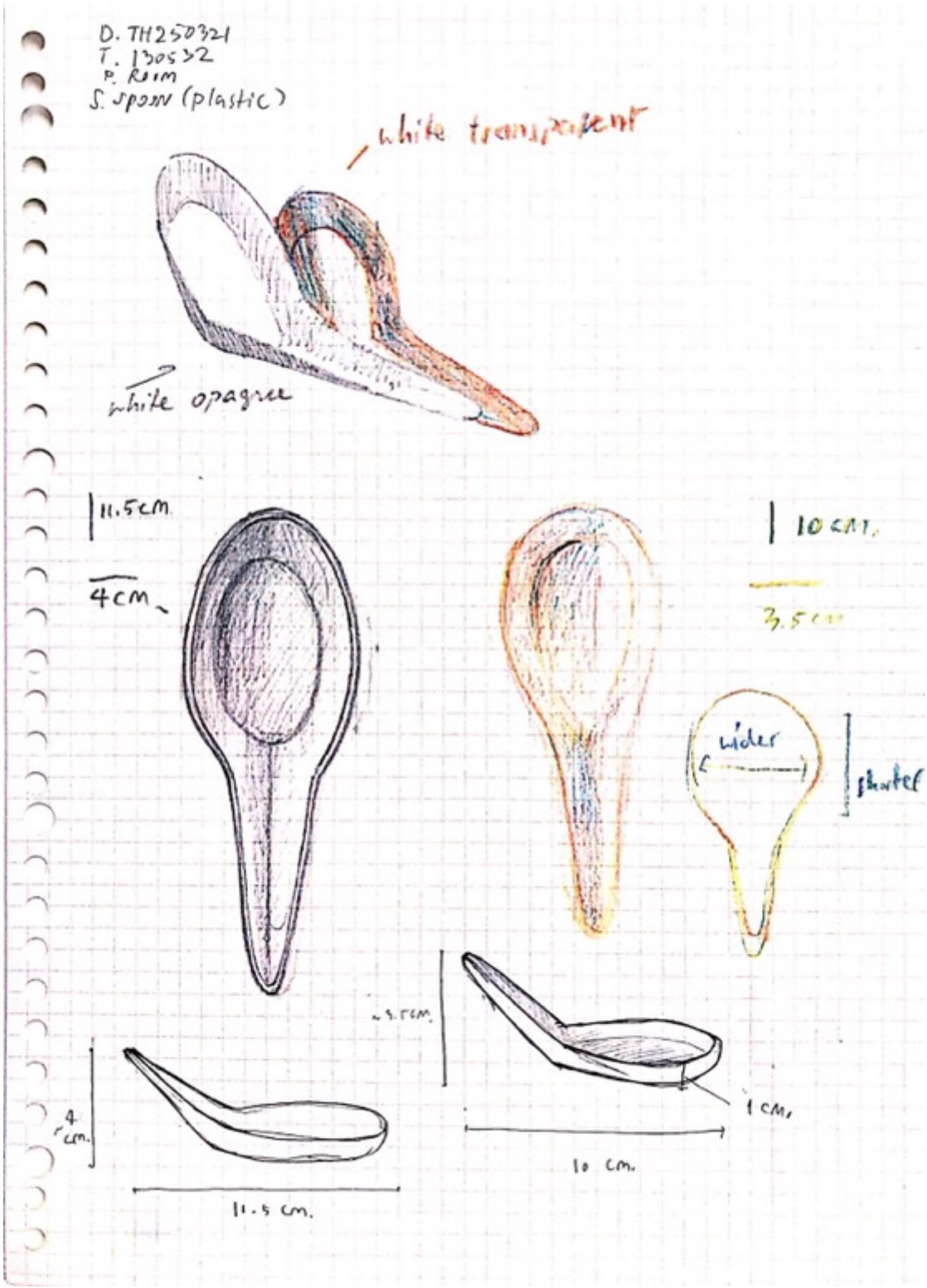
Drawing in studio multicoloured pencil and graphite on graph paper, 25 March 2021.



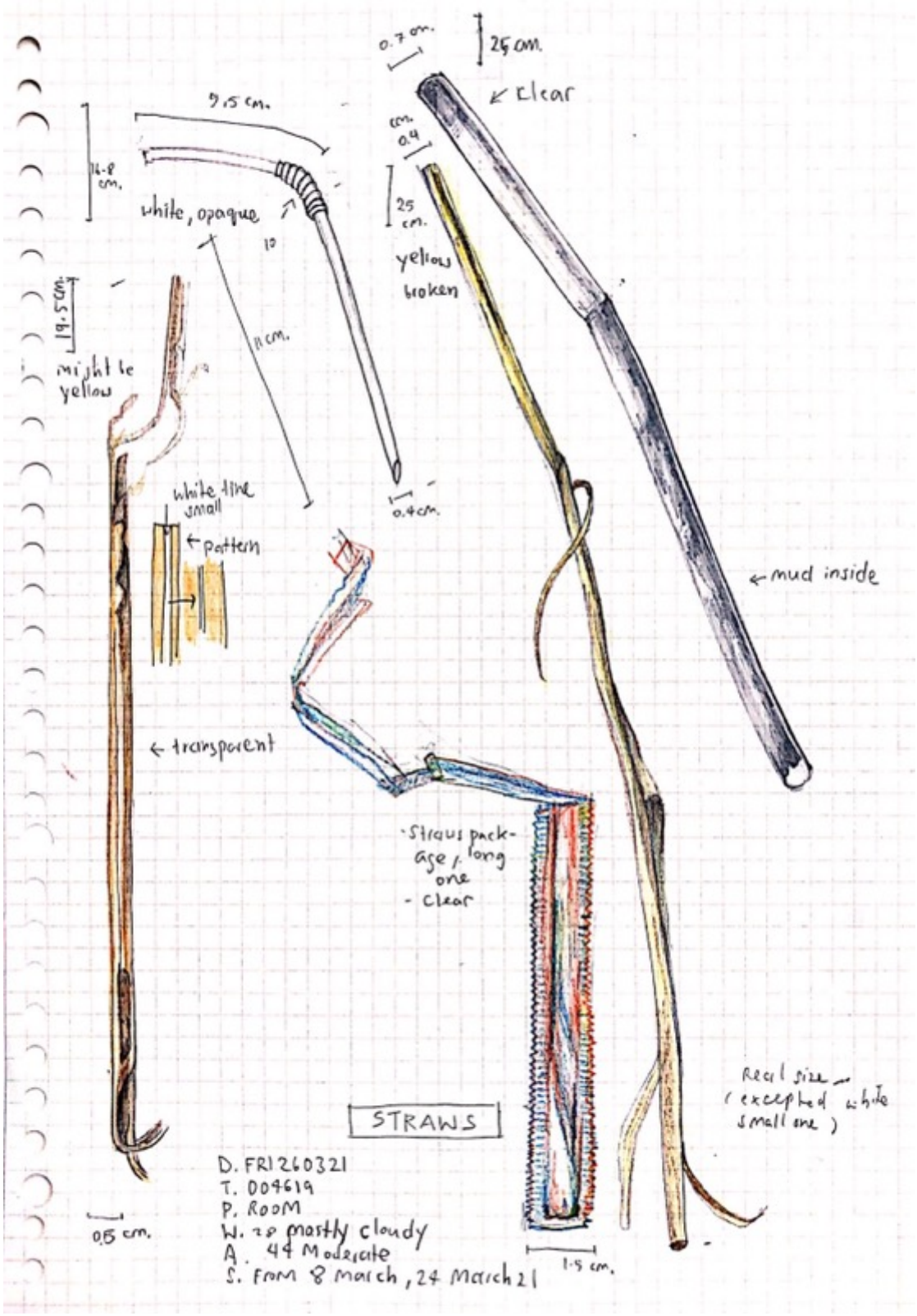
Drawing in studio with multicoloured pencil on graph paper, 25 March 2021.



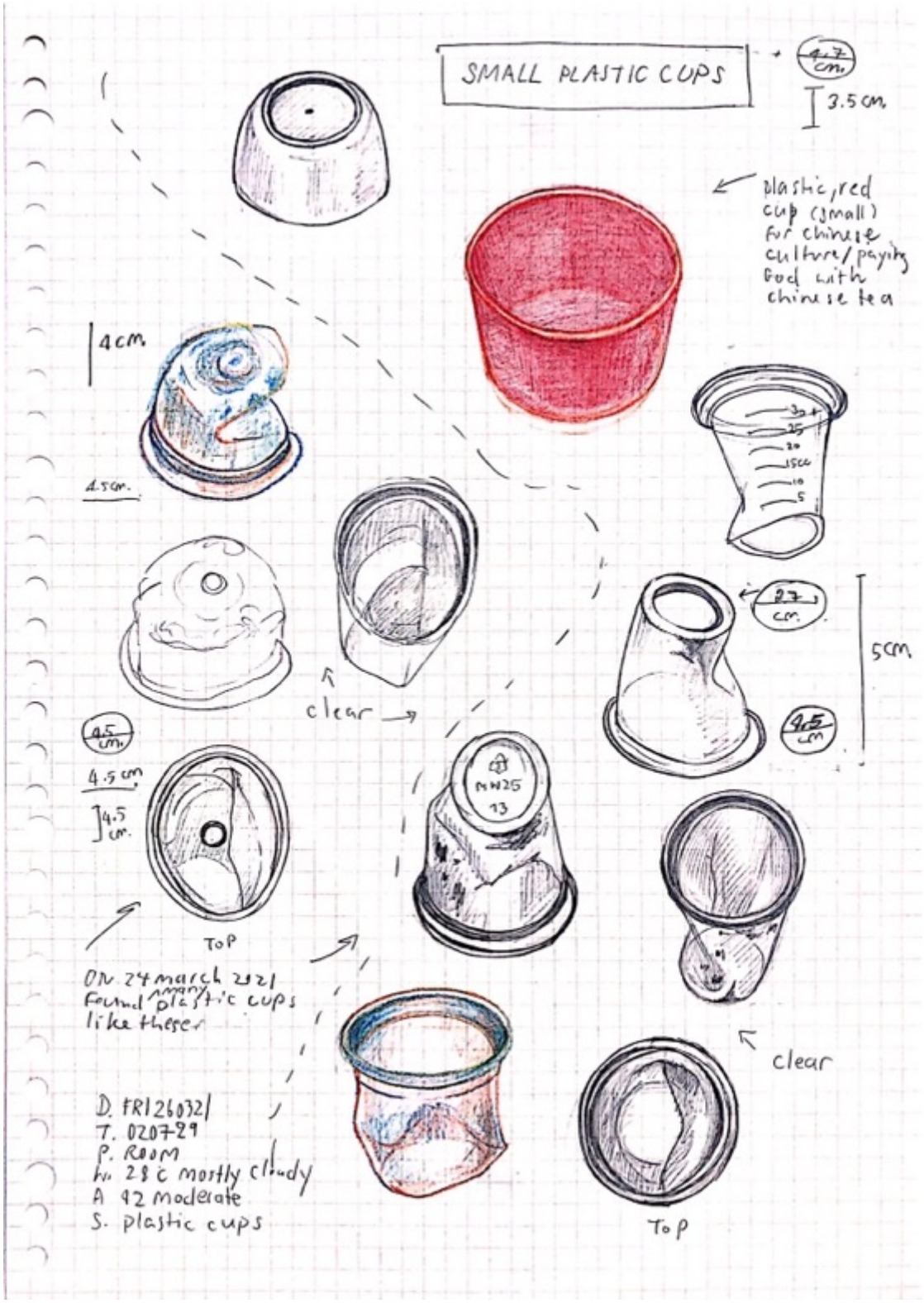
Drawing in studio with multicoloured pencil and brown pastel pencil on graph paper, 25 March 2021.



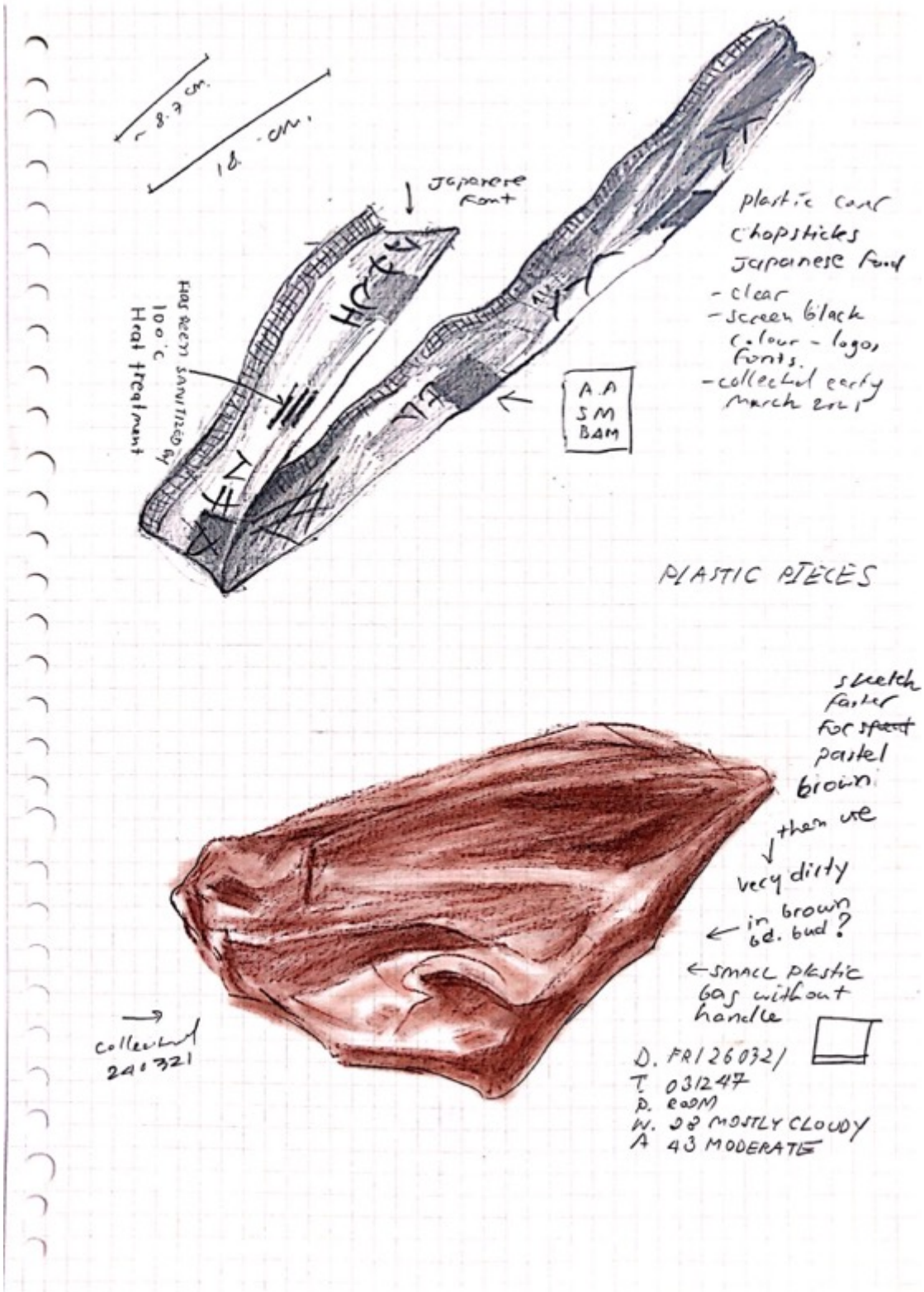
Drawing in studio with multicolored pencil and graphite on graph paper, 25 March 2021.



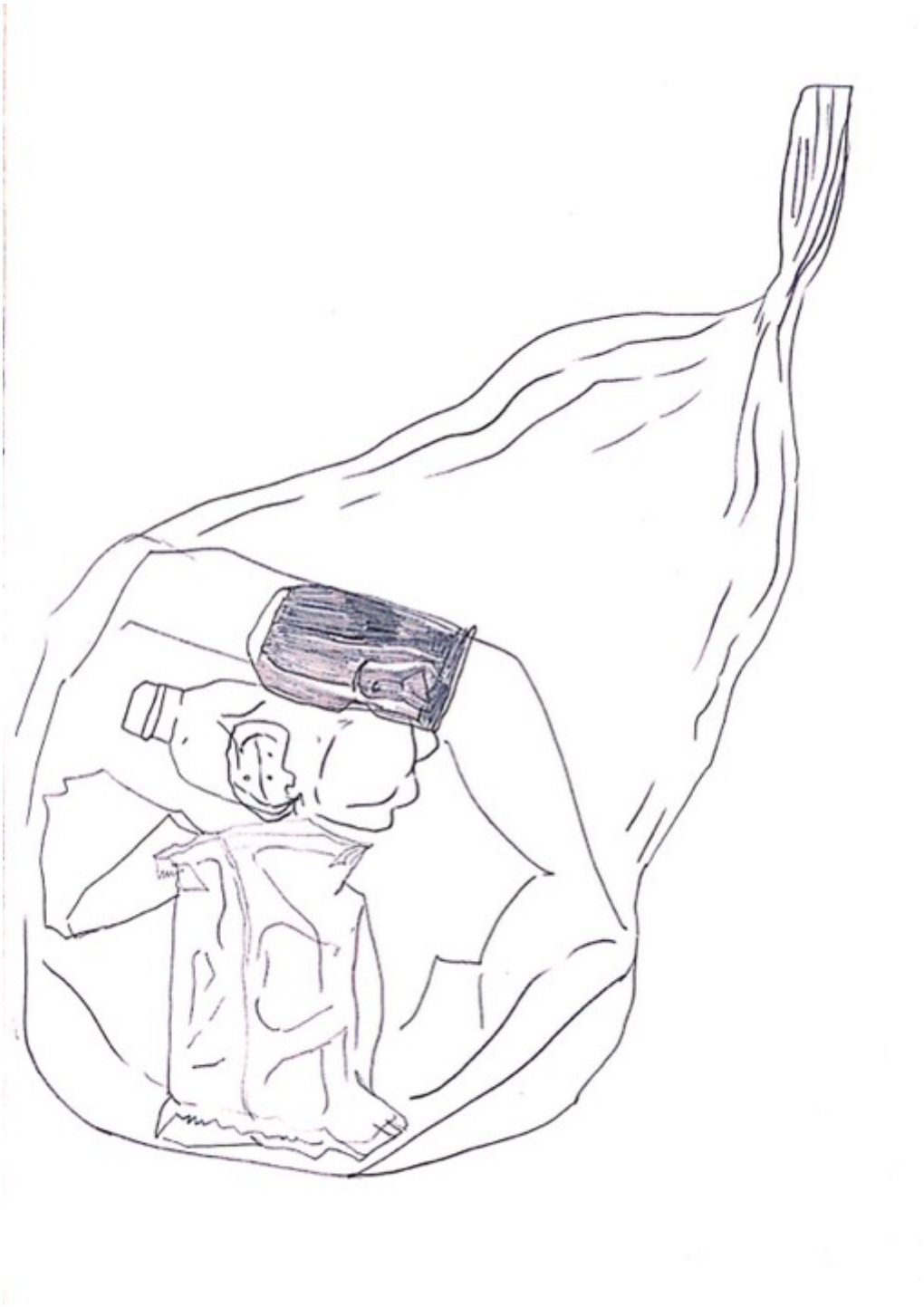
Drawing in studio with multicolored pencil and graphite on graph paper, 26 March 2021.



Drawing in studio with coloured pencil, multicolored pencil, and graphite on graph paper, 26 March 2021.

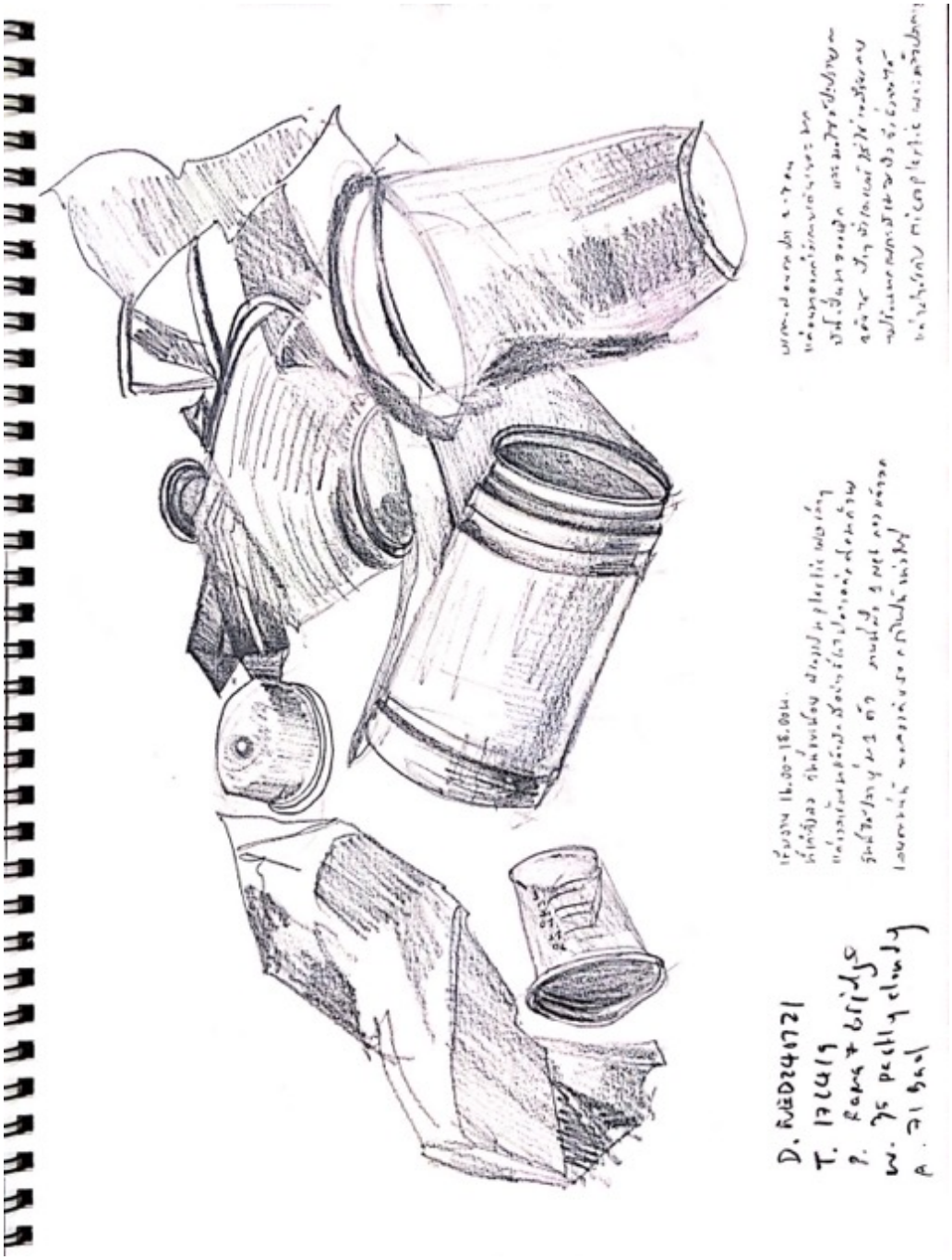


Drawing in studio with graphite and brown pastel pencil on graph paper, 26 March 2021.



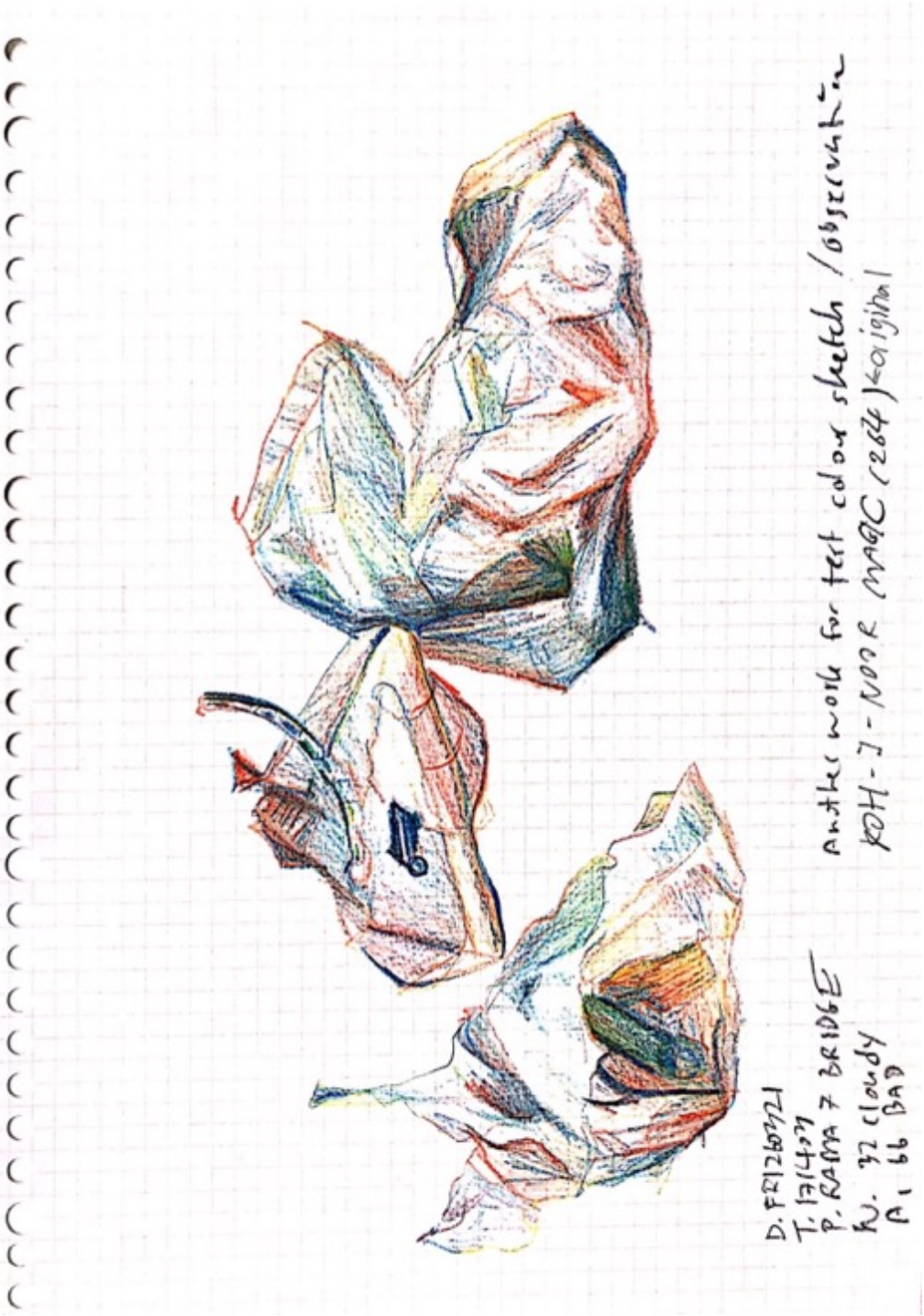
Drawing on-site with ballpoint pen on paper, 2021.

Drawing on-site with graphite and coloured pencil on paper, 24 March 2021.

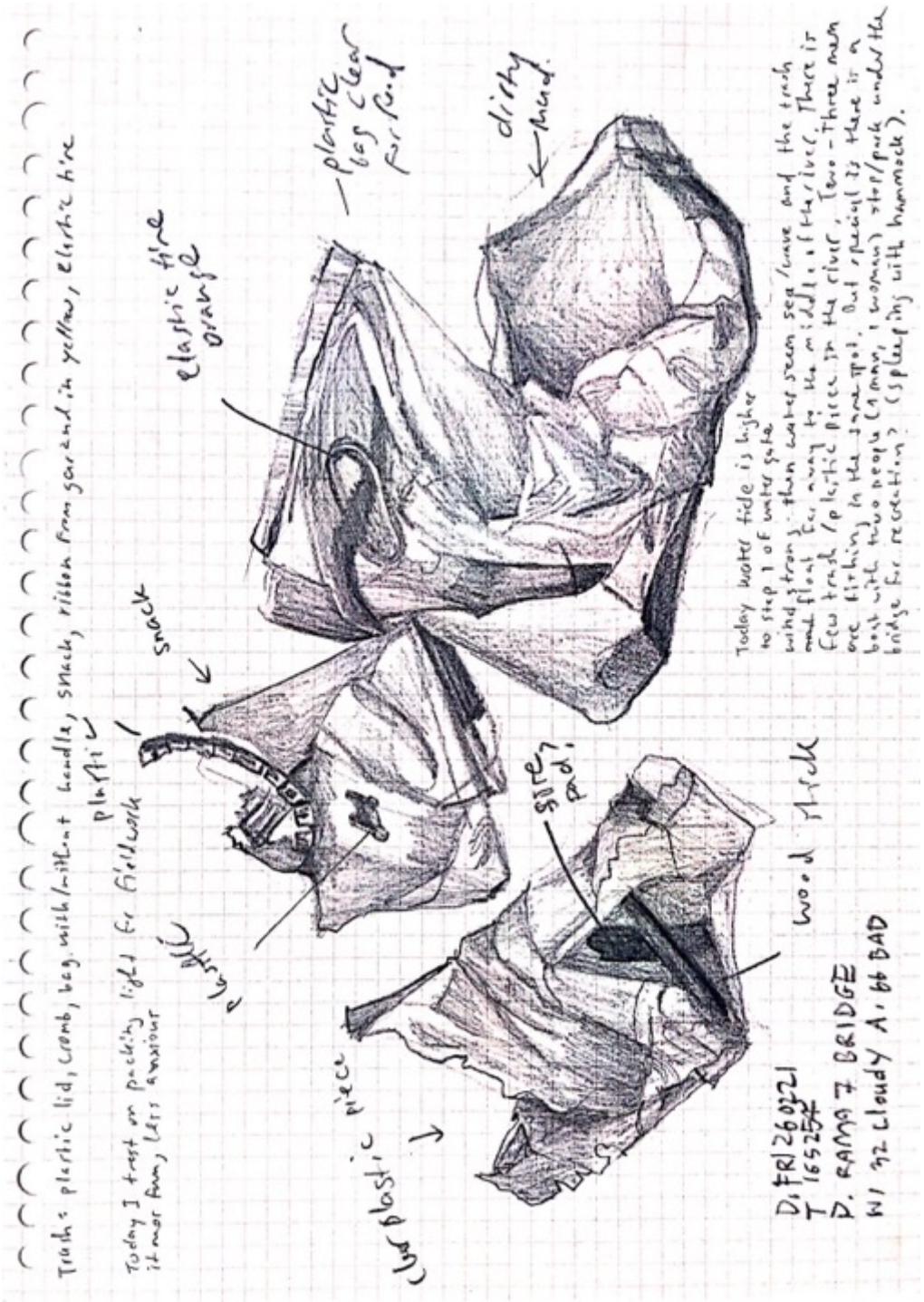


Drawing on-site with graphite on paper, 24 March 2021.

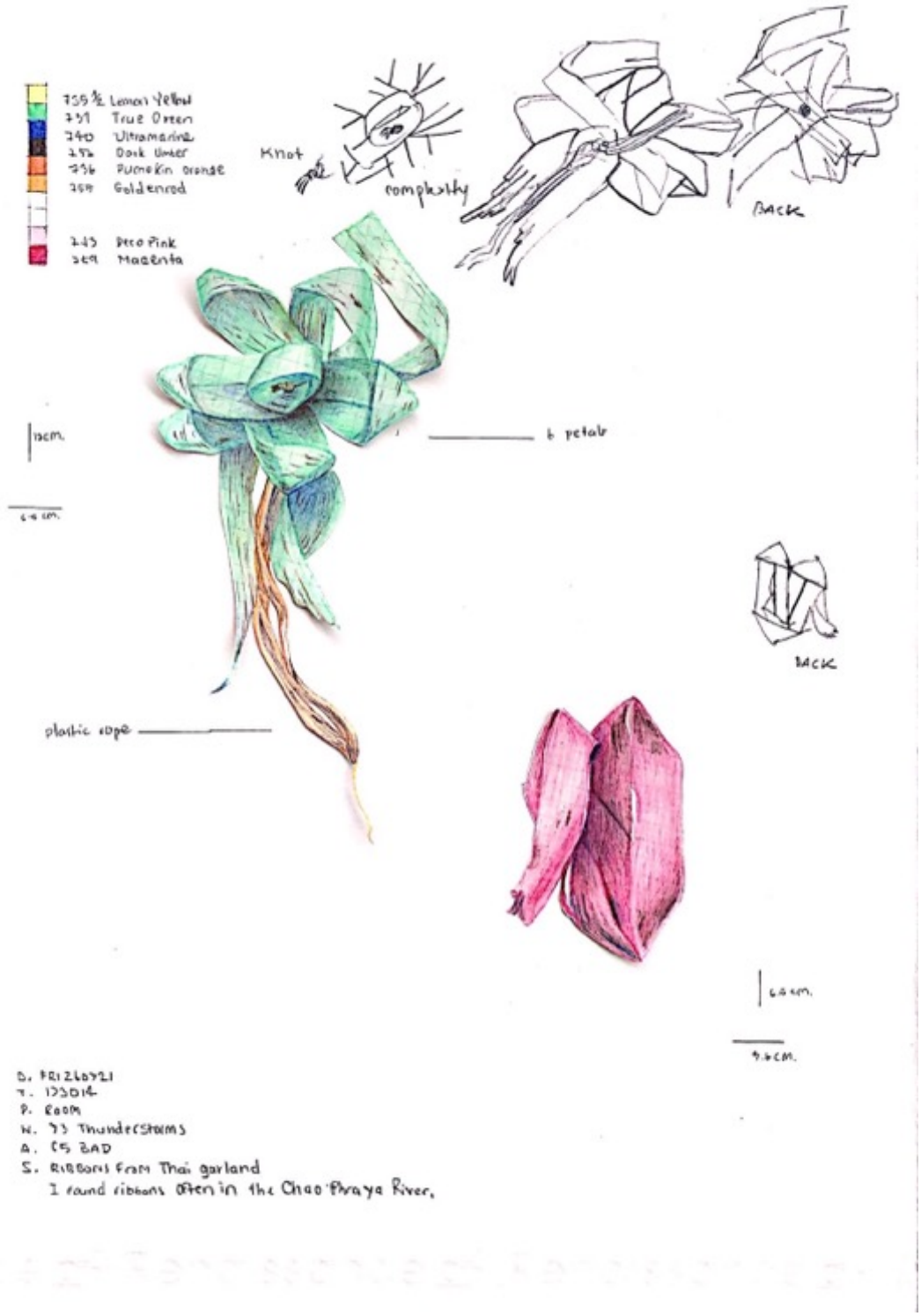
Drawing on-site with multicoloured pencil on paper, 24 March 2021.



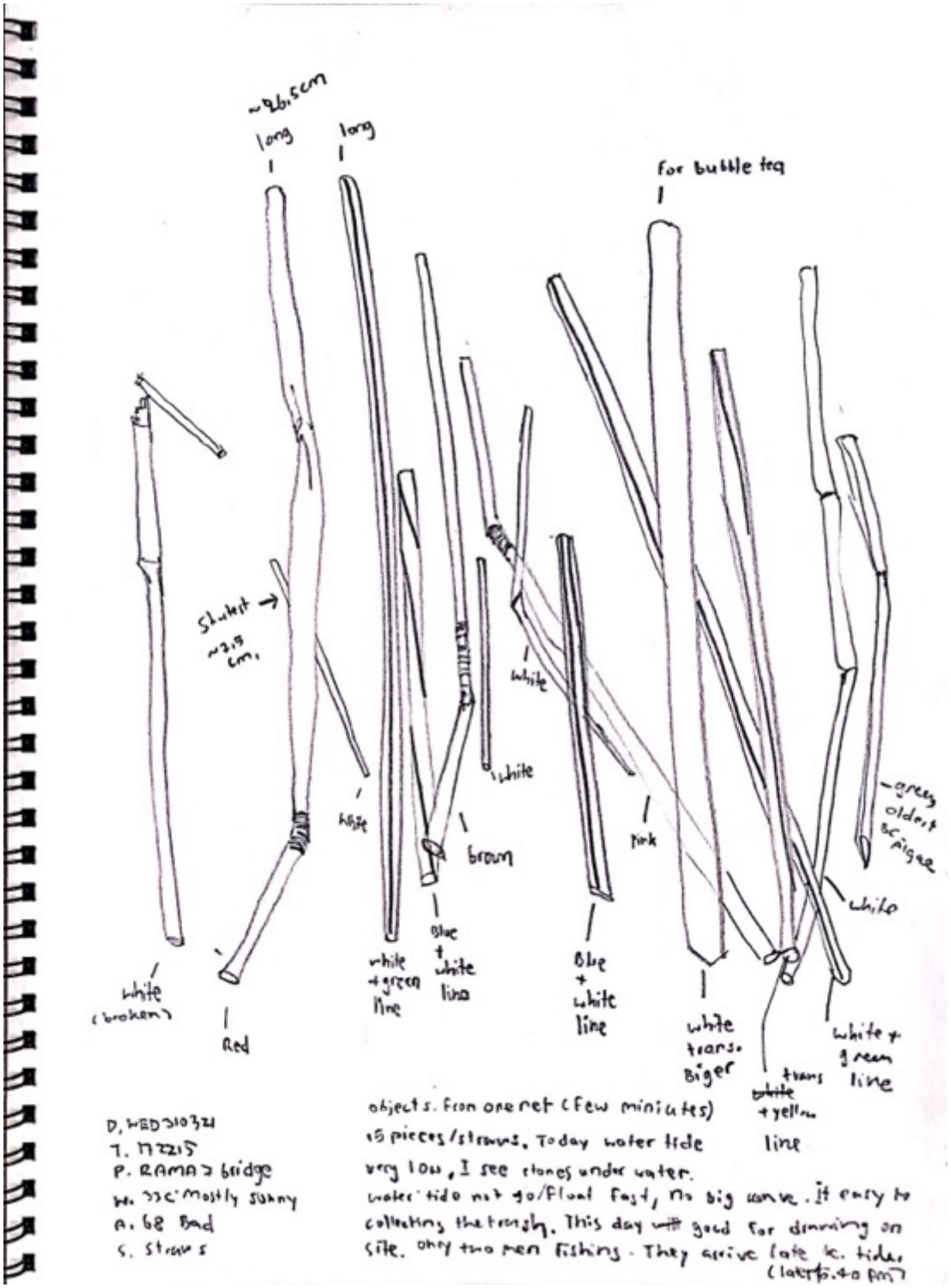
Drawing on-site with multicoloured pencil on graph paper, 26 March 2021.



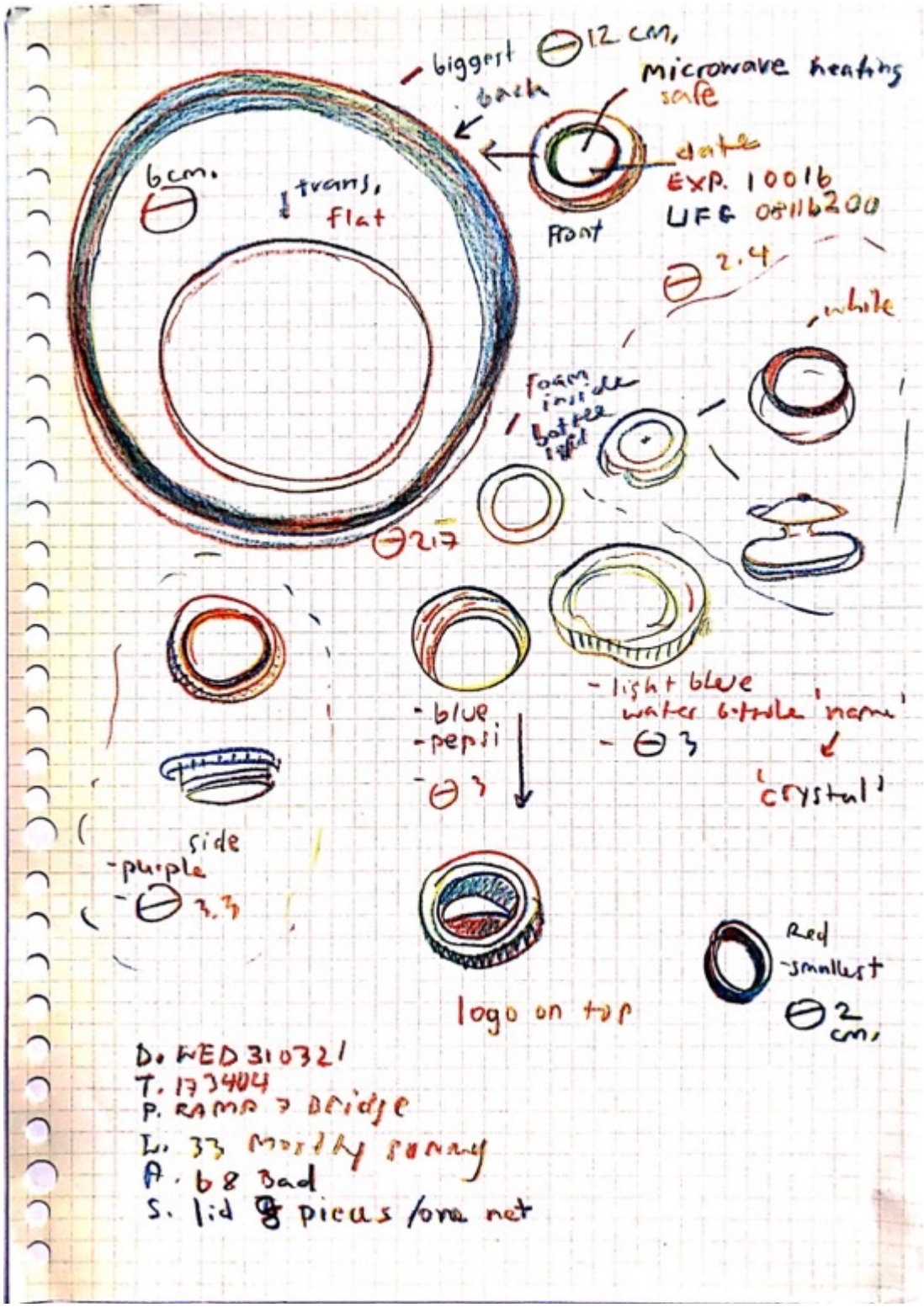
Drawing on-site with graphite on graph paper, 26 March 2021.



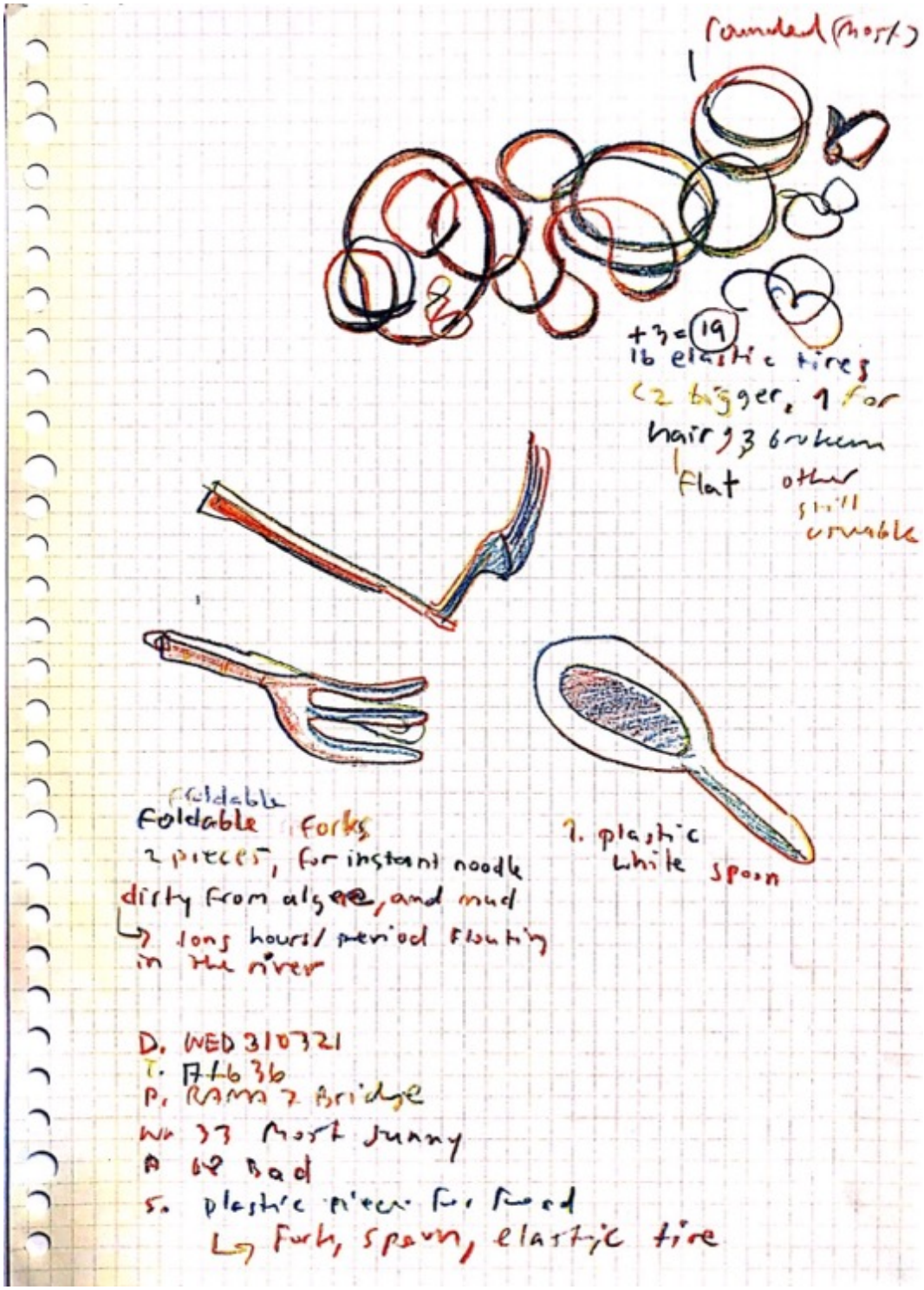
Drawing in studio with coloured pencils on graph paper, cut into shapes, and technical drawing pen on paper, 26 March 2021



Categorising plastic waste from one collecting with net, drawing on-site with graphite on paper, 31 March 2021

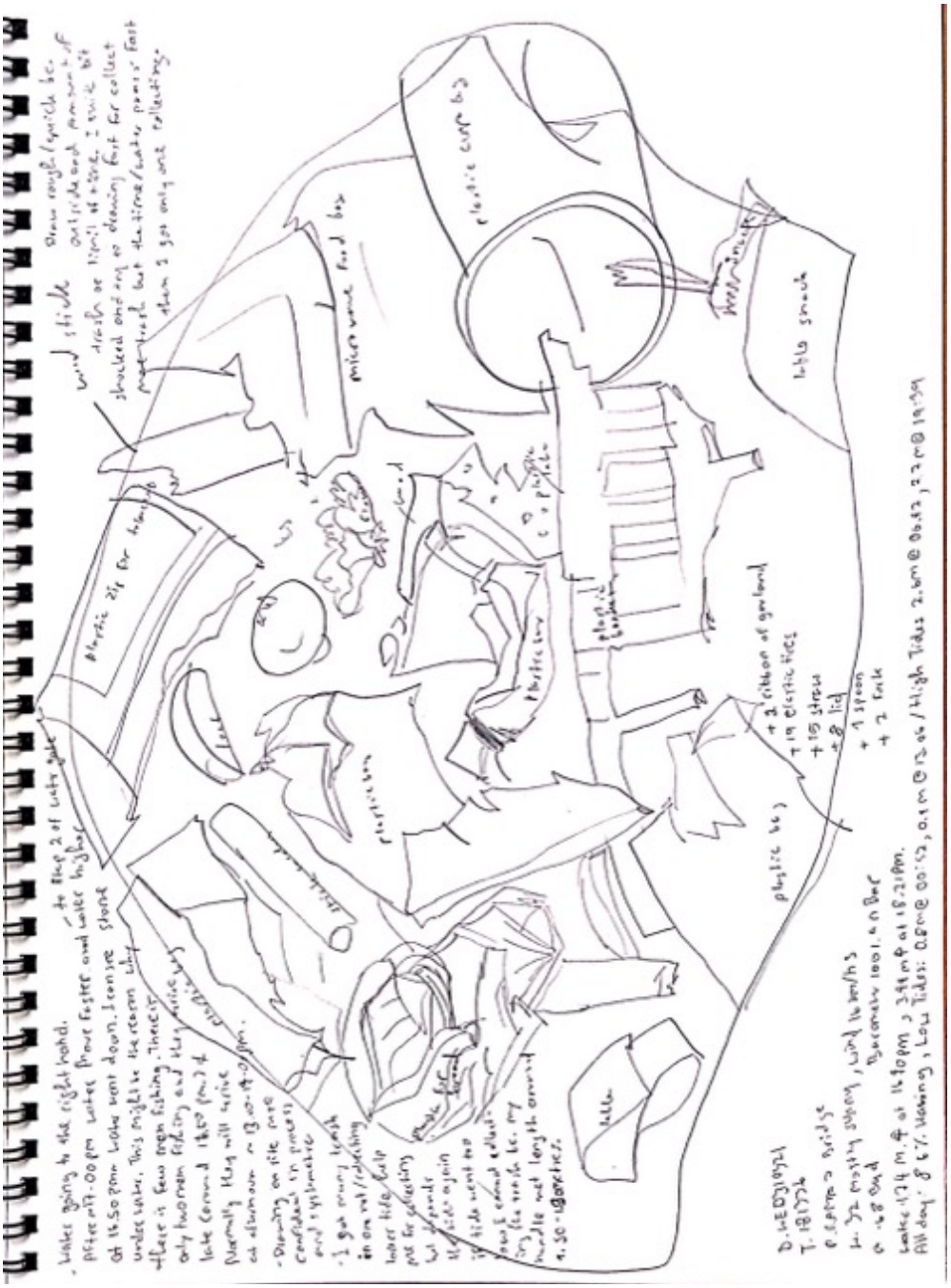


Categorising plastic waste from one collecting with net,
drawing on-site with multicoloured pencil on graph paper, 31 March 2021

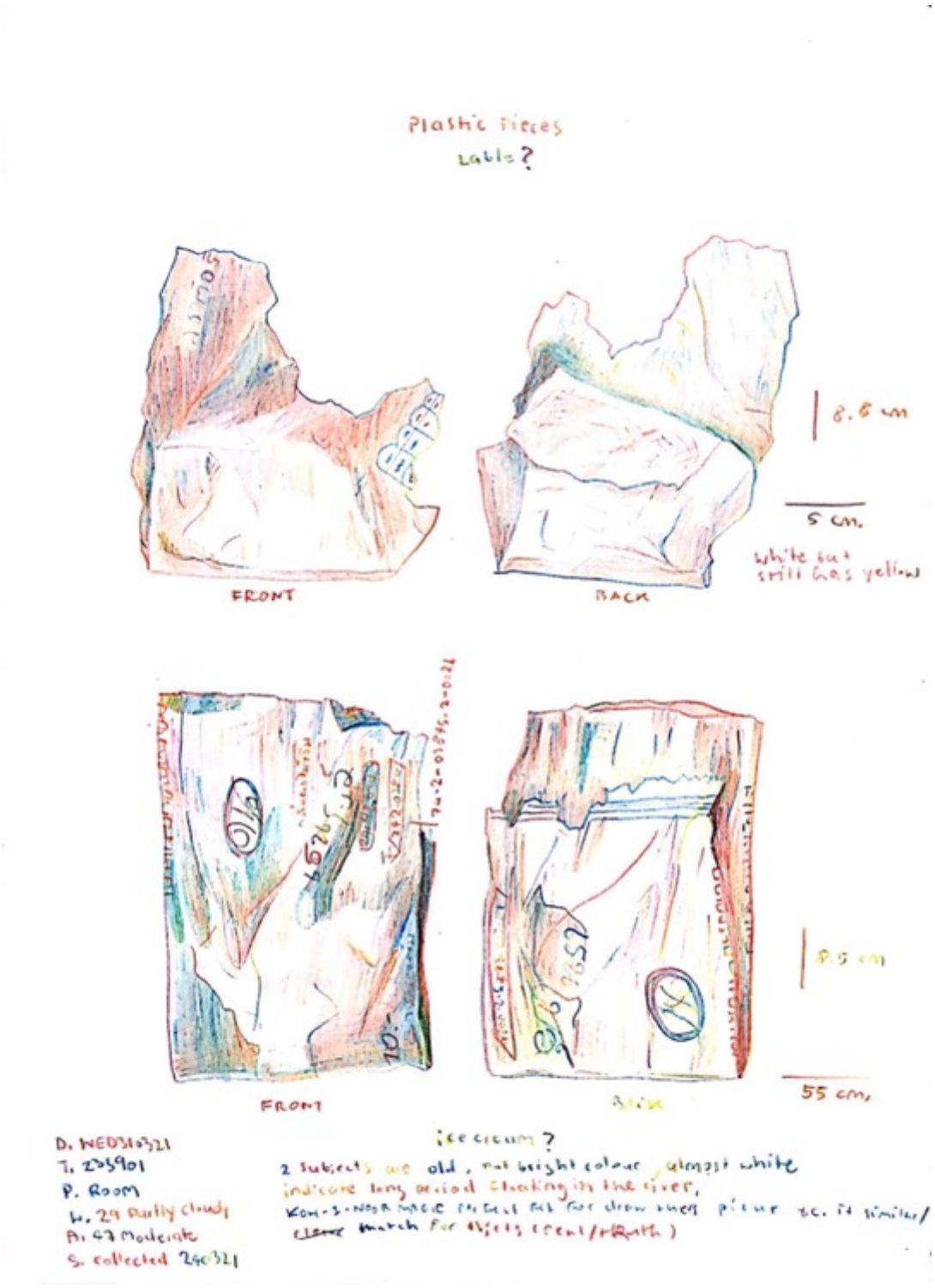


Categorising plastic waste from one collecting with net, drawing on-site with multicolored pencil on graph paper, 31 March 2021.

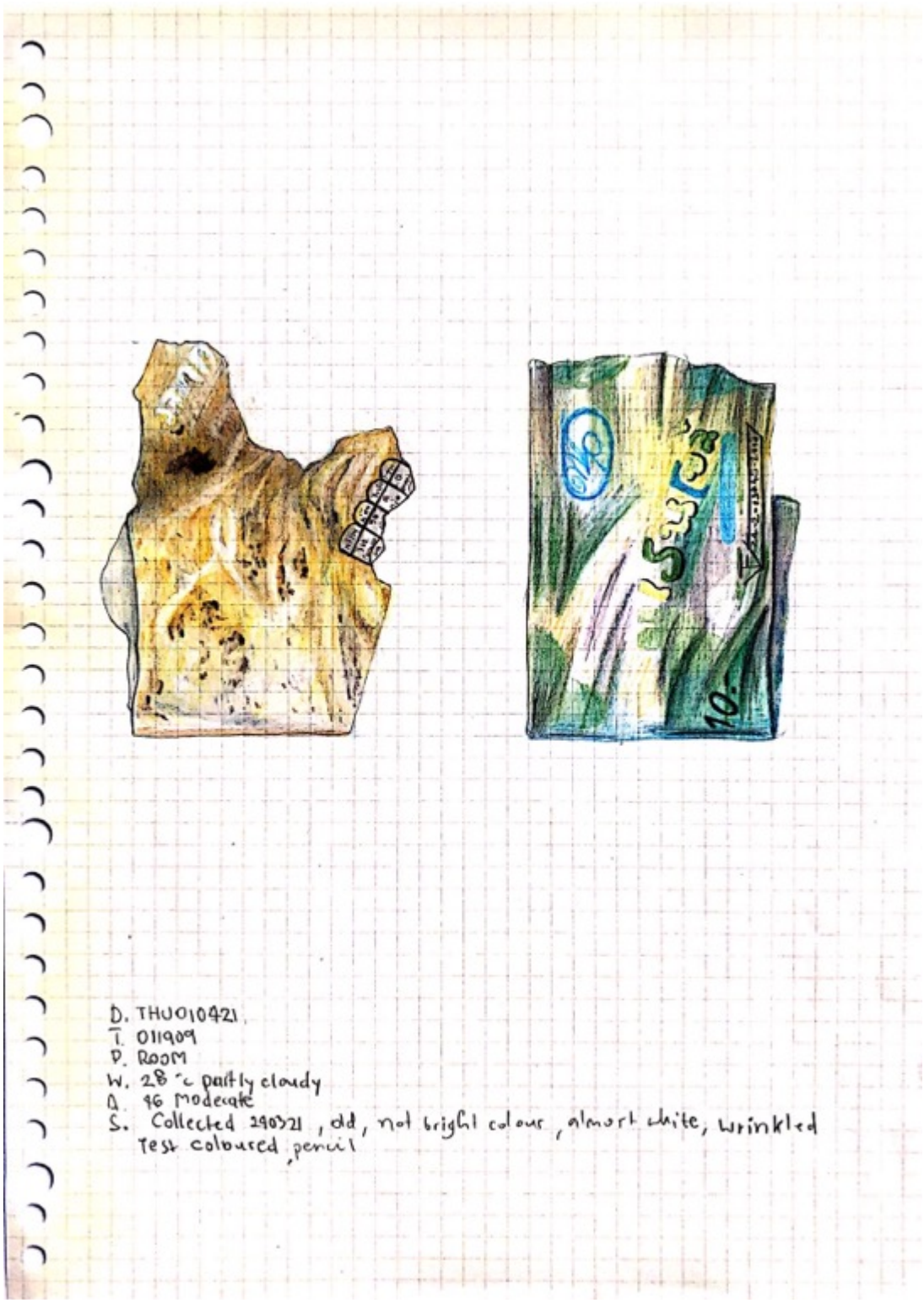
Plastic waste from one collecting with net,
drawing on-site with multicolored pencil on paper, 31 March 2021.



Categorising plastic waste from one collecting with net, drawing on-site with graphite on paper, 31 March 2021.



Drawing in studio with multicoloured pencil on paper, 31 March 2021.

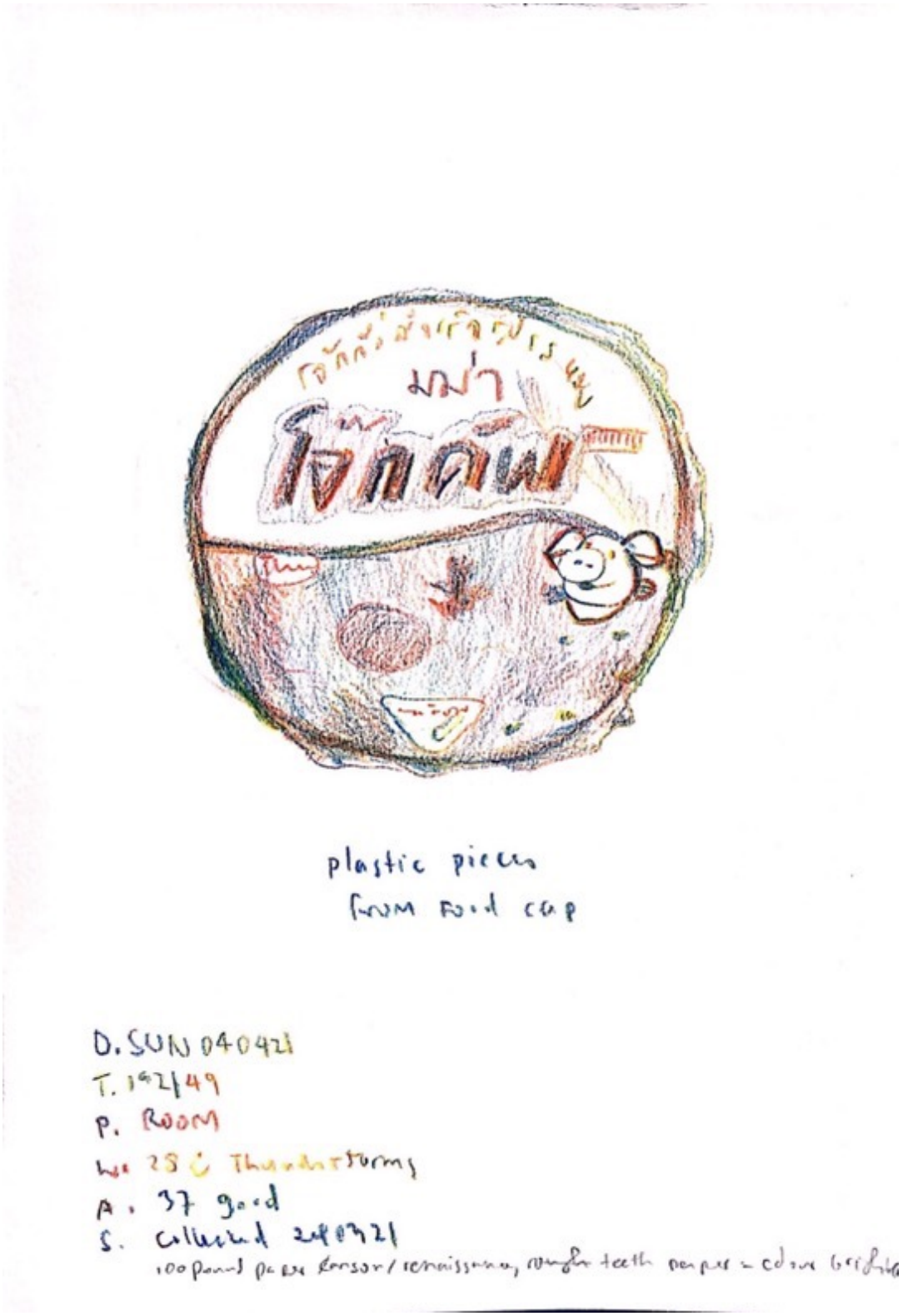


Drawing in studio with coloured pencils on graph paper, 1 April 2021.

Drawing in studio with coloured pencils on paper, 2 April 2021.

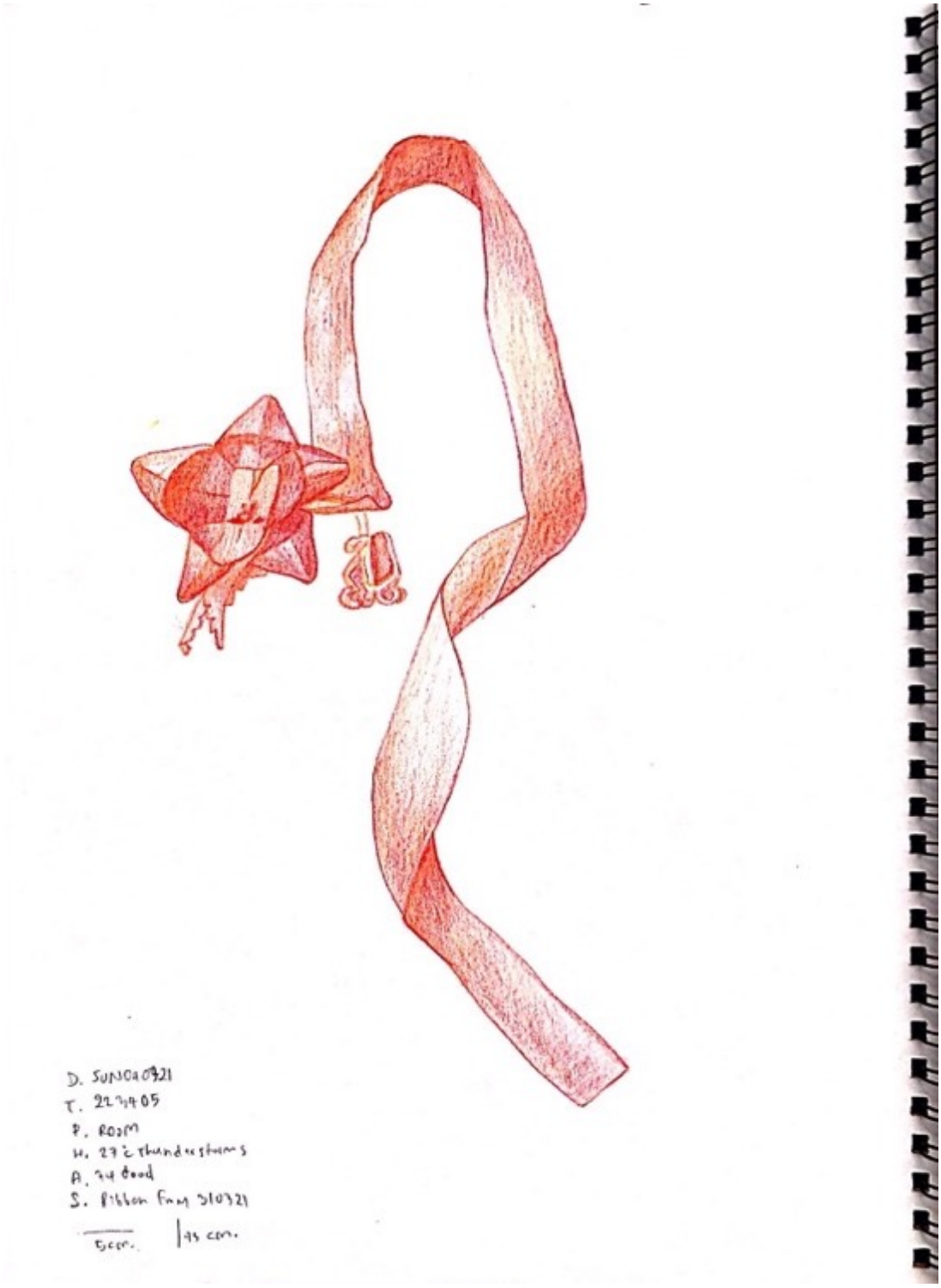
Drawing in studio with multicoloured pencil on graph paper, 2 April 2021.

Drawing in studio with coloured pencils on paper, 3 April 2021.

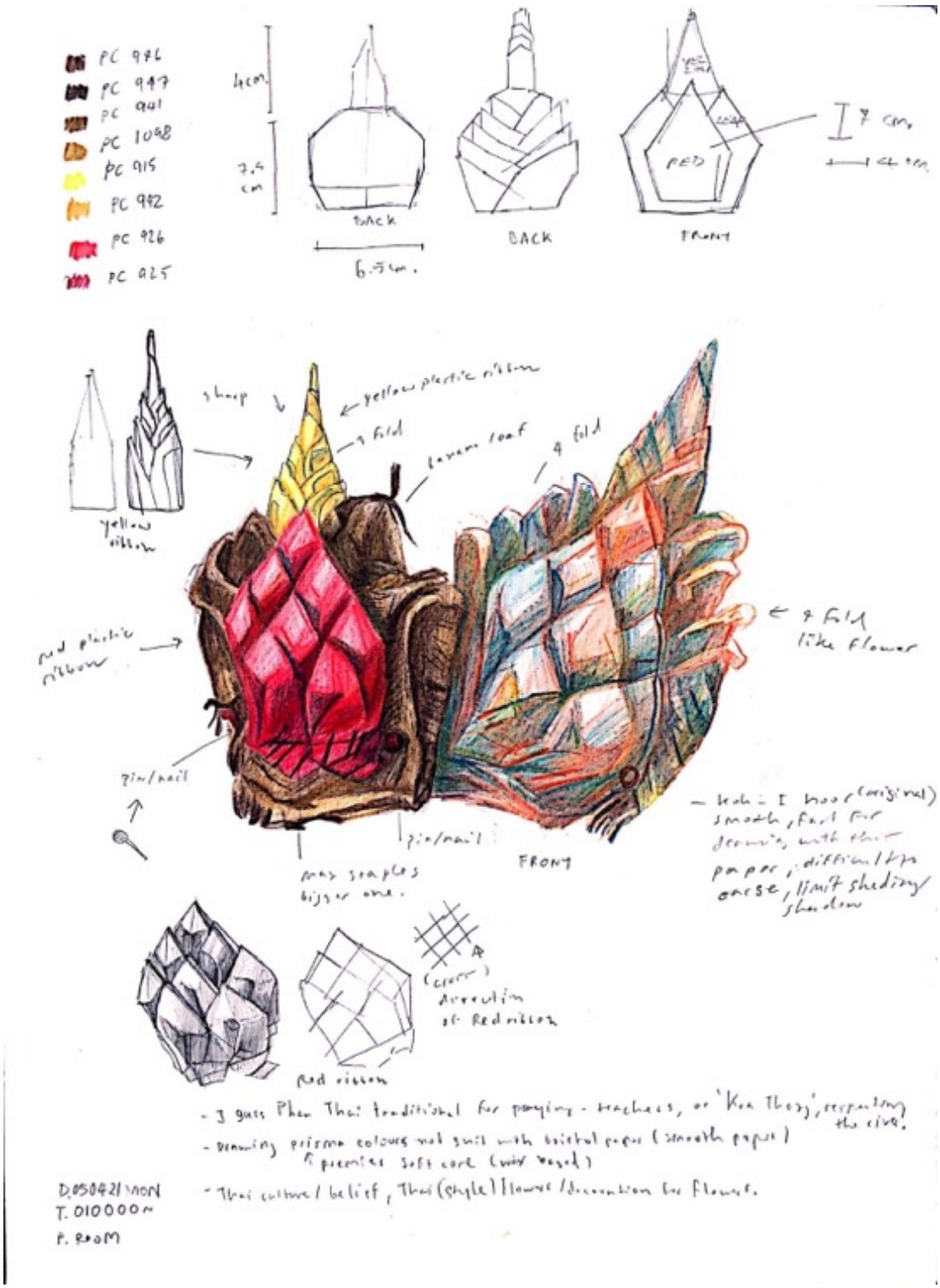


Drawing in studio with multicoloured pencil, 4 April 2021.

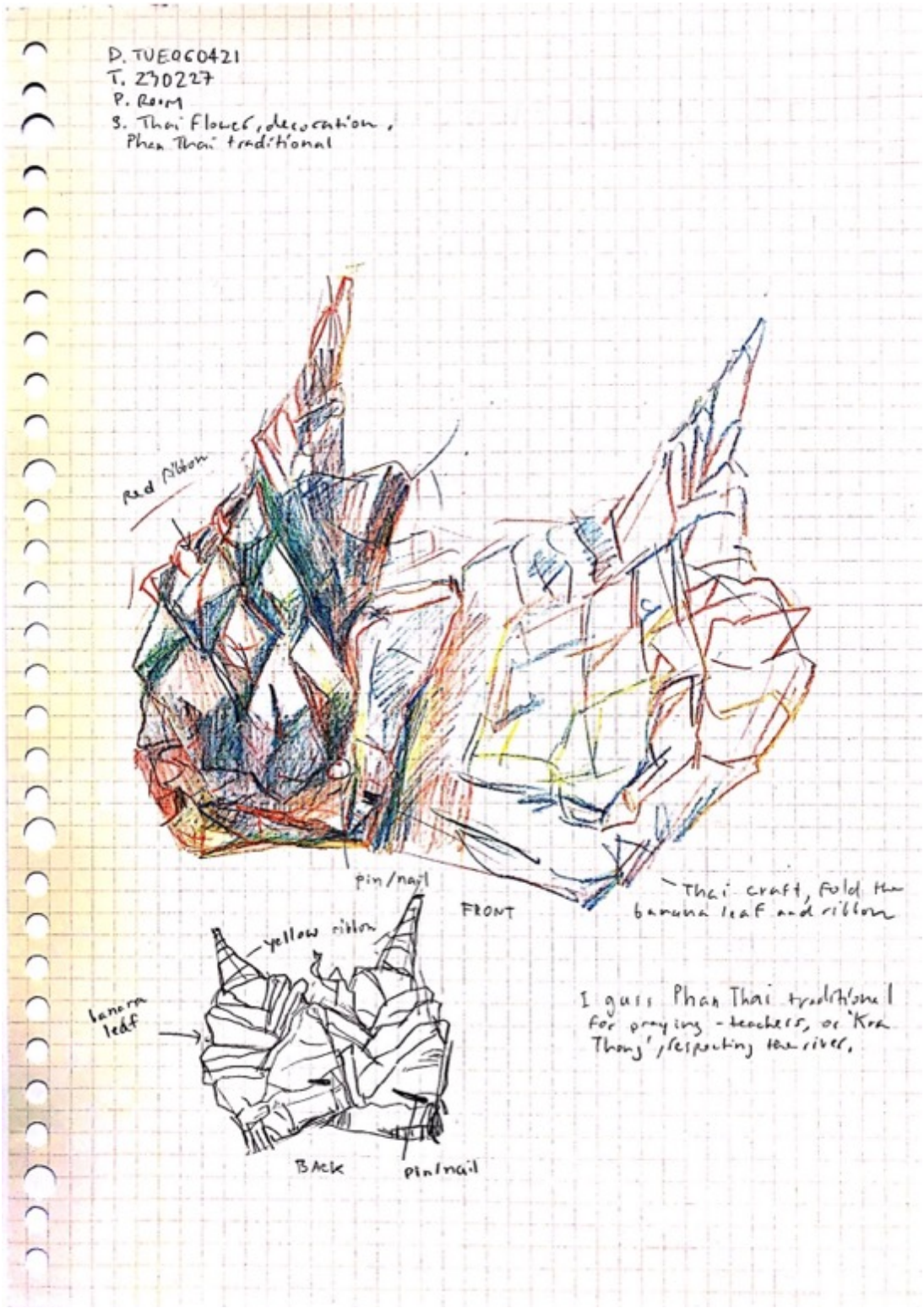
Drawing in studio with multicoloured pencil on paper, 4 April 2021.



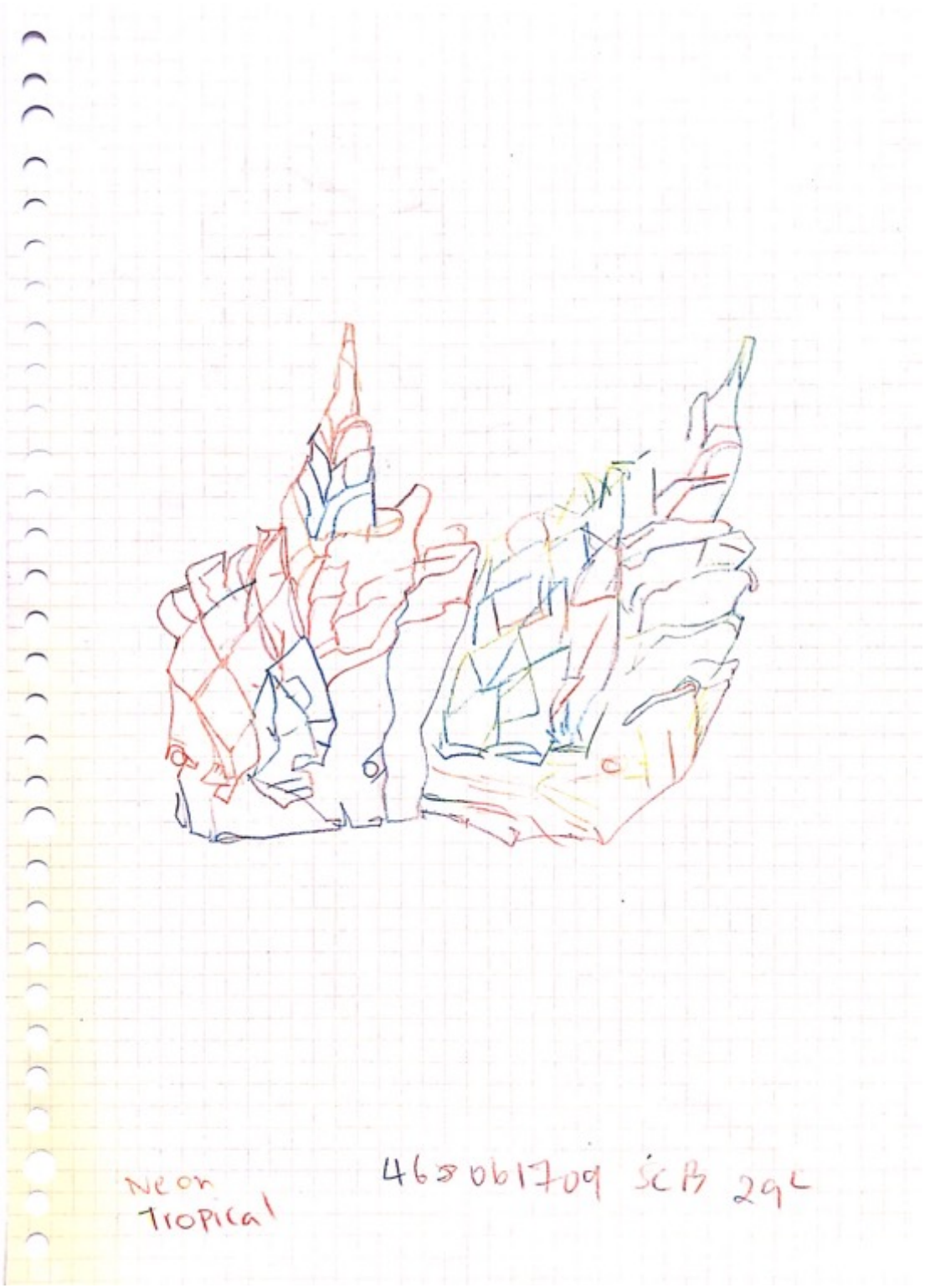
Drawing in studio with multicoloured pencil on paper, 4 April 2021.



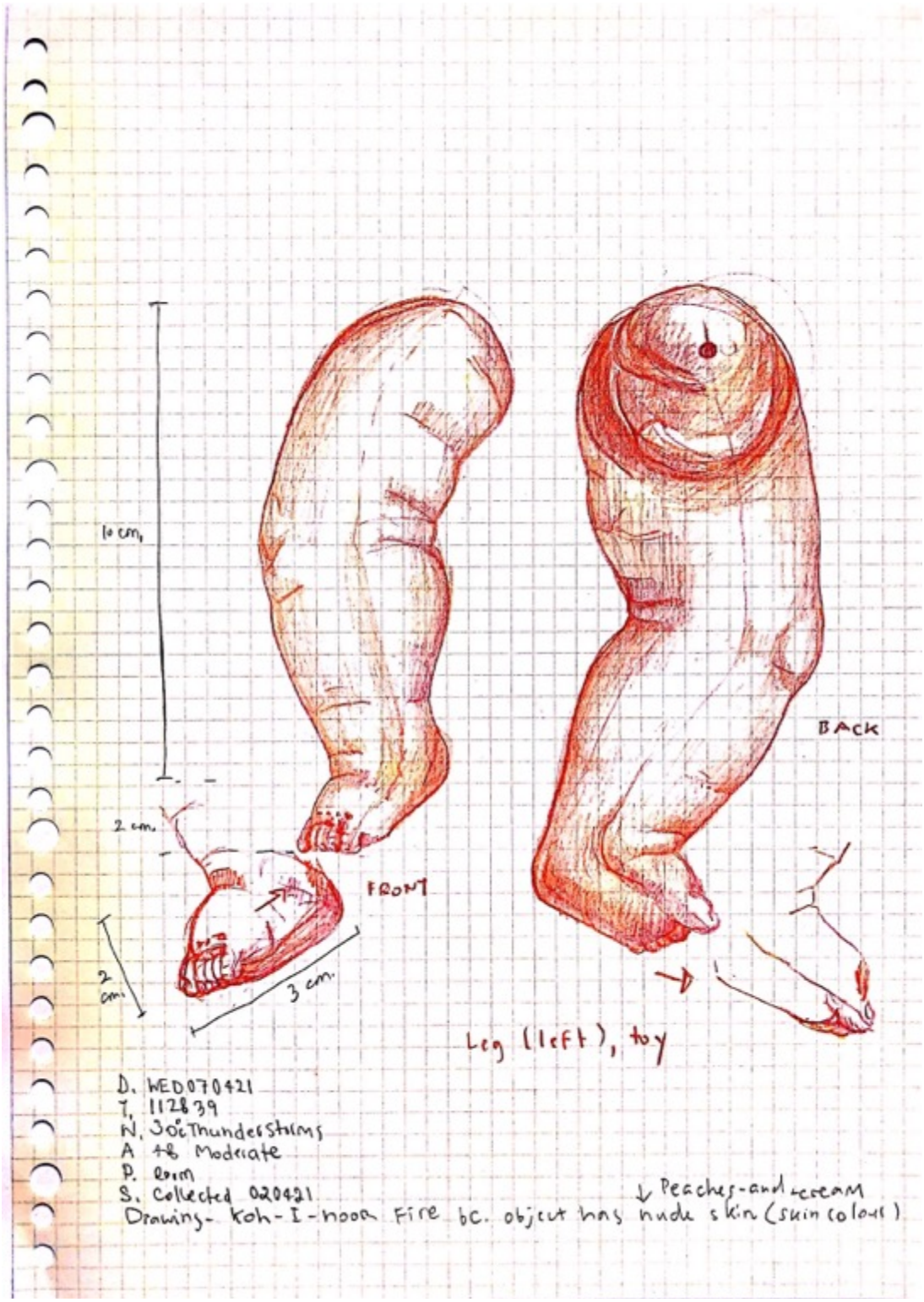
Drawing in studio with multicoloured pencil on paper, 5 April 2021.



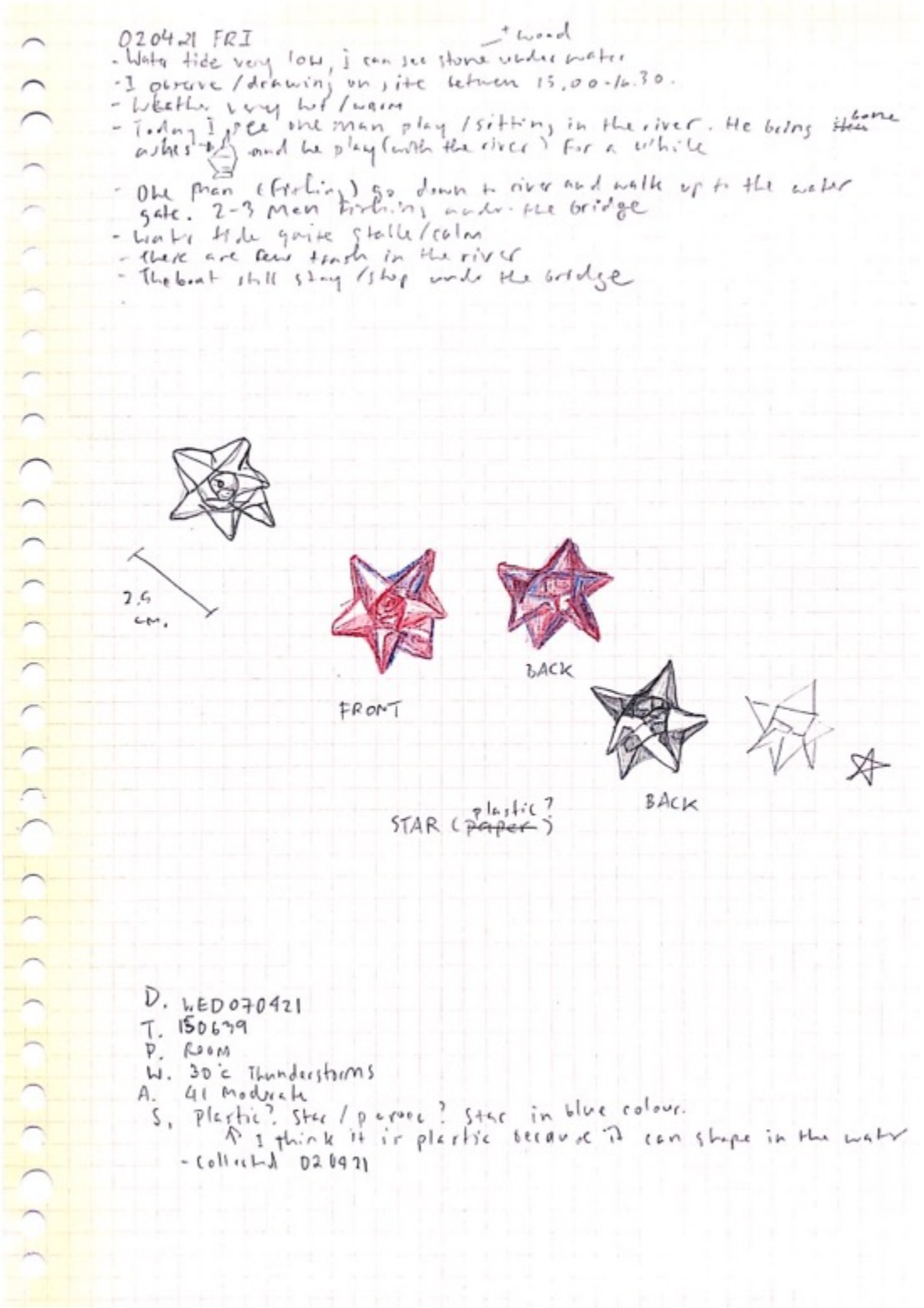
Drawing in studio with multicoloured pencil on graph paper, 6 April 2021.



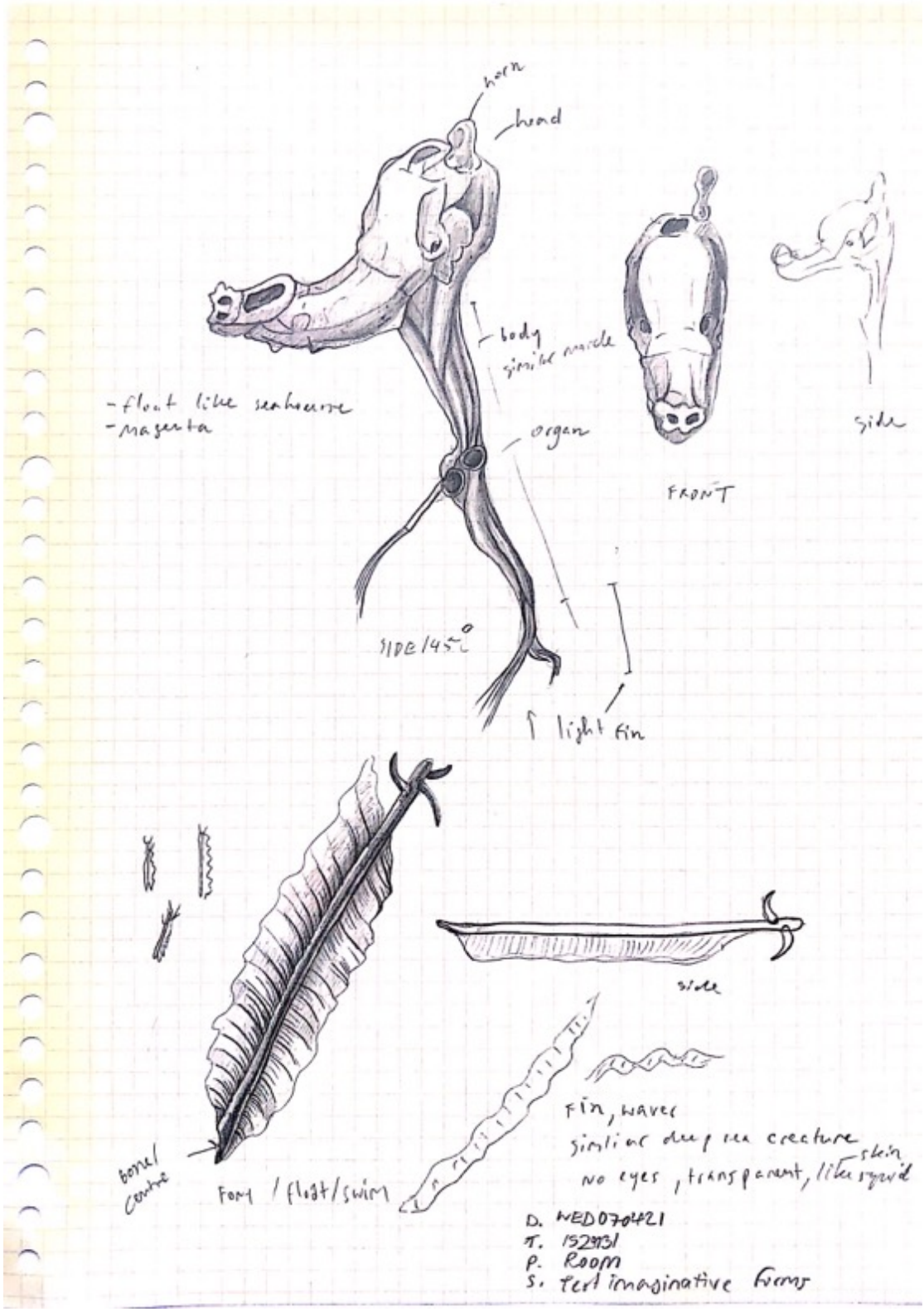
Drawing in studio with multicoloured pencil on graph paper, 6 April 2021.



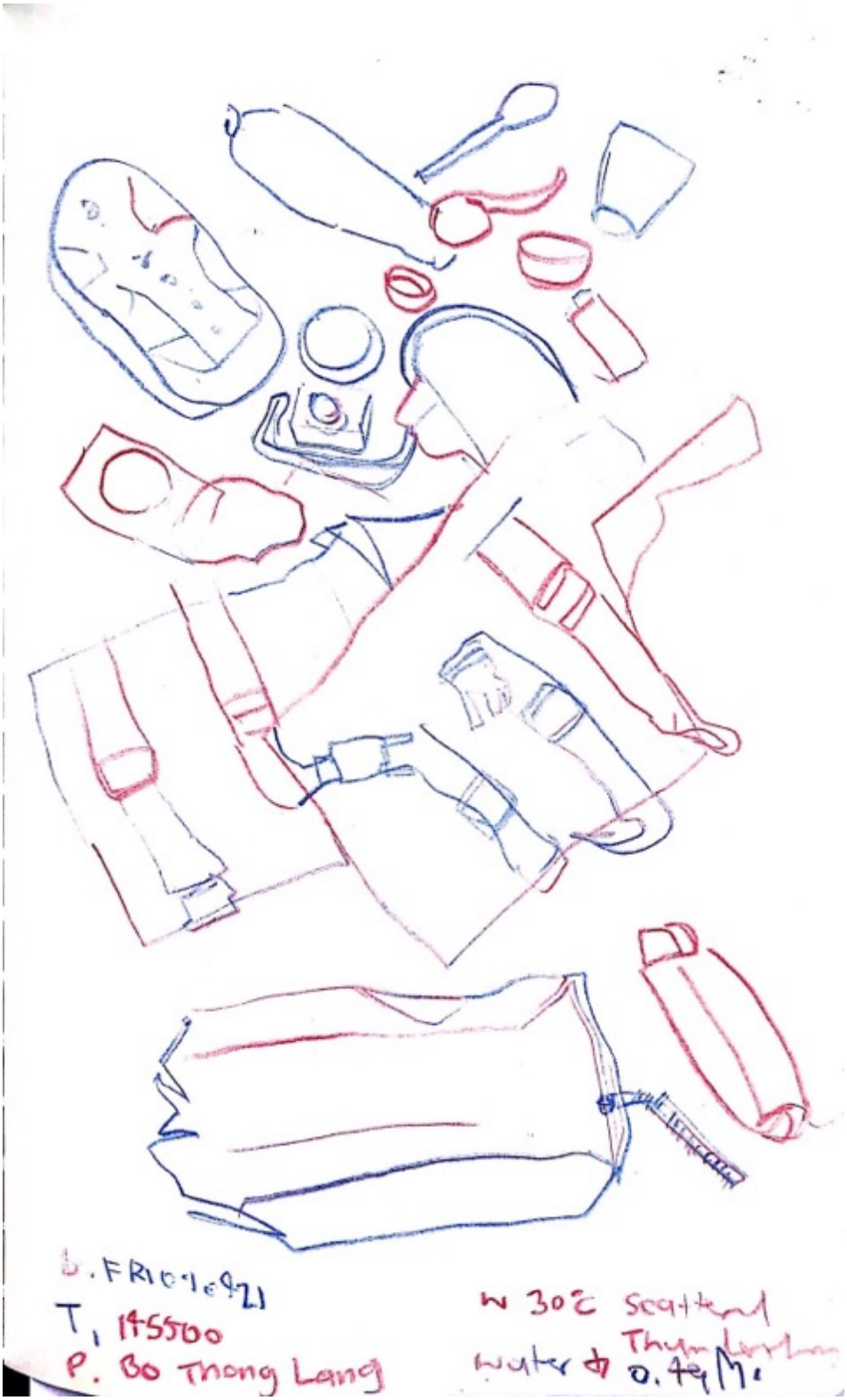
Drawing in studio with multicoloured pencil on graph paper, 7 April 2021.



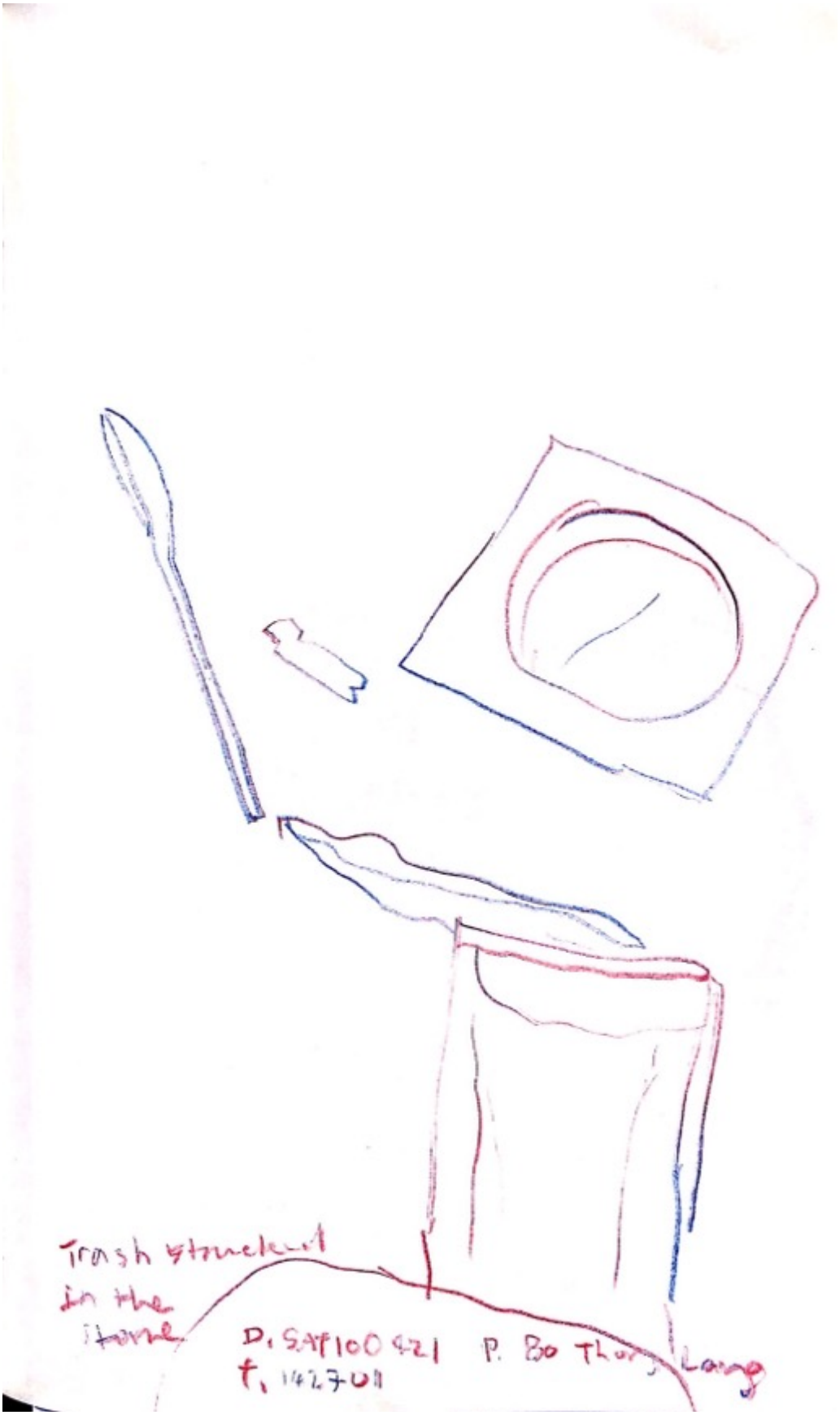
Drawing in studio with multicoloured pencil and graphite on graph paper, 7 April 2021.



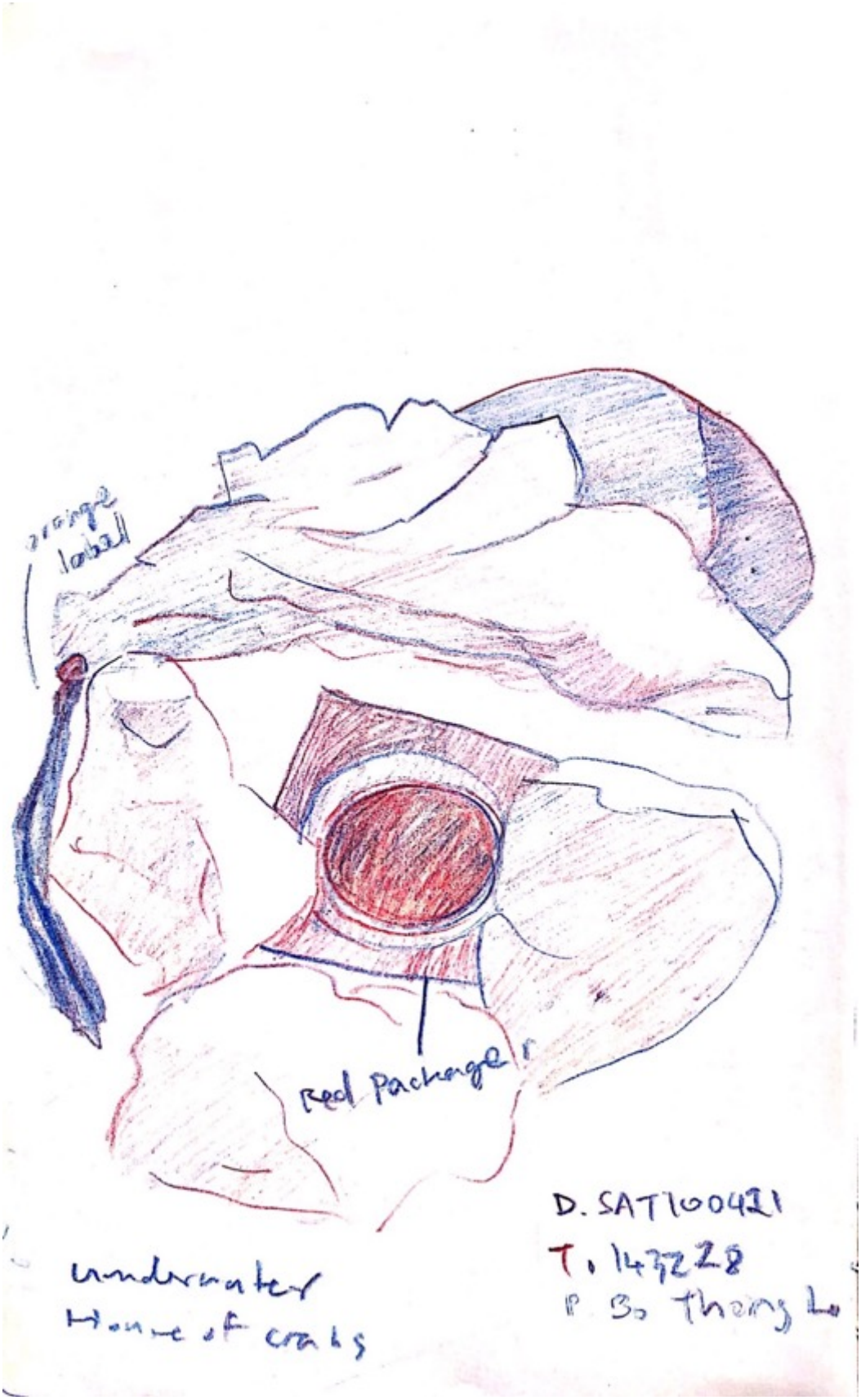
Drawing for examination of microplastics in the studio with graphite on graph paper, 7 April 2021.



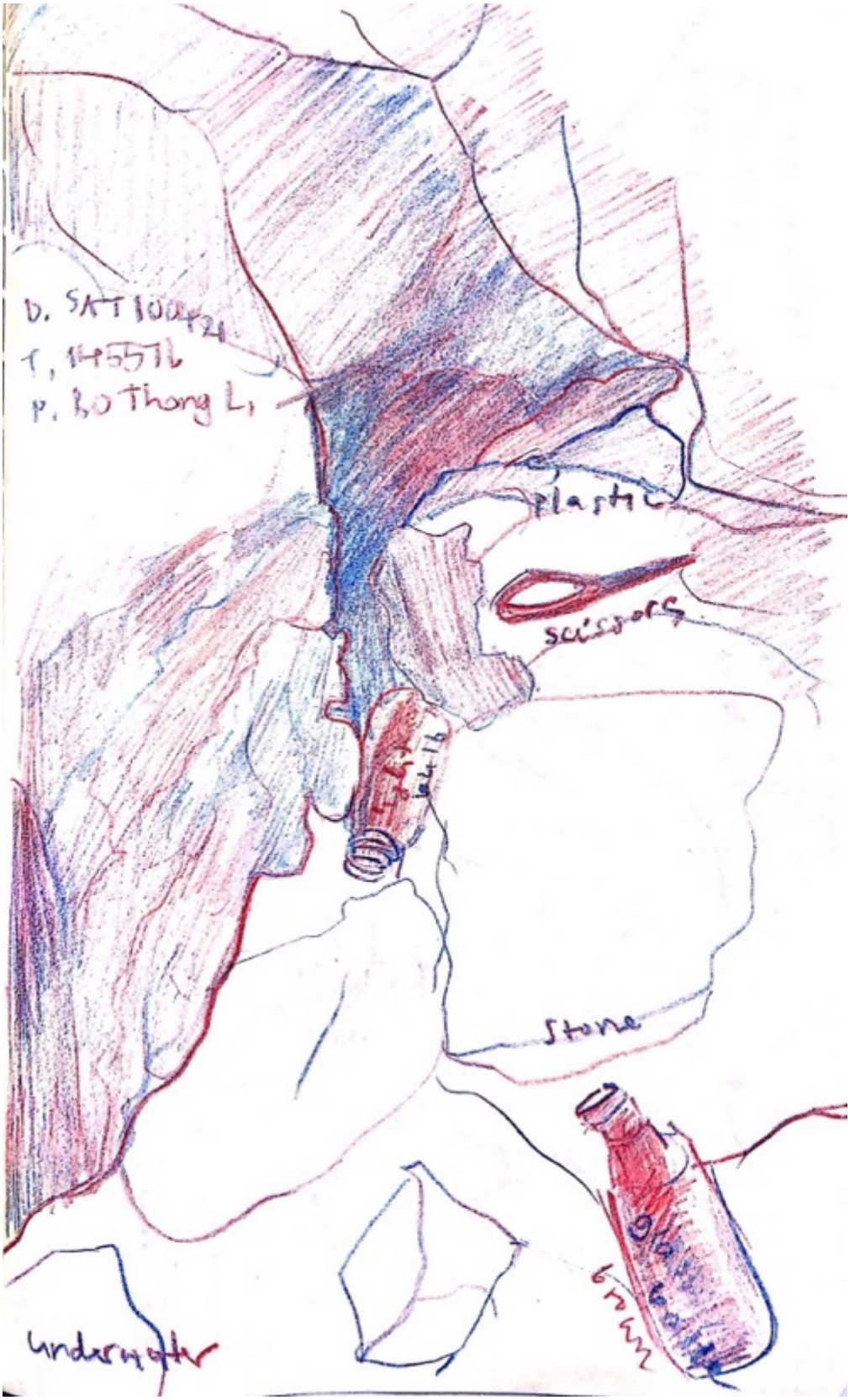
Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 9 April 2021.



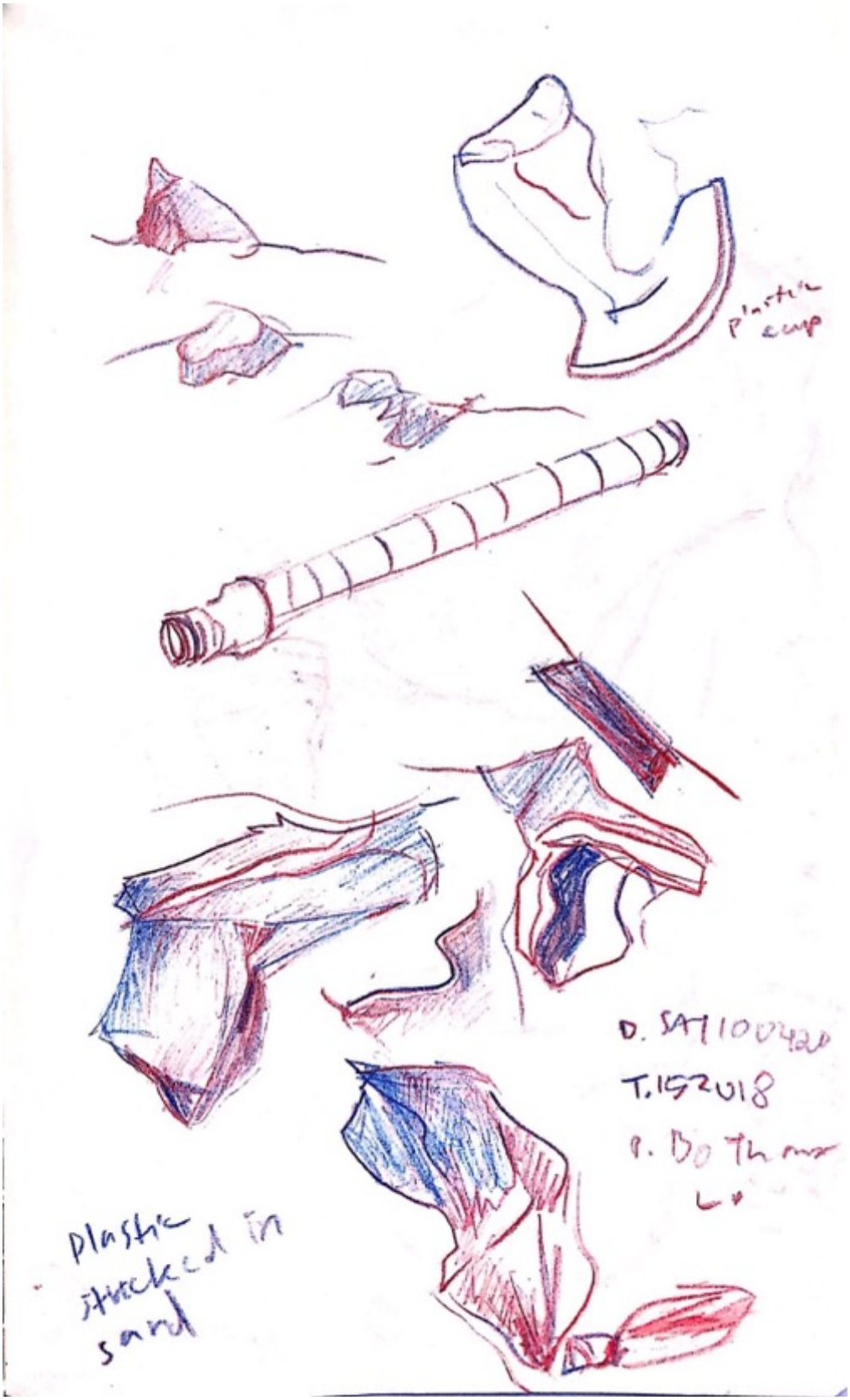
Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 10 April 2021.



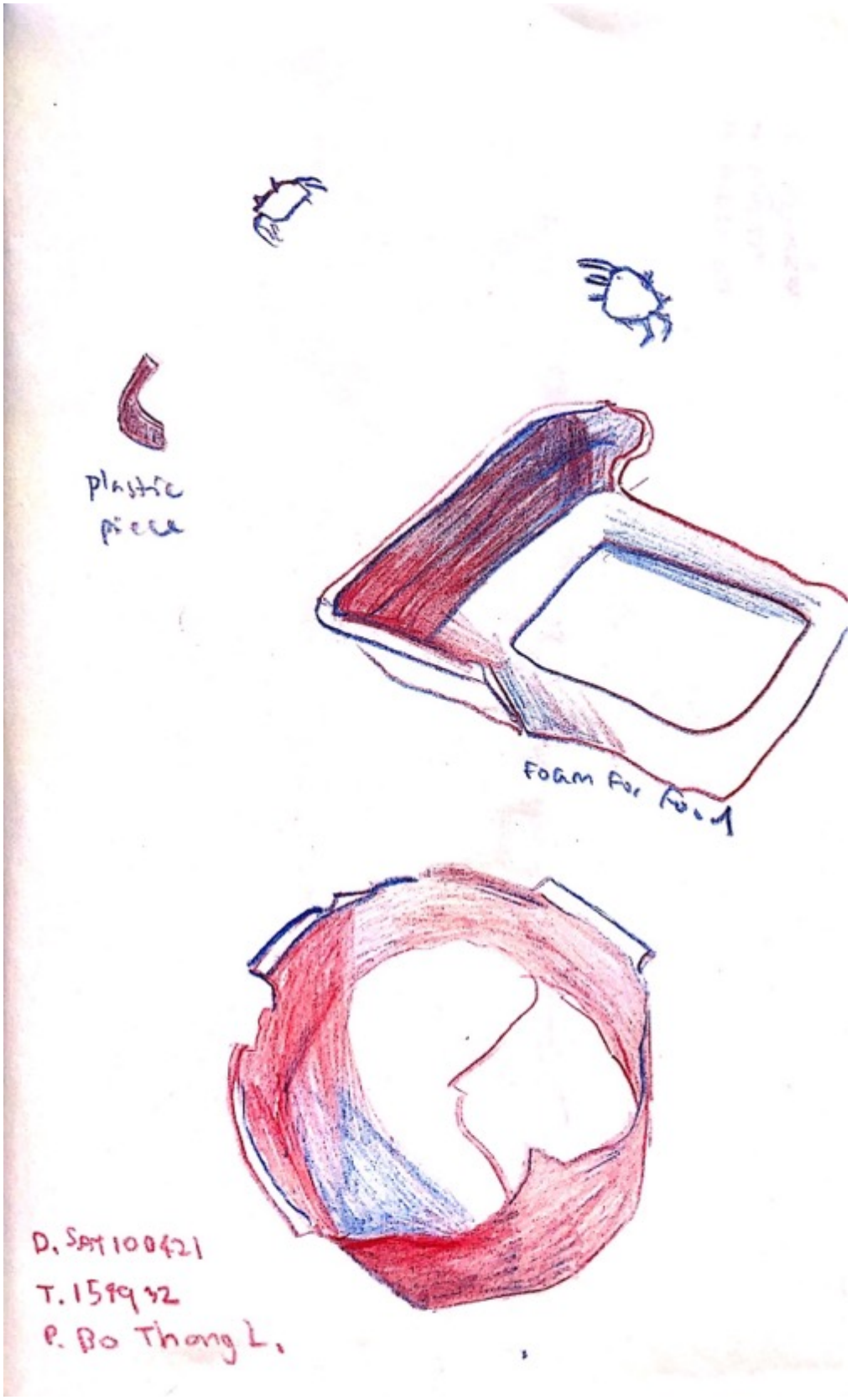
Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 10 April 2021.



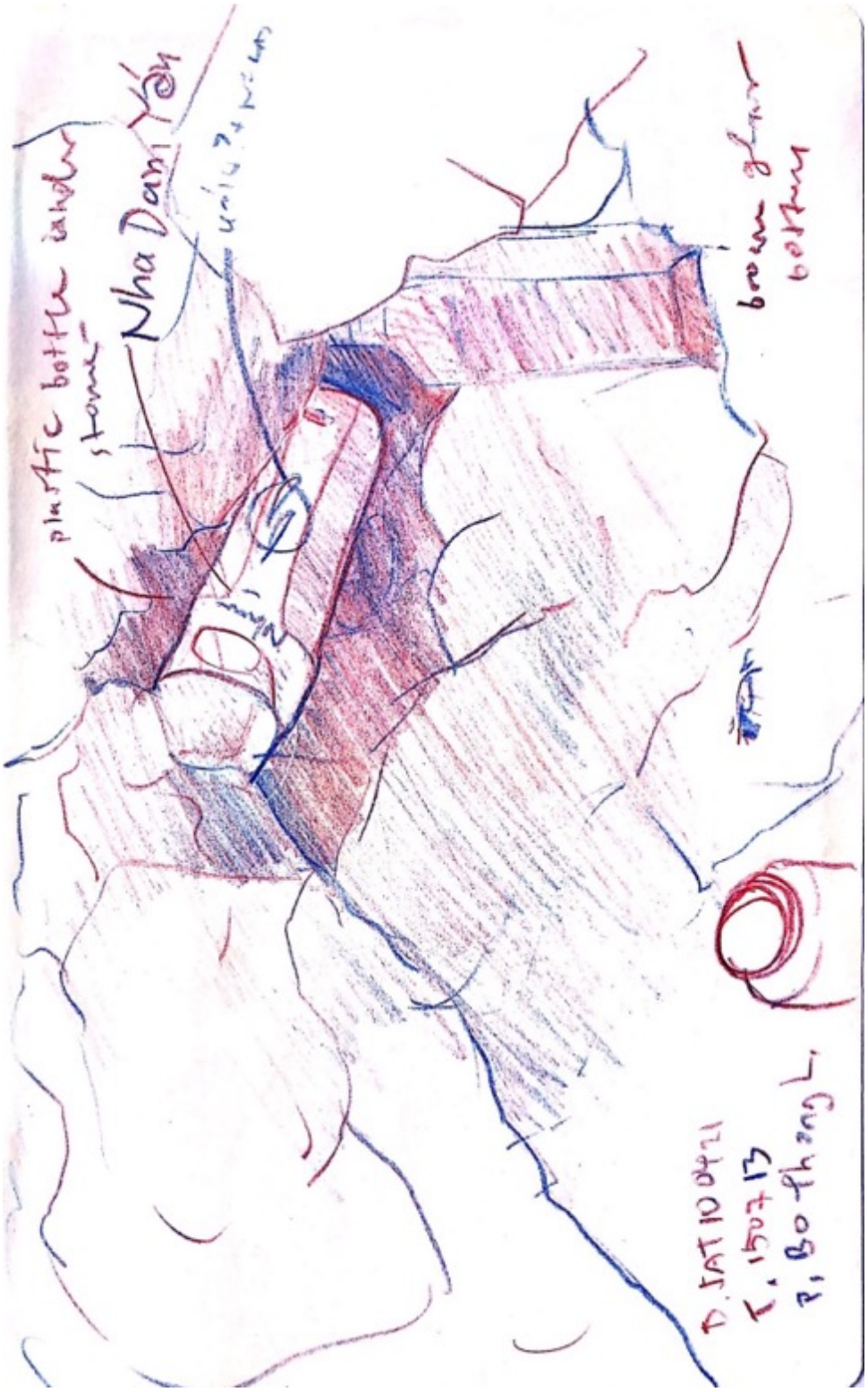
Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 10 April 2021.



Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 10 April 2021.

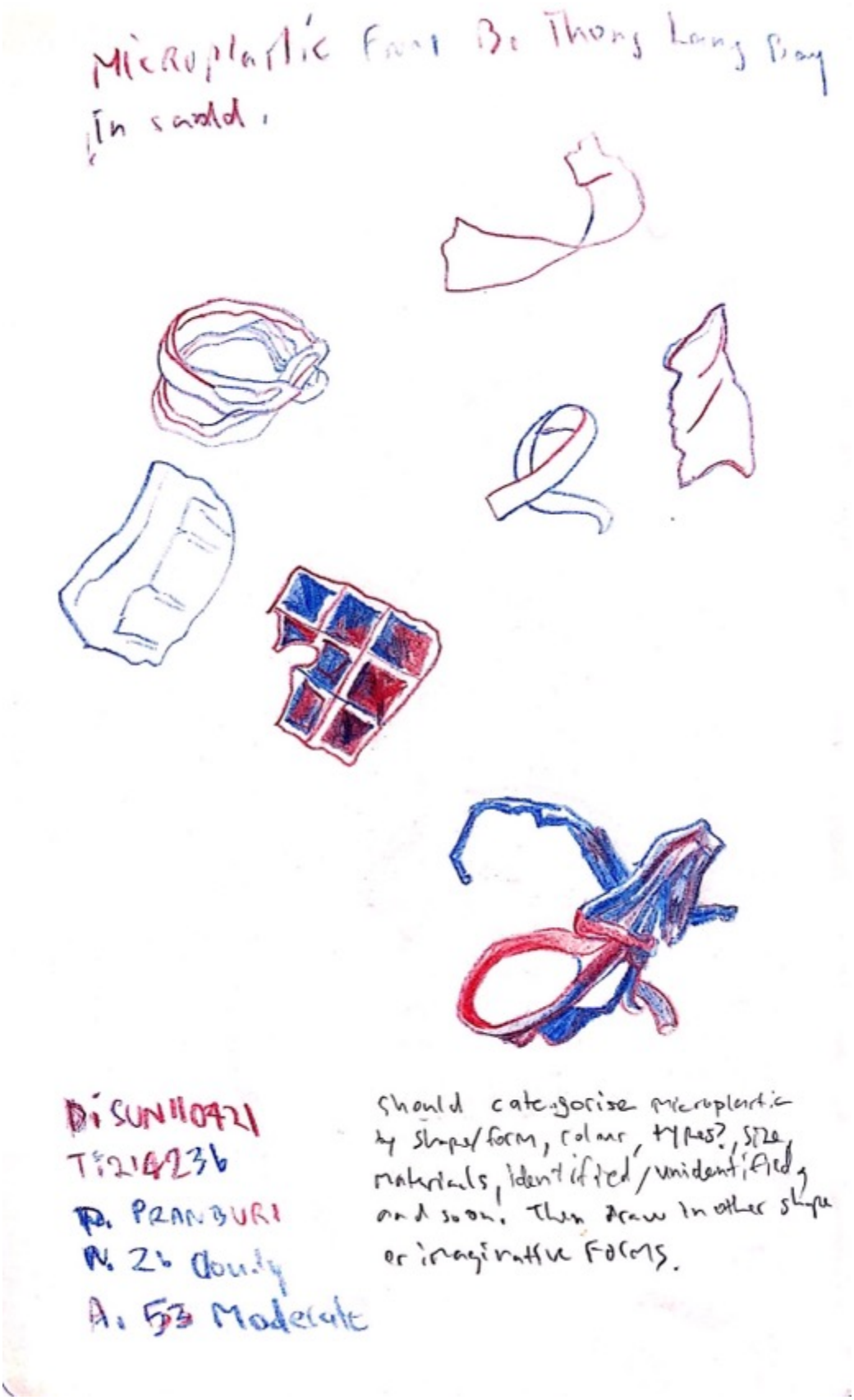


Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 10 April 2021.

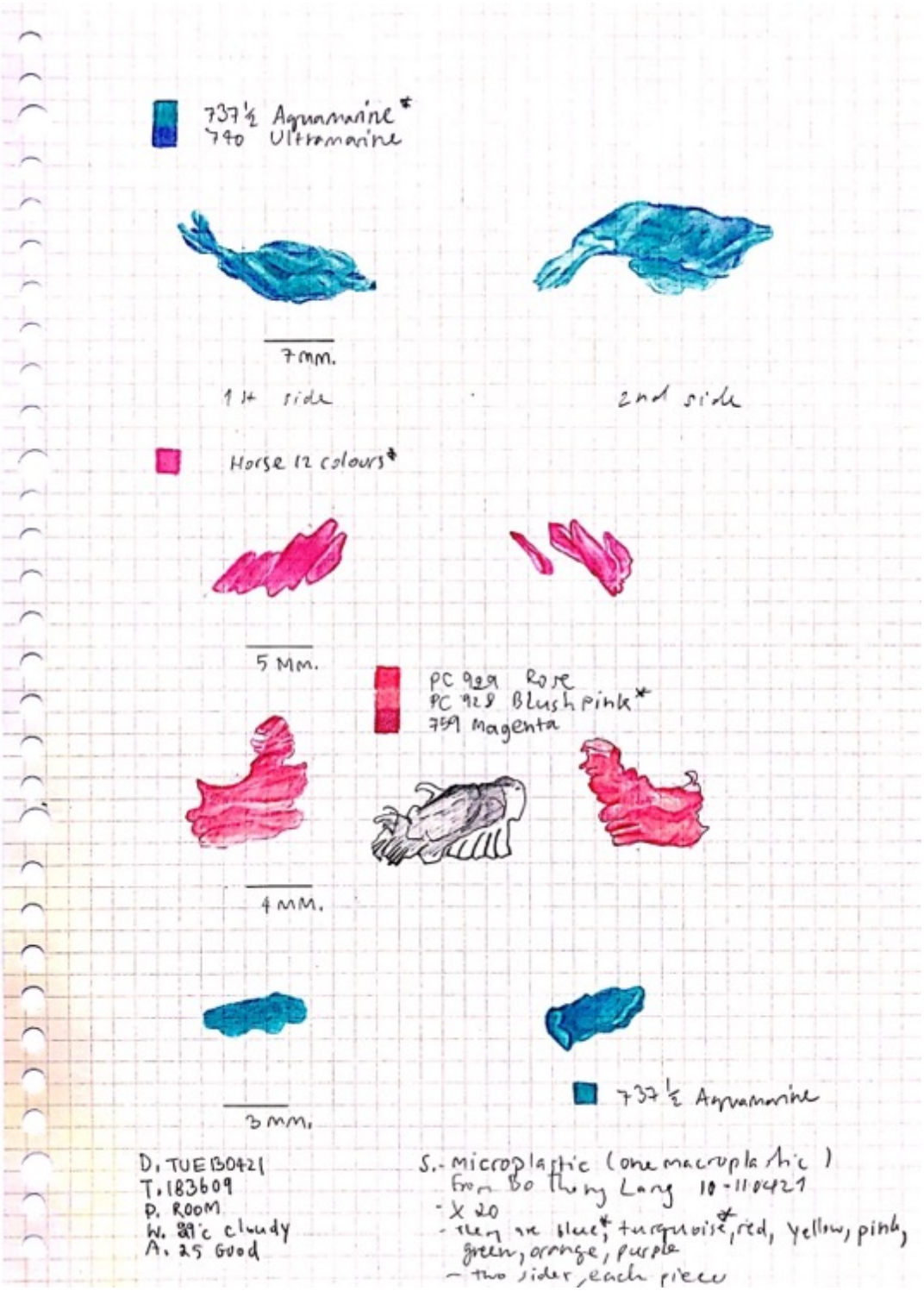


Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 10 April 2021.

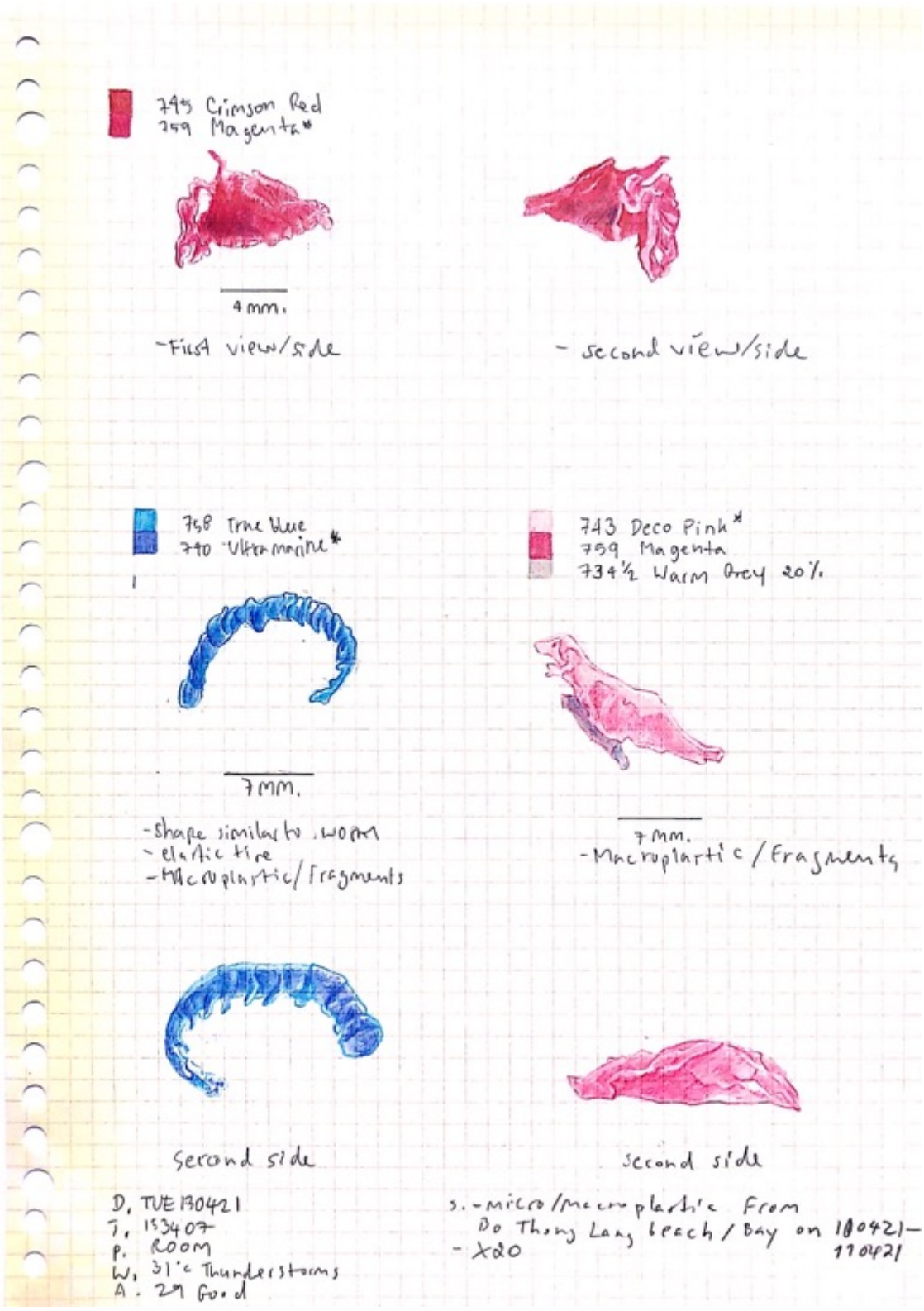
Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 10 April 2021.



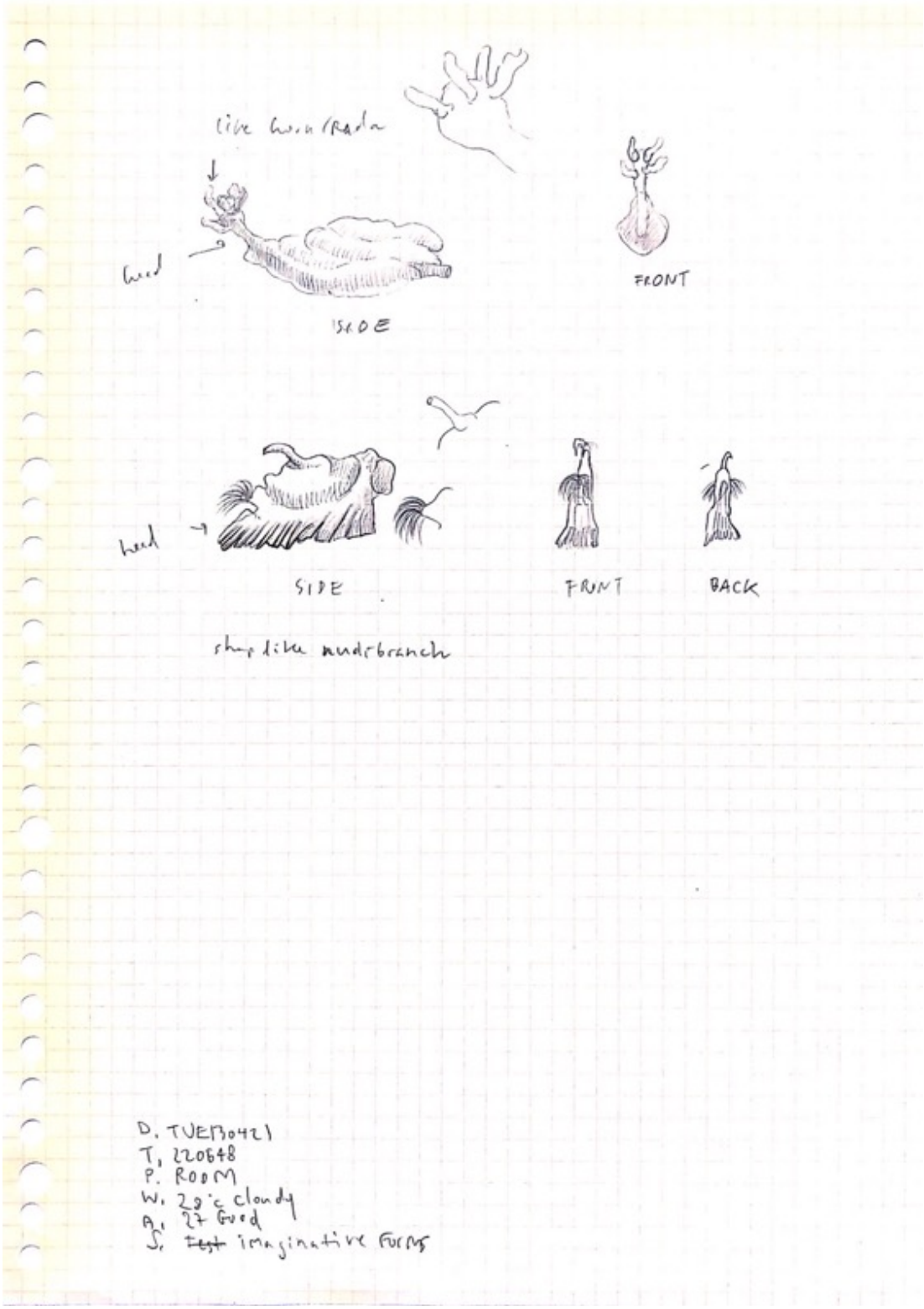
Drawing on-site at Pranburi with multicoloured pencil on paper, 10 April 2021.



Drawing microplastics in studio with coloured pencils on graph paper, 13 April 2021.



Drawing microplastics in studio with coloured pencils on graph paper, 13 April 2021.



Drawing microplastics in studio with graphite on graph paper, 13 April 2021

Drawing on-site at Bo Thong Lang Bay with multicoloured pencil on paper, 15 September 2021.

Drawing on-site at Aldcliffe with graphite on paper, 20 March 2022.

Drawing on-site at Aldcliffe with graphite on paper, 20 March 2022.

Drawing on-site at Fleetwood Beach with ballpoint pen on paper, 24 June 2022.

Drawing on-site at Cleveleys Beach with multicoloured pencil on paper, 23 September 2022.