INNATE PAINTING:
INVESTIGATING OF ORIGINS OF ARTISTIC PRODUCTION THROUGH CONNECTIONS BETWEEN CURIOSITY, EXPERIMENTATION, AND CREATIVITY

VOLUME II
CATALOGUE & FINDINGS:
A PERSONAL JOURNEY FROM CURIOSITY TO CREATION

by

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investigating II (result of process 14). Jessica Montgomery.
digital image. microbial cellulose, acrylic and sunlight. 2018.

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CATALOGUE & FINDINGS: A PERSONAL JOURNEY FROM CURIOSITY TO CREATION

1.1 FROM PAPER TO PETRI DISH AND BACK AGAIN: A FOUNDATION FOR A CRITICALLY RESOLVED ART-MAKING PROCESS

The overall goal of this research project, as detailed in *Volume I* of this document, is to explore the universal relationship between curiosity, creativity, and experimentation within human art-making. In correlation with this aim, detailed here in *Volume II*, a body of artworks has been created to explore and emulate these relationships and their universality among us. This body of work was thus produced to explore and experience these traits within my own art-making processes in comparison to universal art-making behaviour and the aforementioned proposed system of traits. This volume serves as an extended catalogue and should be read in parallel with *Volume I*.

The theoretical framework behind the following artworks and practice revolves around the notion that art-making is the result of an innate, biological system and one that we all share as a species. Moreover, while parts of this proposed system (curiosity, experimentation, and creativity) inform the behaviour of general, human art-making (as explored in *Volume 1*), this formed, practical practice and resulting artworks attempt to review and observe this system on an intimate scale as part of a greater, universal whole. Throughout the creation of these artworks I remained conscious of these proposed traits and their influence and have detailed these experiences in the following subchapters. By observing and by reflecting on these traits in my own working process I attempted to not only reveal the motivation behind my own, personal impulses to make art but to compare these observations to the general art-making drives of our species.

Each trait was considered and examined in conjecture with the various stages of this ever-evolving art process and observations were made throughout in regards to my own, personal experiences of each trait. In short, curiosity led me to formulate a question and assert critical pathways to investigate it. Experimentation led me to seek tactile ways to address this question.

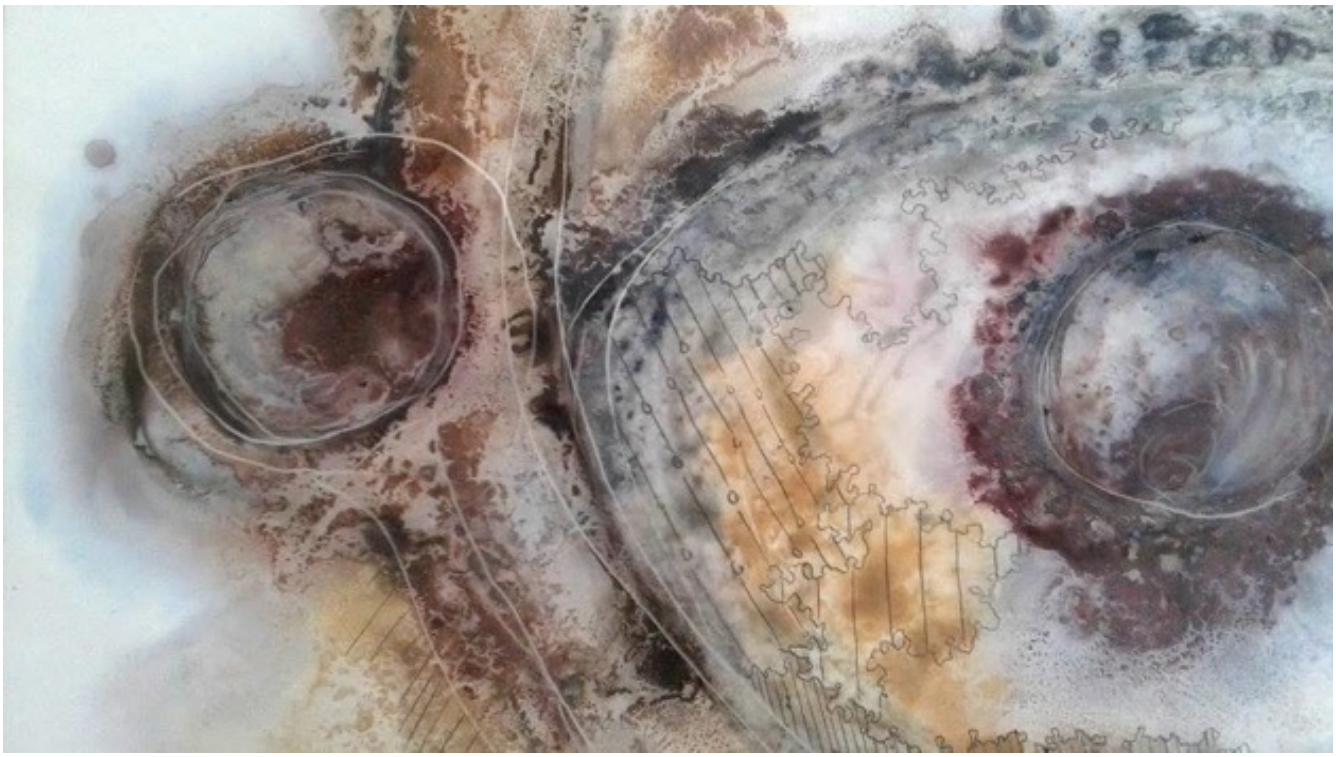
And creativity then applies the results of experimentation to expressively address the initial question and create physical works. These observations led me to form the proposition that these traits were emulative of the order of my art-making process in general and, in turn, my art process and artworks became emulative of the synthesising of traits themselves.[1]

However, though an attempt was made to focus on the instinctual driving forces behind the art-making process, it must be stated that it is impossible to decouple learned behaviour in favour of instinctual behaviour. The resulting works of this study are proposed to be both the results of innate means as well as intentional revision of these traits by the artist. Therefore, these works are both products of an innate cognitive process and an intention to express the universality of this process itself in a physical artwork. As professor and poet Frederick Turner (1999) once mused in his essay on bioaesthetics, "Foucault…reminded us, there is now way of keeping knowledge and action from contaminating each other" (Turner, *Et al*., 2006).

This document examines my journey from concept to creation. Through both an examination of early 2-dimensional works, to a more refined study incorporating the creation and growth of a biological art process, *Volume II* sojourns my experiences of critical, art-making and its resulting processes.

[1] see 1.3 New Process, Same Concept (p. 16)

(Figure A) *embryo 1*. Jessica Montgomery. ink and acrylic on drafting film. 2017.



(Figure B) detail, *untitled cell (purple).* Jessica Montgomery.
acrylic and pencil on drafting film, 2017.

1.2 CURIOSITY, BIOLOGICAL ORIGINS AND EARLY WORKS (2016-2017)

I am curious and have always been curious. Curiosity is ingrained in my being and thus, my artistic working process. Without it I would fail to formulate, initial artistic problems to solve; therefore, I would not create artwork at all. It is a crucial and basal beginning. In regards to the specifics of this study, I was foremost curious about human art-making behaviour and the universal, cognitive framework that bound us together as an art-making species. I was also curious as to how best to convey this universality in an artwork.

Initially, I created artworks that relied heavily on biological imagery and the abstraction of these organic images (Figures A-E, p. 9-15). To create these early works I utilised aspects of non-representational drawing and painting and sought to create aesthetically pleasing combinations and reactions between various materials. These initial studies are both large-scale (Figure B, p. 10, Figure C, p. 13) and small-scale works (Figures A, p. 9, Figure D, p. 14, Figure E, p. 15), which use techniques that purposefully offer relatively, limited control to the artist in an attempt to emulate a naturally occurring, innate origin.

Works such as *untitled cell (blue),* (Figure C, p. 13), were created by pooling various layers of liquid media: inks, acrylics, watercolours and salt washes. These combinative materials created freely forming, reactionary textures and surfaces that lacked total, artistic control while creating motifs emulative of cells or other biological forms. Once the wash layers had dried, I continued to work over the pieces with pencil, ink, or charcoal. This secondary process initially began by tracing the forms and patterns created by the naturally pooling washes. Once these natural patterns were discovered (as seen in Figure B, p. 10) I began to add expressive marks and patterns (as seen in Figure E, p. 15).

In an attempt to convey human artistic origins, for example in *embryo I* and *embryo II* (Figures A, p. 9, Figure D, p. 14), the images of microscopic fish embryos were abstracted to convey a sense of our basal, prehistoric origins as well as to engage the viewer with familiar biological

forms and textures.[2] In larger works such as *untitled cell (blue)* (Figure B, p. 10) and *untitled cell (purple*) (Figure C, p. 13), imagery of both macro and micro origins were explored and abstracted through the fusion of cellular imagery, celestial origins, and non-representational painting. In both these large-scale and small-scale works, the final layers of pencil and ink drawings also aimed to be non-representational in form. These drawings were done to not only satisfy my own artistic needs to expressively mark-make, but to also engage the viewer's own curious eye and strategically draw them in to investigate the resulting layers of texture and process.

As stated, the early phase of this practical art project and working processes attempted to depict final images reflective of an innate, universal entity. And while analogous to my research aim[3], these artworks were mainly concerned with their finality rather than the processes themselves.

During the creation of *cell 8* (Figure E, p. 15) and similar artworks, I remained particularly conscious of the expressive marks I was creating and was critical of where and why and to what benefit was I making them; I was placing emphasis on the *end*. Though expressive and pleasurable to make, these works were primarily focused on an end result and attempted to represent a concept about *process* in a stagnant, pictorial image.

These initial artworks were ultimately deemed to be unsuccessful. This body of artwork intended to be about the universal, art-making 'process', not directed at an end result. In order to investigate the artistic process and examine the occurrence of selected traits throughout, I found it necessary to create artworks that were process-based themselves.

[2] Contemplating art-making behaviour as being rooted in such a biological form led me to conceptually develop a series of *cells* 'responsible' for these behavioural actions (Figure B, p. 10, Figure C, p. 13, Figure E, p. 15).

[3] The purpose of this study is to examine the origins of creative, artistic behaviour as a byproduct of evolution through connections between curiosity, experimentation and creativity (See *Volume 1* of this document).

(Figure C) detail, *untitled cell (blue)*. Jessica Montgomery.
oil and pencil on drafting film. 2017.

(Figure D) *embryo 2.* Jessica Montgomery. oil and ink on drafting film. 2017.

(Figure E) *cell 8*. Jessica Montgomery. acrylic, ink, and pencil on drafting film. 2016.

1.3 NEW PROCESS, SAME CONCEPT: EXPERIMENTATION AND MICROBIAL CELLULOSE WORKS (2017-2018)

After critical review of my research question, I was unsatisfied with the initial artworks created and strove to reconcile my working process with my concept. My research question is primarily concerned with a system of factors (curiosity, experimentation, and creativity) that are in part responsible for the generation of art-making behaviour and I decided to focus on, and emulate, this cumulative and naturally generative condition.

After some time, I settled on an experimental, microbial process (Figures F-K, p. 18-22) that better attempted to explore art-making as a universal, biologically imperative process. After experimenting with numerous solutions, materials, and potential processes I was exposed to a naturally occurring, microbial process with a similar symbiotic and generative nature to my proposed, generative hypothesis: microbial cellulose.

Microbial cellulose, a so-called 'bio fabric[4]' (See Figure F, p. 18), is a microbial, surface material generated via a combination of natural factors. The microbial process responsible for the growth of this material hinges on a symbiotic relationship between two universal origins to multi-cellular life on this planet: bacteria and yeast[5]. This microbial process and resulting artworks (Figures L-Z, p. 23-45) are formed via the culmination of a multitude of factors, or ingredients, to produce something new.

The choice to pursue, create, and use this microbial material was made in order to symbolise the primordial stock we've evolved from and the eventual growth, through catalytic and generative processes, of universal, biologically engrained traits and behaviours. Like art-making, microbial cellulose occurs naturally and universally and is formed from an organic, collection of factors and mergers, both the result of innate processes and interactions with our environment.

[4] Microbial cellulose is a versitale material now being applied to a vast number of fields: medicine, textiles, architecture, etc (Keshk, 2014).

[5] The first known unicellular microbes appeared on Earth approximately 3.5 billion years ago (Choi, 2017).

The process of growing and harvesting microbial cellulose is fairly simple. The cellulose material grows on the surface of a fermenting liquid of SCOBY[6], tea, and sugar. This mixture was left to gestate in a plastic over a period of weeks; the number of weeks fluctuated as I experimented with this gestation time and added other, experimental elements to the container (See Figure H, p. 19). (A basic tea and sugar solution was consistently used as a base, but other fructose sources such as slices of apple were added to experiment with textural growth, etc.) The cellulose layer takes the shape of the container it is grown in and, once it has formed[7], I then removed each piece from the solution and experimented with a variety of materials and processes, similar to the earlier works in this study. I carved into the surfaces (Figure Y, p. 44), I layered and seamed multiple pieces together (Figure R, p. 33), I inlaid fabric mid-growth, or I simply dried them and drew overtop with pen and ink (Figure L, p. 23. (The gelatinous material eventually dries into a paper-like surface [See Figure I, p. 20] and can be rehydrated and re-formed at any point.)

The end results of these works are not necessarily important. The final works serve as a history of its process and are a physical representation of the biologically imperative systems we harbour to create and are symbolic of the innate, yet personally controlled processes, we employ to do so.

It is important to state that I have not developed this cellulose, harvesting process myself. SCOBY, microbial cellulose, and the fermented tea solution[8] used to create it have long-standing biological and cultural histories. Microbial cellulose, and similar bio-fabrics, are used today by artists, fashion designers[9], and pioneering architects[10].

[6] SCOBY: Symbiotic Culture of Bacteria and Yeast (See Figure ii, p. 47)

[7] Heating mats were used at times during this process to accelerate growth.

[8] The solution is used to brew and ferment a traditional tea, called kombucha.

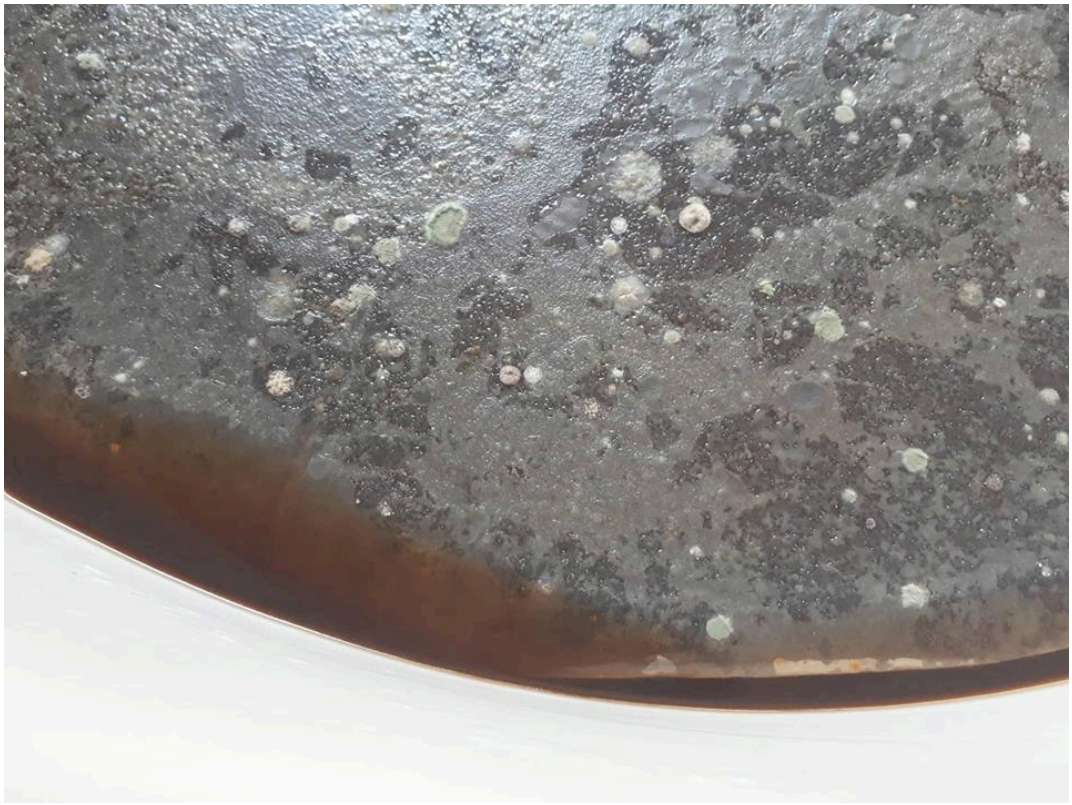
[9] Suzanne Lee (2011), a leading bio-fashion designer, has even created a motorcycle jacket out of dyed and sewn cellulose patterns, or 'mushroom leather'.

[10] For instance, see: Institute for Advanced Architecture Catalonia – Barcelona. IAAC (Arroyo, 2017).

(Figure F, above) microbial cellulose layer formed after 1-2 weeks growth time.
digital image. Jessica Montgomery. 2017.

(Figure G, below) microbial cellulose sample, two layers seemed together.
digital image. Jessica Montgomery. 2017.

(Figure H) First attempt at 500L growth. Microbial cellulose, with mold spots, two weeks growth time. digital image. Jessica Montgomery 2018.



(Figure I) harvested microbial cellulose sample, two weeks growth time.
digital image. Jessica Montgomery 2018.

(Figure J) cellulose growth after 5 weeks growth time. digital image. Jessica Montgomery. 2017.

(Figure K) detail, cellulose growth after 5 weeks growth time. digital image.

Jessica Montgomery. 2017.

(Figure L) *result of process 12,* left exposed to air for 3+ months. ink on grown material. Jessica Montgomery. 2017-2018.

1.4 UNIVERSAL SYSTEMS & INDIVIDUAL PROCESSES: REFLECTIONS ON PERSONAL CURIOSITY, EXPERIMENTATION, AND CREATIVITY

Throughout this creating process I was conscious of the system of traits proposed in this study (curiosity, experimentation, and creativity) and while creating these artworks, observations were made in regards to these traits throughout its various stages. I did not attempt to be emulative of any particular trait while doing so, but rather engaged in my own habitual art-making practice. However, due to the proximity of these studies, a subconscious bias may be present in my observations.

A. CURIOSITY

From an evolutionary psychology perspective's examination of curiosity, curiosity is proposed to be an empirical trait concerned with a specific organism's experiences and motivations; therefore, there is no set goal for this behaviour to be measured as beneficial or not (Fowler, 1966, p. 18). However, while reflecting on my own experiences in art-making, I find that curiosity is that little, internal voice that initially drives me toward the development of an artistic problem. I'm a slave to curiosity. As stated, without curiosity, there would be no beginning with which to start.

Prior to the creation of an art object, curiosity leads us to pursue a question. Whether that question is a problem of content, material, how to represent an abstract idea, or as simple and whimsically inconsequential as, 'What will it look like if I put *that* mark *there*?'

Curiosity is not something we've gained from experience, but rather the ground for experience itself (Barrow, 1995, p. 10-12). The desire to learn, or general inquisitiveness occupies a crucial bridge between cognition and motivation, between thought, action and growth (Cosmides, Tooby, 2001). In my personal art-making experience, curiosity led to the formulation of an artistic problem and a desire to combat it. This initial drive to investigate an idea, coupled with a desire to create something new, was notably self-fulfilling and pleasurable.

Secondly, curiosity led me to distinctly ask: 'How?'

- How will I achieve what I want to achieve?
- How will I lead my audience?
- How will my thoughts be perceived through my actions?
- How will I feel if I make this, touch that?

And so forth.

Specific to this study, curiosity played a new and surprisingly important role in my art-making process. During the creation and interaction with this unfamiliar, organically grown microbial surface, I felt a need to touch and test the capabilities of this foreign material. Not only was there a definite need to physically investigate this new environment, but I was also compelled to experiment with its surface and test the parameters of what this surface could do, what it could withstand, and how I could manipulate it further. This compulsion gave me an additional sense of fulfilment while creating the works and drove me to constantly make and grow more, more, more[11]. I often questioned, 'What else can I do with it?'

Engaging with this new and strange surface challenged and pushed my aesthetic mark-making as well and drove me to create far more non-representational images than my early artworks (See Figure S, p. 34). The surfaces themselves are oddly inviting. Each surface grew slightly different to the next and offered their own, unique textures and dimples, which furthered the excitement at each reveal. As seen in Figure Q, p. 33), some surfaces grew slick and skin like, while, as seen in Figure K, p. 22), others grew with fungal-like forms and projections.[12]

With each piece, as I continued to paint and make marks on these gooey, yet firm, foreign slabs, I gained a sense of the surface's possibilities and, while physically delicate, its lack of preciousness (See Figure T, p. 35). These attributes fuelled a desire to further create and

[11] I grew over 40+ pieces of microbial cellulose in various shapes, sizes, thicknesses, and variations.

[12] These variations are caused by numerous variables: contamination, addition of other fructose sources, movement of the tanks, etc.

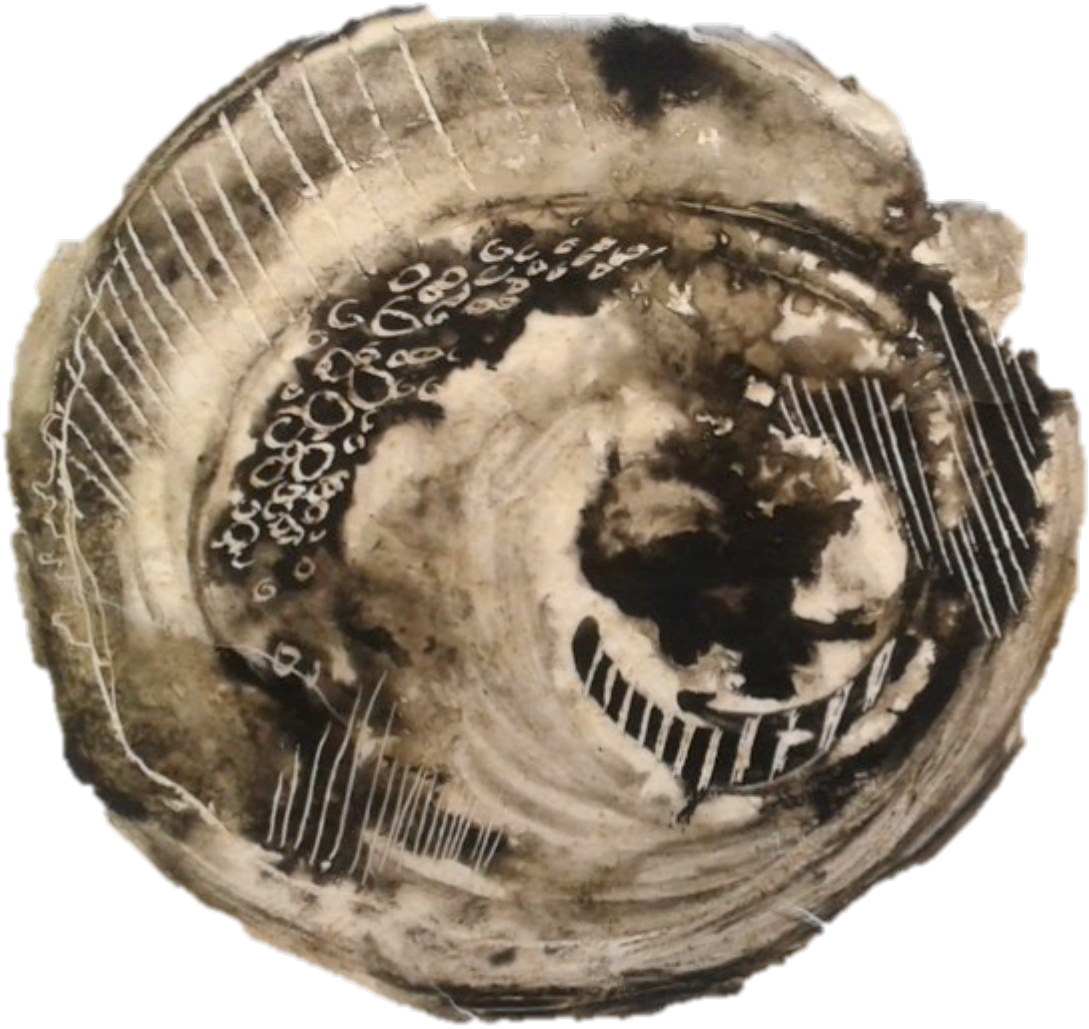
experiment. I knew that I could destroy it and learn from it; there was a sense of freedom in knowing that. Rather than having the familiar, stark white of blank canvas staring back at me I was encouraging myself to step away from this relative comfort and into something new. Surprisingly, I found contentment in this newness as well. It wasn't always comfortable working with this new material, but it was ultimately rewarding in the end and continuously propelled me to try new materials and processes.

These personal experiences can then be compared to similar, universal sentiments humans commonly experience while making or conceptualising artworks. As explored in *Volume I* of this document, some 'curious behaviours' are caused by a self-driven need to return an organism to a state of homeostasis, to fulfil a need, or to seek a cognitive reward based on novelty (Fowler, 1966). There is comfort in familiarity; however, there is creation in curiosity. Dissanayake claims that humans have a constant attraction and desire to and seek the 'extraordinary' or the 'different', stating "…we tend to go out of our way not just to experience it but even to fabricate it" (Dissanayake, 1995, p. 41-50).

I'd have to agree. Why else would I be growing tubs of bacteria in my living room?

B. EXPERIMENTATION

Through general experimentation with materials, I feel that I not only gain knowledge of the specifics of that material, but also how to coerce it into delivering the results I intended. During this microbial cellulose process, I experimented with a variety of factors to test and influence the outcome of the naturally growing material, as well as the drawing and mark-making processes overtop its surface. I felt a sense of reward with the general act of mark-making on the surface of the works, like I would with a more traditional process, but I also felt rewarded by tending to the initial growth of the material itself.



(Figure M) detail, *result of process 1*. acrylic and ink on grown material.
digital image. Jessica Montgomery 2017.

(Figure N, below) *result of process 2.* ink on grown material.
Jessica Montgomery. 2017

During the microbial growth process, a variety of experiments occurred. Heating mats were placed underneath a select few of the tubs to accelerate growth (See Appendix A, p. 59) and were periodically paused to control their growth states. Multiple pieces were always growing at once and each piece consisted of its own variables and additives. For example, some containers consisted of a basic kombucha solution brewed and grown under traditional circumstances (See Figure F, p. 18), while others contained bits of fruit [another source of sucrose] to influence the texture of its surface (See Figure viii, p. 52). Some were left to gestate undisturbed or longer than others (See Figure iv, p. 48) while others were repeatedly doused with ink and salt to simply see *what would happen*. I was tending to, accelerating, and modifying their growth intentionally and was ultimately able to somewhat predict and somewhat control their growth. However, throughout this process, I was also aiming to explore the unknown possibilities of this material and process and sought to provide answers to questions I'd not yet asked.[13]

Though I was in 'control' of the growth and the adding of various materials to either hinder or accelerate this growth, the works were also subjected to environmental variables I did not account for, or could not prepare for. Change in atmospheric humidity had interesting effects. As the pieces are 'self-healing' and could be rehydrated, changes in moisture often caused the works to become brittle or warped and then later relaxed (See Figure V, p. 36); they began to 'breathe' on their own. I then began to use this and other naturally occurring variables intentionally (See Figure x, p. 53)

Throughout this process, both during controlled and unpredictable changes, I felt enjoyment. I was experimenting with a foreign environment and was becoming able to discern my impact and the impact of various materials and conditions on it. I was also experimenting with time as a factor; how long to leave each piece, etc. This was a new venture for me. And, like all experiments, many of them were failures (See Figure T, p. 35).

[13] For example, when upgrading to a larger tub [larger surface area] I was unaware that the ratio of SCOBY would also need to increase, or else mold would occur (See Figure H, p. 19). This mold growth was hlated however once I added a larger SCOBY culture. (Further explored in Creativity, p. 38)

As stated, this process was developed and chosen to simulate the concept that art-making is an innate, biological imperative through a combination of elemental factors. In this respect, it is fair to state that this process is my attempt to 'mime' this reality through my own representation, and in doing so I have become a part of the mimetic cycle of environment and interpretation. Through instances of experimentation to initially create this material, manipulate its growth, and the acquired ability to recreate these results, my experimental processes are reminiscent of basal, behavioural mimesis[14]. I felt the need to mimic a natural process to conceive and present a conceptual one and experimented accordingly to achieve this goal.

In conclusion, experimentation is a crucial bridge between thought and action. It is conclusively an outwardly fruitful behaviour that is beneficial to the whole as well as an intrinsically rewarding one. Experimentation; therefore, is key to unlocking the door to certain satisfactory experiences. This is true for my own personal art-making experience and, I propose, indispensable from general human art-making behaviour.

I am not a trained a scientist by any means and I know very little about microbes and microbiology. However, perhaps by evolutionary design we all collectively have on some scale a drive towards deliberate trial and error and a natural longing to test our own internal hypotheses. Pablo Picasso (1976) famously once mused (supposedly)[15] that 'every child is an artist'. While I don't disagree, it must also be considered that every child is also, foremost, a scientist.

[14] "Mimesis denotes a cluster of behavioural capacities" (Dissanayake, 1995) such as mime, imitation, gesture, broadly refers to the imitation of nature, predominantely in aesethetics (Dissanayake, 1995, p. 15).

[15] "Every child is an artist. The problem is how to remain an artist once he grows up" (*TIME,* 1976),
*This quote is disputed to have come direcly from Picasso himself.

Figure O) *result of process 21 & 23*, four weeks growth time v. two weeks growth time.
digital image. Jessica Montgomery. 2018

(Figure P) *result of process 15*. watercolour on grown material. Jessica Montgomery. 2017.

(Figure Q, above) harvested microbial cellulose sample, two weeks growth time. digital image. Jessica Montgomery. 2018.

(Figure R, below) *result of process 28.* multiple, layers of grown material on drafting film experiment. digital image. Jessica Montgomery. 2018.

(Figure S) *result of process 4*. ink and acrylic on grown material. Jessica Montgomery. 2017.

(Figure T) *result of process 13*. ink and watercolour on grown material. digital image. Jessica Montgomery. 2017.

(Figure U) detail, *result of process 20*. acrylic on grown material. Jessica Montgomery. 2018.

(Figure V) *result of process 20*. acrylic on microbial cellulose, left exposed to air. Jessica Montgomery. 2018.

C. CREATIVITY

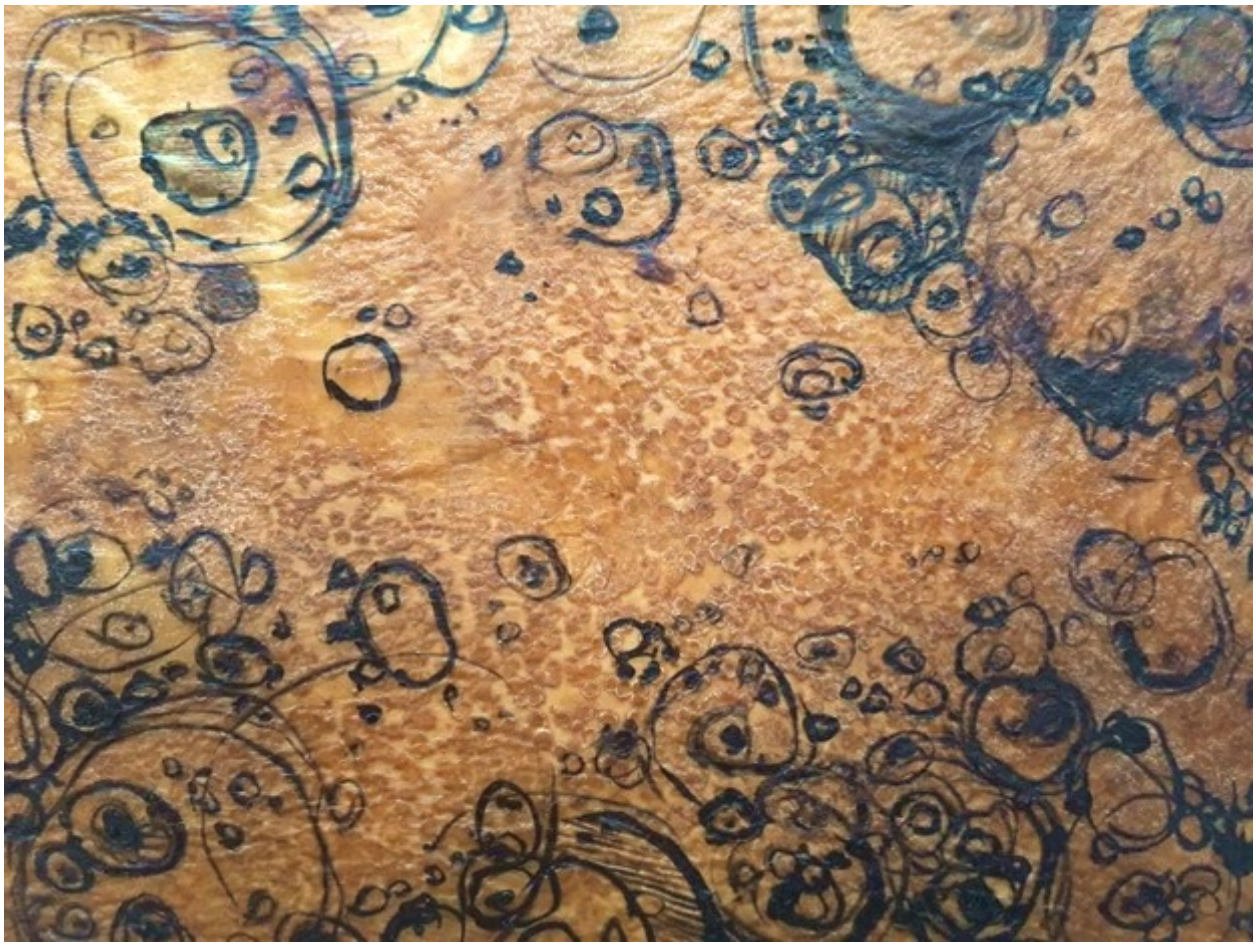
While the initial manipulation of the growth and surface texture of the cellulose was done out of curiosity, the knowledge gained from this experimentation was then applied to further develop and produce intended, curated artworks. Initially, I was unsure if this material would be a successful vehicle to communicate my concept to my audience. However, after experimenting further, I concluded that it was in fact a suitable, symbolic material and chose to pursue these works further. The final choice to use this material was directed under the intent of communicating both the 'human' and 'natural' aspects of art-making and to produce a result reminiscent of this idea.

Once the cellulose was harvested, I used a variety of wet media (and dry media, if dried cellulose) to draw and mark-make on the material. During the mark-making process, I continued to make a conscious effort to create non-representational and expressive marks. These marks were created using a variety of tools and were created in a manner that lacked precise control and the overall eventual longevity of the works. Ink was dripped, the cellulose was carved, and entire pieces were destroyed in the process, some were patched back together while others were disposed of entirely (See Figure T, p. 35). With the first few works (Figure M, p. 27, Figure N, p. 28) this was the most enjoyable stage of this process, while later on I became more interested in manipulating the growth of the material itself. Both aspects of this process were fulfilling, as there was a distinct feeling of understanding what was being produced and a symbiosis between the organic and the anthropogenic.

In works such as *result of process 12* (Figure W, p. 40) and *result of process 14* (Figure Z, p. 45), though expressive and non-representational in nature, the marks were informed by the surface of the material. In both mimicking the surface of the microbial form, as seen in *detail, result of process 12* (Figure X, p. 40), and in contrast to the forms as seen in *result of process 20* (Figure U, p. 36), both marking styles were informed by the material's environment. Reflecting on these works and the secondary processes utilised, it was clear that the environment of the material greatly guided my marks and the creative paths I considered. I was either drawn to following the forms created by the material's growth, or was compelled to contrast against it.

The choice to pursue works based on process also informed my title choices. In 'final' works, such as *result of process 20* (Figure V, p. 37), I refer to the objects as a 'result of a process' and the medium as 'grown material'. In documentative works, such as *investigating* (Figure xii, p. 55), the medium is stated as the formal 'microbial cellulose'. I made this distinction to guide the audience to focus on the growth and process of the work, rather than focusing on the biological content provided such a loaded term as 'microbial'. Microbial cellulose itself is not an important symbol, but rather the combinative, transformative process it incurs to manifest.

(Figure W) *result of process 12*. ink on grown material. Jessica Montgomery. 2017.



(Figure X) detail, *result of process 12*. ink on grown material. Jessica Montgomery. 2017.

1.5 CONCLUSION: I AM, WE ARE, GENERATIVE ARTISTS

By analysing my own art-making process in this way, and allowing myself to address my conceptual goals from an uncomfortable and different perspective, I have demonstrated the importance of art-making as means towards the manifestation and communication of an otherwise internally residing idea.

While multiple factors 'generate' human art-making behaviour, a personal qualitative impact has been observed: Curiosity drives me to pursue an idea and propose a question or problem. Experimentation leads me to seek tactile and successful solutions within the given environment to address this question, and creativity is the catalyst that reacts with the results of experimentation to expressively communicate the initial question. Respectively, I view curiosity, experimentation, and creativity as a simplified, cognitive, 'scientific method'. Curiosity leads to the development of a hypothesis, experimentation tests this hypothesis, and creativity analyses and applies its results.

The works created during this study, paired with this study's research (See *Volume 1*), represent the idea that when we examine creative, artistic production through its origins and connections between curiosity, experimentation and creativity, ultimately, all art-making is a form of 'generative art'. Comparable to the input and output of a computer, we harbour and perform catalytic functions and generate.

Like many human behaviours before it[16], art-making is a product of a system of drives and rewards. But unlike many behaviours, art-making is the uniquely human blend of problem solving and satisfaction, intent and innate, communication and personal resolve. Not only did I receive pleasure from creating these works, but I also received pleasure from attempting to achieve the goal of communicating my artistic problem regardless of its relative success. I received 'cognitive rewards' from the processes I engaged in and the resulting works serve as a proposed, generated outcome of this drive-behaviour relationship. Though these works were

[16] See *Volume I: Beginning, Behavious, and Us*

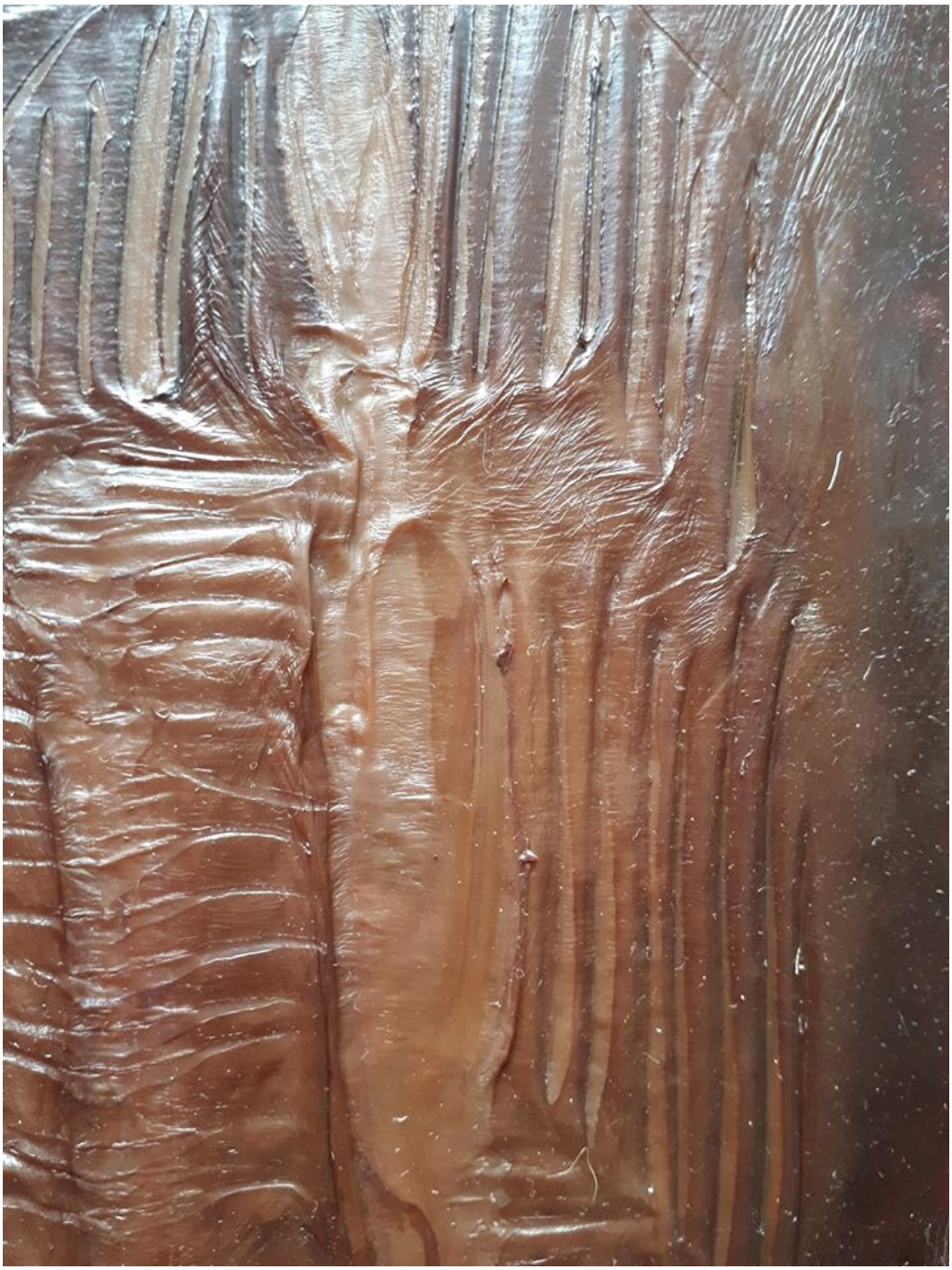
internally satisfying to create, the impulse to experiment in order to better express the conceptual goal of these works was ultimately driven by a need to communicate my concept to the viewer; the final artworks established a ground for that communication. Through both examining the universal origins of these traits in comparison to my own art-making experience, this study intends to connect back to a unifying, evolutionary beginning, illuminating what occurs within the brackets of one of humankind's most indispensable and beautiful behaviours.

The assertion of an evolutionary impact on a particular prowess of humankind should rather be celebrated. Cosmides and Tooby profess,

> When humans are described from the point of view of their complex adaptations, differences tend to disappear, and a universal architecture stands out in stark relief (Cosmides, Tooby, 1995, p. 78).

I believe that optimistic evidence of our shared, universal truths can be found in art-making. Ultimately my research led me to this conclusion above all. We are, as well as our behaviours, results of a shared history that continues to evolve and unite us.

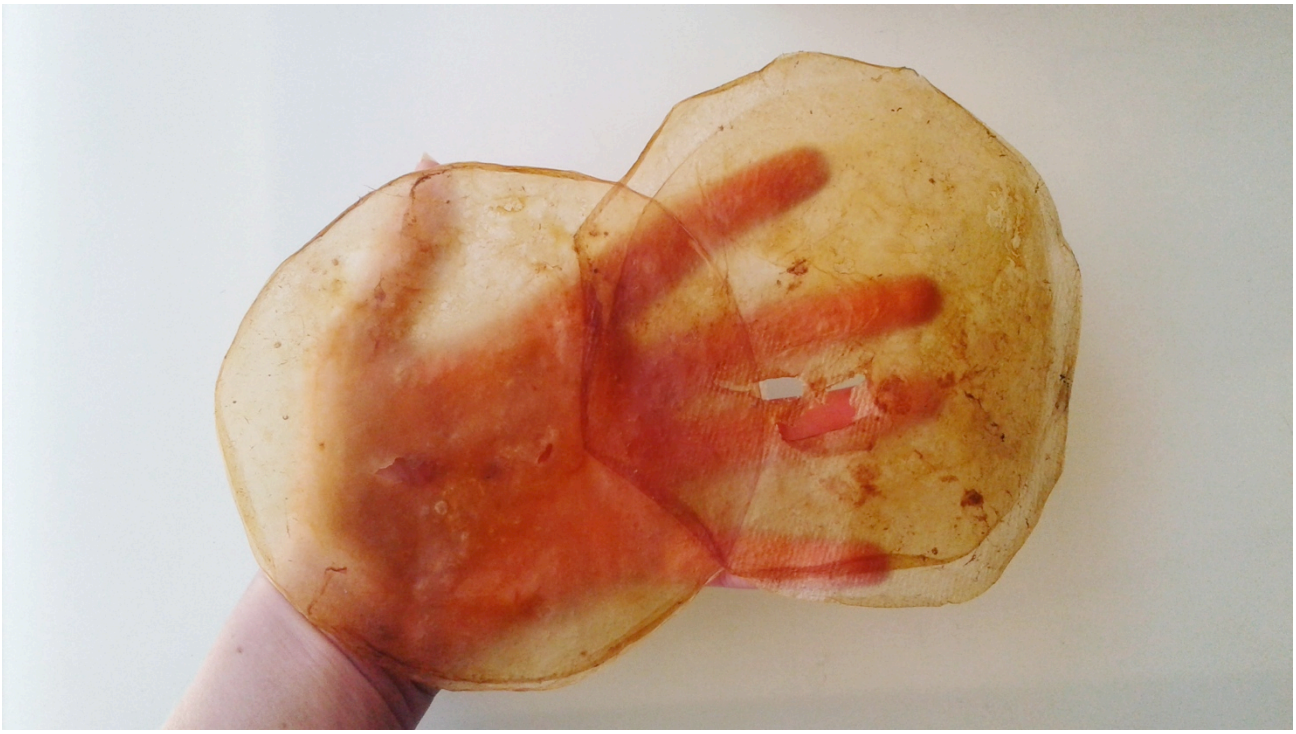
Through art-making, we continue to seek better ways to communicate and understand one another. Through art-making, we satisfy internal and external needs. Through art-making, we continue to strive to progress individually and collectively. In art-making, we are united.



(Figure Y) in progress, carved microbial cellulose (process 17)
digital image. Jessica Montgomery. 2017

(Figure Z) *result of process 14*. acrylic on grown material. Jessica Montgomery. 2017.

EXTENDED CATALOGUE & PROCESS IMAGES



(Figure i) *mitosis*. seamed, microbial cellulose. digital image. Jessica Montgomery. 2017.

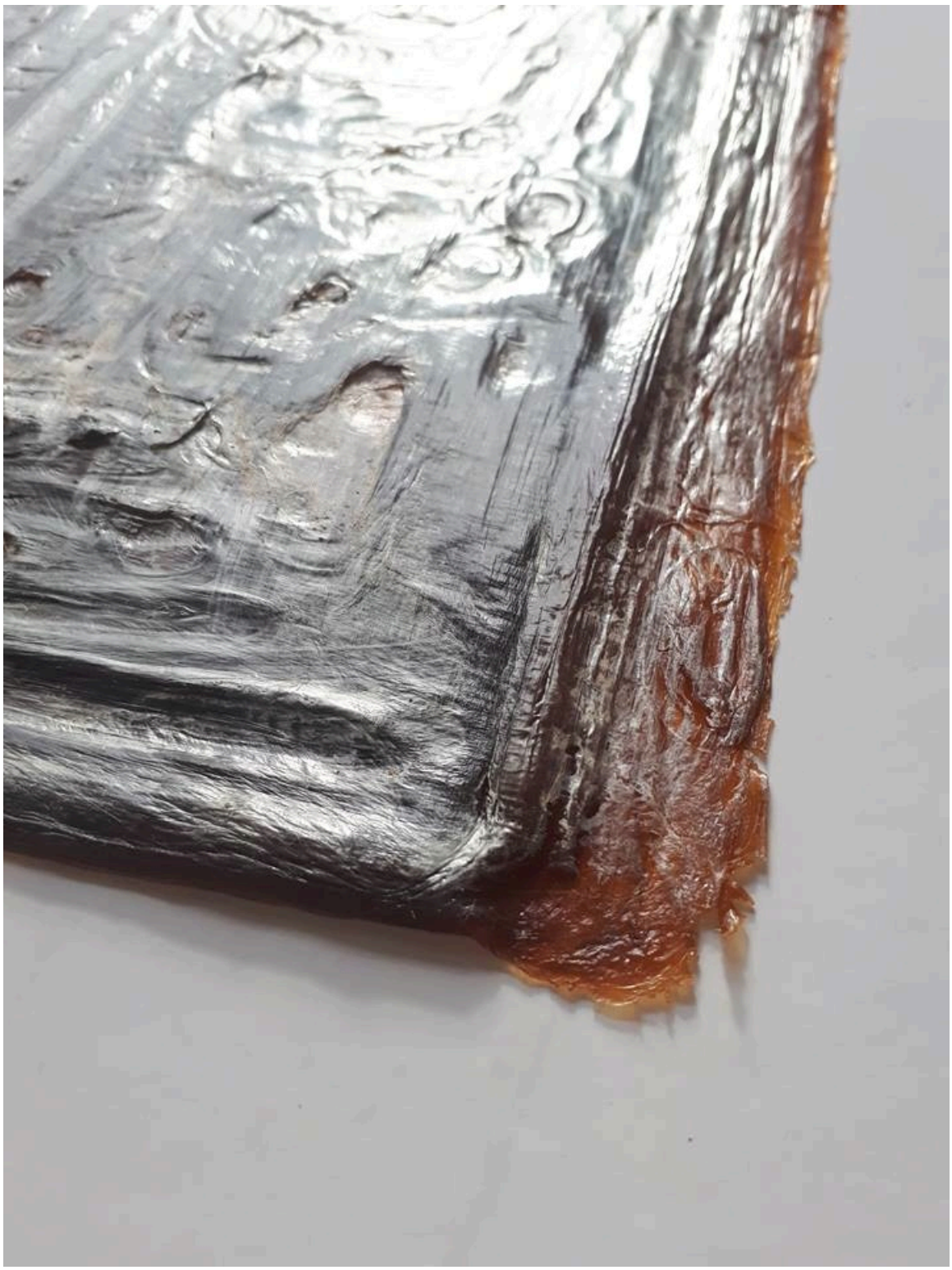
(Figure ii, above) SCOBY culture. digital image. Jessica Montgomery. 2017.

(Figure iii, below) 2 growth tubs in process. digital image. Jessica Montgomery. 2018.

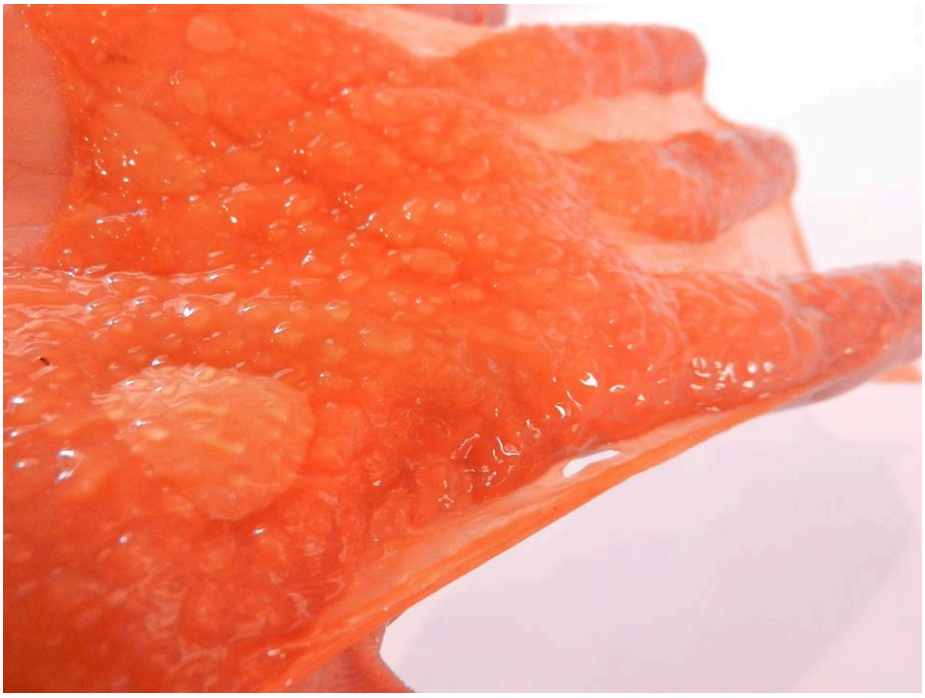
(Figure iv) growth tub in progress. digital image. Jessica Montgomery. 2017.

(Figure v) harvesting microbial cellulose. digital image. Jessica Montgomery. 2017.

(Figure vi) *result of process 17*. acrylic on grown material. Jessica Montgomery. 2017.



(Figure vii) detail, *result of process 17*. acrylic on grown material.
Jessica Montgomery. 2017.



(Figure viii, above) harvesting microbial cellulose with added carrot. digital image. Jessica Montgomery. 2017.

(Figure ix, below) in progress, ink on microbial cellulose with carrot. digital image. Jessica Montgomery. 2017. (piece did not survive, See Figure T, p. 35)

(Figure x) *cellulose circles (result of processes).* grown material on paper. Jessica Montgomery. 2017.

(Figure xi), *result of process 16.* oil on grown material. Jessica Montgomery. 2017.

(Figure xii) *investigating.* microbial cellulose and sunlight. digital image. Jessica Montgomery. 2018.

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APPENDIX A: HOW TO BREW KOMBUCHA / HOW TO GROW MICROBIAL CELLULOSE

Equipment and materials needed:

- large glass brewing jar
- wooden spoon
- pot (to boil water)
- breathable cloth (to cover once brewed)
- SCOBY culture
- black tea (box of 12+)
- white sugar
- water

Basic kombucha brewing recipe (approximate 3L yield):

1. Bring **4L** of water to a boil, then remove from heat.
2. Add **1 cup** of sugar, stir with wooden spoon until dissolved.
3. Add **8 bags of black tea**
4. Leave the tea to steep and cool until liquid is at **room temperature** (approximately 21-23C).
5. Remove the tea bags with spoon.
6. Pour the cooled sweet tea mixture into your clean, glass, fermenting jar.
7. Add SCOBY and cover jar with breathable cloth (do not seal jar)
8. Kombucha should be ready after 10-14 days of fermentation

To grow and harvest microbial cellulose:

1. Find a container with a larger surface area (plastic tubs are okay here)
2. Follow the same directions as kombucha, but **increase yield** comparable to your new container size.
3. Cover with breathable cloth and leave for **2-4 weeks**
4. Place heating mats (seedling mats) underneath tub to accelerate growth (optional)
5. Remove **top layer** and detach SCOBY (if attached) from cellulose layer
6. **Wash** cellulose in moderately warm, soapy water to remove excess
7. Place cellulose on a **porous**, wooden board (particle board works fine)
8. Peel off board after 1-2 days
9. Rehydrate with water if your cellulose sticks to the board