



# Velas Içadas

Navigating emotion in a sea of science

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## **Resumo**

Cheguei a Portugal para aprender a ciência do vidro e evoluir como artista que usa vidro. Fascinado pela ciência e pelo mundo misterioso que apresenta, comecei por tentar expressar essa nova consciência, uma vez que colidiu com o meu mundo interior. Qual é a ligação entre arte e ciência? Lidando com essa questão eu comecei a explorar. Estas explorações expressas em projectos, deram voz aos meus sentimentos sobre a totalidade dessa experiência muito forte. Aqui vou analisar três dos meus esforços artísticos: *Glass/Glace*, uma instalação ao ar livre no campus da FCT, *Observações*, uma exposição individual no campus da FCT, e *Velas içadas*, exposição de final de Mestrado apresentada no Museu da Água, Reservatório da Patriarcal, em Lisboa . Essas apresentações do meu trabalho mostram o meu desenvolvimento. Também sugerem como o estímulo do estudo científico e a experiência de viver nesta terra estrangeira podem fazer evoluir a prática artística na medida em que mudam o artista. Um momento crucial em que o crescimento foi a constatação de que a ciência pode ser uma fonte de inspiração sem ser o tema da minha arte. Na minha exposição final, a fim de entender onde me encontrava assim como as minhas emoções, olhei para trás no tempo usando a história da minha casa na ilha de Terra Nova e sua relação de cinco séculos com Portugal. Usando mapas históricos e os ícones de exploração do mar, bem como símbolos pessoais, como a rosa, cheguei a uma maior compreensão, não só dessas histórias compartilhadas, mas de mim mesmo e do meu mundo.

## **Abstract**

I arrived in Portugal to learn the science of glass and to develop as an artist using glass. Fascinated by science and the mysterious world it presents, I started in earnest to try to express that new awareness as it collided with my internal world. What is the connection between art and science? Grappling with this question I began to explore. These explorations expressed in projects, gave voice to how I feel about the totality of this potent experience. Here I will examine three of my artistic endeavours: *Glass/Glace*, an outdoor installation on the FCT campus; *Observations*, a solo exhibition on the FCT campus; and my thesis exhibition *Velas /çadas* presented at the Museu da Água, Reservatório da Patriarcal in Lisbon. These presentations of my work show my development. They also suggest how the stimulus of the scientific study and the experience of living in this foreign land can develop artistic practice as it changes the artist. A crucial moment in that growth was the realization that science can be an inspiration without being the subject of my art. In my thesis exhibition, in order to understand where I was and the emotions that I had, I looked back in time using the history of my island home of Newfoundland and its five century old relationship with Portugal. Using historical maps and icons of sea exploration as well as personal symbols, such as the rose, I came to a greater understanding of not only these shared histories but of myself and my world.

## **Introduction**

On September 7<sup>th</sup> 2009 I collected up my life and set off for to discover new knowledge and also rediscover familiar ideas. I set my course for Portugal to study in the newly inaugurated Master of Glass Art and Science at the research unit of Vidro e Cerâmica para as Artes (VICARTE) at the Faculdade de Ciências e Tecnologia (FCT), Universidade Nova de Lisboa (UNL). I landed here as an artist to explore from a scientific perspective the many qualities of glass while cultivating my artistic expression. The scientific exploration of glass has been fascinating and has changed the way in which I perceive all that is around me.

During my studies I was asked the question; what is the connection between art and science? In an attempt to explore this problem I tried to imagine art that overtly displayed a scientific aspect. As I have a deep interest in light I devoted my research to an understanding of optics in hopes of finding personal solutions. Optics, I thought, would be the source of inspiration for my studio work and the theme of my thesis.

In Art it is difficult to hypothesize the outcomes to the questions before us, even if we know what the questions are, as each artist has different sensibilities, styles and sources of inspiration. It became clear that it is absurd to imagine a testable hypothesis, treatments, controls, quantitative data and repeatability that science requires to be sound applied to an art process.

As I floundered through cycles of creative blocks I began to grasp the conflict between these two disparate disciplines. Art should be a deep connection to a feeling, something that is not easily expressible with language or can be dissected and quantified by rigid processes. I am happy to live in a world with vast scientific knowledge. This knowledge brings me the comfort of understanding how the natural systems around me work and also appreciating the conveniences of our modern world. The strict requirements of science can ensure that we, as humans, when tinkering with nature's powerful systems get it right, so we avoid as much as possible errors and disastrous outcomes through the strict implementation of the scientific method. This method in its most rudimentary form is expressed as observation, question, hypothesis and experiment and back again to observation forming a feedback loop of constant verification that scientific knowledge is built upon (1). Where science must be objective and its methods rigorously tested, the methods of art should be subjective and fluid as it is our bond to what makes us human, a product of our irrational selves to remind us of our emotions, vulnerabilities and freedoms. The Kantian *free play* (2) in the aesthetics of art and the perception of beauty (3) has to be excluded from science. Science by definition is not grounded in feeling but in demonstrable fact. I make my decisions in the studio not because I know they are right but because I feel they are right as I begin to see the possibility of beauty in my work appear before me. I have resolved that the exactitude of science is in direct conflict with the in-exactitude of art, that science in this moment has no direct or spontaneous connection to my work.

I did not have a specific question when I arrived here to begin this program. For me the *questions* arrived as I dealt with what appeared before me. I was told I should ask myself, ‘why was I here?’ to aid my development as an artist. In the course of that development I have understood the need to be less insistent on control over my work, my need for a ‘blue print’ before I begin. By letting chance play a greater role, my emotion and intuitions are used more, allowing me to tone down my analytical thinking and arrive at a greater freedom in my work.

In the end what has been inspiring and profound about this voyage to Portugal was the experience of removing myself from all that is familiar to arrive in a land that I had not yet visited or even thought about before. I decided that science can be an inspiration for my art without being the subject of it – Portugal itself would be where I would find my muse. In developing three major projects during these two years of study I shifted my thinking from a maker of glass objects to an artist showing a broader understanding of our world. By arriving to the shores of the country that led the Age of Discoveries I discovered my *Terra Nova*<sup>1</sup> in finding the answers to the question of who I should be as an artist.

With all voyages come the observations of what you pass and curiosity about what is discovered. These observations, that curiosity provokes questions that mark the direction of the course taken. For me this has meant looking in different places inside myself, questions of the heart and not the mind, to discover my own way of understanding. Here, in the course of this master I have given myself permission to go deeper into emotion. This has allowed me to better feel and understand my own emotions and use those emotions in my work.

*Glass/Glace*, an outdoor installation of glass frit on the FCT campus located in front of the VICARTE buildings was the first major work I completed as a part of my studies. In taking an opportunity to work with glass in a novel way I was able retreat into myself and take a bold step in recognizing deeper bonds between my emotions and my studio work.

*Observations*, a solo exhibition also presented on the FCT campus, was motivated by working and studying in a scientific environment. It was an exhibition built on an emulation of scientific methods while using light as a material in an art installation. I created the exhibition to express my thoughts on being in this Master’s program. However its message in the end, at least for me, was more linked to ephemeral notions of being human and my existence in a vast universe.

*Velas içadas*<sup>2</sup>, my thesis exhibition, presented at the Museu da Água, Reservatório da Patriarcal in Lisbon, was my departure from science toward sources of inspiration that resonated much more strongly and convincingly with me. For this exhibition my inspiration was Portugal and its connection to my birth place of Newfoundland.

Portugal is where I redrew my personal maps as I became transformed by her people, landscape and history. Re-encountering the history of my island home of Newfoundland I traced the parallel history between these two lands. Looking at early maps, researching the story of the brothers Corte Real and

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<sup>1</sup> *Terra Nova* Latin for new land. It was an early name for the island of Newfoundland and is still used in many Latin countries as the place name.

<sup>2</sup> Meaning sails hoisted.

the Portuguese Age of Discoveries, I began to drift into these past times. I found myself charting, learning and understanding where I come from and who I am as I arrived at a new and better understanding of what is around me.

While searching for historical maps of both Portugal and Newfoundland I found many that inspired me. The first were Terra Nova and Portugallia produced in 1602 from Barnet Langenes' *Caert-Thresoor* (4) and the 1554 Lopo Homem Planisphere<sup>3</sup> (5). These representations of land and sea are rich documents that contain perhaps more artistic flair than geographical accuracy. On them are beautifully written calligraphy, fanciful navigation roses, banners of kings and noble men as well as illustrations of breaching whales.

When looking for the older maps I also discovered more contemporary representations such as the James Cook 1775 map of Newfoundland (6), the 1775 Antonio Zatta map of Portugal (7) and the 1835 Edmund M. Blunt map of the North Atlantic (8). These maps are depictions that are much more pared down and geographically accurate than the older ones.

The last map I found was the 1502 Alberto Cantino Planisphere (9). It is the earliest surviving map showing the Portuguese discoveries (10). This last map shows the first graphical representation of Newfoundland accompanied with a legend describing the island and claiming it as a Portuguese territory (11). As I compared these different maps I found, I saw an evolution in the representation of Newfoundland that gave me a peek into the past and the minds of people who experienced the same coast as I have.

I located historical texts relating to the voyages of the brothers Corte Real dating from the beginning of the sixteenth century. Finding these texts allowed me an opportunity to look back in time. By reading the words of Portuguese people, albeit in a 19<sup>th</sup> century translation, who lived during this time, allowed me to glimpse into their world. These texts include a letter, dated 17<sup>th</sup> October 1501, to King Manuel I of Portugal describing the discovery of Newfoundland. Also included is an excerpt from the 1563 *Tratado* by Antonio Galvam describing the disappearance of the brothers Corte Real while voyaging to Newfoundland (11). These words introduced me to an aspect of Newfoundland history of which I was not aware. Having this knowledge gave me a deeper connection to Portugal as well as to my home.

The rose, more specifically the rose petal, also became an important visual presence in my work. Being of English ancestry myself, the rose is a strong symbol, significant in Anglo culture<sup>4</sup>. The Tudor Rose has symbolized England since 1485 (12), the founding of the House of Tudor, and also the following Elizabethan golden age of England. This is also the period of the Age of Discoveries. A contemporary use familiar to me is the rose in the Canadian Coat of Arms, representing the English as a founding nation of Canada for which Newfoundland was the first territory of The English Empire (13).

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<sup>3</sup> A Planisphere is an early world map.

<sup>4</sup> Anglo culture refers to English lineage in the Commonwealth countries of Australia, Canada, India and New Zealand.

No discussion of the connection between Portugal and Newfoundland, visual or otherwise, could be complete without including the common cultural icon of both places. It is the enduring reason for five centuries of contact between these two lands – the cod fish. Now, neither Portuguese nor Newfoundlanders can be found fishing the once abundant Grand Banks off the South-East coast of Newfoundland. In 1992, with the cod stock collapse in Canadian waters, an indefinite moratorium on the fishery was put in place (14). It is my generation that witnessed the end of a centuries old tradition and way of life. I now understand this also meant the end of the historical connection between Newfoundland and Portugal.

My expedition into this history, packed with these points and icons, became a pursuit of meaning and meaningfulness as I left behind ‘safe’ ways of working and sought out new means of engagement through these histories and symbols. I hoped my making would evolve from design to narrative, a shift from pure abstraction to more accessible work in which the viewer can find a story, perhaps with a relationship to themselves. By placing images, icons and objects together I hoped I would convey potent ideas to a viewer, going beyond the mere form of the objects.

In speaking of my motivations for producing these works, I wish to show what effect this time here in Portugal had on me as I took on scientific knowledge from my course work combined with my research into these histories, tempered with my experience of living in this land. I will offer my conclusions about this experience as a whole and consider how studying here, in this new and unique Master of Glass Art and Science, both art and science has affected me, my work and my future as an artist.

# Experimental Design

## **Velas içadas,**

Solo exhibition, June 21<sup>st</sup> to July 21<sup>st</sup>, 2011

Museu da Água, Reservatório da Patriarcal (Lisboa, Portugal)

The Reservatório da Patriarcal finished in 1864, served as a part of the water works for Lisbon and is located in the Praça do Príncipe Real. The structure is a 16 meters wide underground space, octagonal in cross-section with 31, 50x50 cm pillars 9.25 meters in height. Above ground it is covered by an exterior pond. Decommissioned in the 1940's, it was renovated as a historical and cultural venue in 1994 (15). This renovation added two levels, one 3 meters above the bottom and another 6 meters above. The lower level has areas of illuminated glass block flooring and the upper level has spot lights set into the floor. In order to explore what I could do with this space I built a scale model of the structure so that while in my studio I could accurately explore and imagine how the space could best be used.

To alter the existing lighting in the upper level I produced coloured flat glass by cutting and slumping blown cylinders. I cut 10 cm glass discs that were then placed over the lights in order to change the quality of light from its original brightness to somewhat more sombre.

I used the illuminated glass block floors by placing three laser engraved paper maps on them, two from the *Caert-Thresoor* and one a section of the Homem map. The final dimension of each work was 152 x 212 cm. I scattered rose petals containing fragments of text laser engraved in them on these floor maps. During the course of the exhibition the petals dried and the text disappeared. On the Terra Nova map, over Fogo Island<sup>5</sup>, was a yellow-green glass disk and a rose petal with an anchor laser engraved into it. The Portugallia map has a similar disk with a mariner's astrolabe, a 16<sup>th</sup> century navigational tool (16), engraved onto the rose pedal. The North Atlantic map had a disk over the island of Newfoundland and another over Lisbon, with atop each a rose petal with a 15<sup>th</sup> century ship engraved into it.

I produced sheets of hand rolled glass with a rippled texture in the VICARTE hot shop using the marver<sup>6</sup> and a rolling device attached to it.<sup>7</sup> Two sizes were made: small (max. 30x15x0.5 cm); large (max. 50x25x0.5 cm). These sheets were slumped over a semicircular steel mould, 20 cm radius. In the installation I arranged the panels over a section of illuminated flooring from smallest to largest. The arrangement had a single yellow spotlight placed in the rear.

I made four sizes of anchors: 50 *Small*<sup>8</sup> (about 15 cm in height), 9 *Big* (40 cm), one *Bigger* (100 cm) and one *Biggest* (120 cm)<sup>9</sup>. The *Small* and *Big* anchors were solid and made hot. The *Bigger* and

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<sup>5</sup> Fogo Island, translates as Fire Island, is one of the oldest named features on the coast of Newfoundland and was named by Portuguese fishing crews of the early 16<sup>th</sup> century.

<sup>6</sup> A steel table usually used for shaping and temperature control in glass making.

<sup>7</sup> Built by Jorge Barracha after the Bullseye Glass Company method of producing sheet glass.

<sup>8</sup> Two of the small anchors were broken during the installation and not used.

<sup>9</sup> Small, Big, Bigger and Biggest are the names I gave to differentiate each category of anchor.

*Biggest* anchors were made in solid sections with a blown centre post. These parts were then cold-worked and chemically bonded together. The centre post of the *Bigger* anchor was filled with evergreen limbs and the *Biggest* anchor was partially filled with dried rose petals.

The *Biggest* anchor was placed on the upper level with a large braided rope attached to it. The rope loosely descends over the railing to the lower level. There it unravels into its 45 component strings. Each off these strings is tautly attached to a *Small* anchor. This created a cascade of strings coming off the rail. The lower section of anchors is lit with a warm glow. The *Biggest* anchor is lit by a single lamp producing a clear shadow on the floor. The object is flanked by two red floor lights.

The *Bigger* anchor, also on the upper level, has a large rope attached to it that extends across the floor. It unravels over its length, seven *Big* anchors and two *Small* anchors are attached at the ends of the nine resulting component strings. This area is lit with a theatre lamp that produces a sea green light with grey green shadows.

About 20 cm of water remains in the bottom of the reservoir. I built a  $\frac{1}{2}$  scale model boat from foam-core. From this model I produced a full scale cartoon used to cut the sheets of ripple glass to make a boat of 100x40x12 cm. The sheets were tacked together using the UV adhesive and finally fixed and sealed with silicone. The boat was placed in the water, in the south west corner, with a red rope attached to it. This rope went to the upper level, through a floor grate, crossed the floor and was attached to a *Big* anchor positioned on a red floor lamp. The work was lit by a rose tinted theatre lamp directed at the boat; a small tube lamp placed on the grate casting a deep red light above and below the grate<sup>10</sup>; and the anchor, lit with a magenta tinted spot. A second boat was used in the above-ground pond on top of the reservoir, made from un-textured float glass from the same cartoon, leaded together with copper foil and sealed with silicone. Red rope was used to anchor this boat.

Three glossy black frames, suspended by red rope, were placed in the alcoves on the east side of the upper level. Each had a photograph behind glass. The glass was vertically divided into 3 even panes that were leaded together. In the first frame was a photograph of red rose petals that fade into a black ground with the Cook map of Newfoundland outlined in grey. The first glass pane had engraved text from the Cantino Planisphere. In the third pane, over a simplified navigation rose, an anchor is engraved. The second frame had rose petals fading into the Blunt map of the North Atlantic. The middle pane contained a 15<sup>th</sup> century ship and the third pane contained a portion of a letter to King Manuel I. The third frame contained rose petals which fade into the Zatta map of Portugal. The first pane had engraved a man holding an astrolabe and the third pane has an excerpt of from the *Tratado*.

There were two drawings in the exhibition. One of them is a reproduction I made on paper of 100 x 250 cm of the depiction of Newfoundland I found in the Cantino Planisphere. This drawing was suspended unframed at the top of the east stairs. The paper is scrolled at the bottom and held in place with a glass anchor. The other drawing is identically presented at the top of the west stairs and shows a lone cod.

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<sup>10</sup> Above the grate this light intersected with the green light of the *Bigger* anchor.

## Results & Discussion

I think one of my strengths as an artist is my resourcefulness. The same resourcefulness I find in my ancestors and in the Newfoundland culture. When they needed a house, they put it up; when they needed a boat, they built it; when they needed food they raised animals and sowed the soil. For the things that they couldn't produce themselves, a bit of money could be made from pulling fish from the sea or timber from the woods. They all, each in their own time, added a layer to history - a proud and resourceful people living on a formidable island - Newfoundland. Inevitably everything I do comes back to the memories and the history of my native land.

Living away from my rock isle I feel removed from this vanishing culture.

I like to problem solve. I feel fortunate to have the ability to quickly analyze and understand information to resolve questions. The solution is the reward. I love to work with my hands to find answers in making. As I have no net to mend or boat to build, I make things as a means of self-expression satisfying the desire to use my hands. This is the central way I have come to understand our world, society and myself.

Through coming to Portugal I have opened myself to re-evaluating the way I see and understand what is around me. I engaged myself in the pursuit of knowledge, not only about the material glass I use to express myself, but about the nature of the expression itself.

This re-evaluation auspiciously started in the first semester of the program with the basic science classes: Introduction to Chemistry and The Science and Technology of Glass. There, a whole new world opened up for me, leading to a new and deeper understanding of all that is around me. A chemical world of universal building blocks held together by physics that is the basis of all things. I also learned that I am made of stardust. Ideas like this caused my mind to take great leaps, triggering my intellect and imagination.

Nevertheless, during the first four months in this new place and learning environment, so filled with novelty, I experienced for the first time in my life a creative block. I made little of note at the beginning of the program even though I was feeling desperate to create.

By the beginning of February scientific papers had been read and reread, books studied, lists memorized and exams taken. February was also the time I decided to leave my partner of five years. The intensity of study and the disruptions in my personal life created an overwhelming need to do something creative – to deal with things with my hands. As my circumstances changed I moved out of the centre of Lisbon to Costa da Caparica, very close to the ocean and the place I knew I need to be. It was a time of great frustrations and of personal loss, mixed with the invigoration and wonder I felt at the university. I was also feeling homesick, not so much for Montréal, my adult home, but for the first time ever for Newfoundland, my childhood home. It was these events, feelings and emotions that I began to see the idea for *Glass/Glace* appear in my imagination. These internal extremes led me to a

different way of working with glass. I was not shaping the glass by cutting or melting but by examining and sorting. Using the glass without a plan or concern for technique somehow offered me mental space and contemplative moments and helped me to begin to understand everything that was happening in my life. This activity became a retreat where I could find my personal balance once again. I feel that this is the moment when I began an examination of myself as a glassmaker, artist and person. I was assessing and sorting myself, finding the bits and pieces that were authentically there, going forth in building what I wanted to become, even though that was not yet clearly defined.

After finding the location for the installation, my first artistic action for *Glass/Glace* was to dump barrels of discarded glass frit<sup>11</sup> onto the concrete pad that defined the space. Outside, drawing with *unusable* frit, by using a garden rake, a spade and other garden utensils, I pushed the glass around into different patterns, sorting it, looking and reacting to the forms I made. It was a cathartic experience that allowed my mind retreat into a place some distance from the rest of the world. During this work it became evident that this act of retreat was also a very unusual public display on this science campus. Normally in moments of self-doubt I would retreat from this kind of spectacle, now I decided to step outside my comfort zone and embrace the curiosity I felt around me, using it as a reviving source of energy. I applied the discomfort I felt to push myself beyond my self-consciousness and quell the fear of failure and embarrassment I had within me in an attempt to arrive deeper within my creative spirit.

In letting go of my fears I began to let go of my obsessive control over my work. I then started to see finer details in the work such as nature's hand in its development. Each time it rained the water drops disturbed and sorted the glass as smaller particles were washed away leaving the larger ones clean and shimmering in the sun. The outlines of heavy rain drops would lead to trails of sparkling dust lining the cracks of the concrete. In addition I found handles of rejected cups and necks of broken bottles were uncovered by the rain. Each day when I came into VICARTE I would see something different, something I was able to react to. I can now see how this experiment was an experiment of happenstance. The fact that this space existed, the arrival of these barrels of bad glass, my being in Portugal, all of these things coincided to produce in me moments of self-reflection and self-evaluation that would ultimately unlock a door.

Richard Meitner, one of my teachers, told me that he felt to be successful with this project I had try to make just one bold statement. As I look at the photographs I took over the course of this project I can see a progression of movement and leading to the arrangement of the glass frit. I see that boldness forming in the way it changed from chaotic piles of frit to more harmonic and simple shapes. It was no longer about fragments of frit but about the glittering forms they together formed. (Ref. Figure 1)

In the third week I added the final quantity of frit and removed all the large chunks. I evenly covered two-thirds of the slab with frit and added the one square meter sheet of float glass to the lower uncovered corner of the pad. Up until this point, all my movements of glass were careful and

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<sup>11</sup> VICARTE had received a delivery of 400 kg of glass frit that was to be used in the furnace however it was of multiple compositions and therefore unusable for a melt.

considered but now it seemed to me that the final gesture had to be spontaneous – a chance. A month into the drawing, seizing both the moment and a shop broom, I pushed a line through the field of glass with the broom and launched the frit into the air, spilling the glass into the empty third of the pad. (Ref. Figure 2) I felt a bold statement had been made but for different reasons than than I do now. At that moment I saw it as a gesture resulting in a good design solution as it then felt balanced and complete. Looking back now, I see this as a turning point. It was when I consciously relinquished control in my work, let go of the obsession to plan and execute according to a ‘blue print’, and go with spontaneity and chance as the way for me to find answers while making. I see this now as the beginning of letting it be ok not to have definitive ideas about my work before I begin.

Looking over the photographs I made to record my progress over the different stages of this project, and seeing the dates they were taken, I realized that the day before I made my last gesture in *Glass/Glace* I had watched my colleague Tara Woudenberg throw a file card cabinet into one of her projects<sup>12</sup>. That was the final bold statement Tara felt she need to complete that work, her gesture of chance, literally thrown into a carefully organized and ordered work. I see this as evidence that the relationships we built and the influences we had on each other were just as important as the science books we read and the lists we memorized. These personal interactions of the mundane and special filled with emotions that make us who we are, also shape who we wish to become. Sharing a studio with Tara, I saw the freedom she had in her work, her willingness to just do. I admired this and wanted to be able to find some of that freedom, that connection to a more visceral action, to let go while creating.

As I looked at the pad and the way the glass lay upon it I was reminded of the ice and snow I missed from the Canadian winter. That is the source of my title: glass as my material and ‘glace’ from the French meaning ice - Glass/Glace. Using homophones in the title also echoed the look of the glass as it rested there like ice. This word becomes a connection to my home-sickness but ‘glace’ can also mean mirror. Perhaps this now can be interpreted as representing my reflections on the beginning of my own personal transformations? If this is true, I was still thinking inside my same old ‘box’, even though I might have been peeking out to have a look around to see what else there is!

This project was the remedy for my creative block but it was not about science, it was about a discovery of artistic process relative to my personality, it was a visual problem used as a means to work out internal questions that rested on deeply subconscious levels. Thought feeling a responsibility to try to answer the question that was given to me, ‘what is the connection between art and science’, and more particularly to the given assignment of producing an exhibition that addressed what I was studying and observing on this campus, I began to contemplate and construct my solutions.

The second semester of science was in full gear and I had started a group science project with my team members Tara Woudenberg and Kojiro Toyoda. We had chosen to investigate the historical origins of glass. We started by developing a timeline of ancient glasses with typical formulas from

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<sup>12</sup> A work presented in the solo exhibition ‘Be Aware Everything is Always Moving’ by Tara Woudenberg, 2010, FCT/UNL (Monte da Caparica, Portugal).

specific archaeological locations. We then found and prepared the ancient raw materials for glass making, using those materials in melts, analyzing the melts and finally presenting our findings. We weighed, measured, made calculations, observed, photographed and noted every aspect of our experiment in order to gain a fundamental experiential knowledge about rudimentary glass making.

In this course of that project, the germ of my idea came to me for the assigned solo exhibition (*Observations* aka the mini-nova project) and how to use the designated exhibition space. When I was observing how the sunlight moved in this windowed space it occurred to me that I could use the same scientific procedures we used in the glass making project in the development of this mini-nova art installation. As it was sunlight I was observing I found it necessary, and in keeping with scientific practice, to isolate it by letting in only a *measurable* amount. I made the installation by covering the windows with sheets of heavy grey paper. In seven of these sheets I each cut seven 2x2 cm holes. I placed photographic gels over these holes that reproduced the colour spectrum. This caused beams of coloured light to be projected into the otherwise dimly lit room. (Ref. Figure 3)

With the sun's position with respect to the earth, I found that light began to enter the room at around 2 PM. I followed the light as it moved across the room and placed square mould blown glass bottles according to a protocol I invented. This protocol had me place the first bottle at the north end of the room in the beam of red light cast onto the floor from the perforated paper. Every 15 minutes I would place another bottle in the next colour from the spectrum in the adjacent panel. One of four laser engraved words, Question, Hypothesis, Experiment or Observation<sup>13</sup> was written on each of the 16 bottles.

According to similar protocol, mirrors of 10 x 10 cm were placed on the floor every 10 minutes starting at the south end of the room. Each was placed according to the grid of tiles on the floor and depending on which pool of light reached furthest into the room from the first panel and then the second panel until the full cycle of 24 mirrors was used. As each mirror was positioned, the time, date and number of mirror were written on it. (Ref. Figure 4)

As I placed the bottles and mirrors I recorded their position, time of placement and any other significant observations, such as the effects of reflected light in the space coming from a passing car. Over 3 afternoons I recorded 15 hours of observations and during the following 3 afternoons, an additional 15 hours of observations, I moved the bottles and mirrors to correct their positions in accordance with the Earth's position relative to the Sun. I created an 'observation station' at the north end of the space as a place to conduct the performance experiment. (Ref. Figure 5)

The 'procedures' I invented for this 'experiment' I created in the space, and the taking of meticulous notes, was my attempt to resolve the question of the relationship between art and science. This was my attempt to understand the experience of being on a science campus following this educational experiment, the new Master's program we were all involved in.

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<sup>13</sup> These words describe the four basic steps of the scientific method.

It was a pure joy to work on this mini-nova project – I hadn't had so much fun in ages. I believe this to be so because I had a good solution to the problem and I was rebuilding my confidence with what I was creating in the studio. At the same time, I had begun to renew my eagerness to take better care of myself. I was eating better, sleeping well and exercising regularly. The wellbeing I was reestablishing in my life was becoming evident in my art.

The experience of staying in the exhibition space over several days brought me an experience that really changed my understanding of who and where I was. Observing and recording the movement of the sunrays each day across the floor was the first time I genuinely perceived the Earth's movement around the Sun – in that movement, I felt Time. That feeling of time is what I imagine people spend years in meditation to experience – it felt transcendental. I was no longer stationary but instead hurtling through space around a star. With my art I created an environment in which I could directly connect myself to a fundamental aspect of our existence, Time. By isolating the light I had inadvertently revealed time. This was, I felt, up to that point the most profoundly powerful thing I had ever made, for that reason the most beautiful. The sun had brought me to Portugal and in these moments it offered me visceral knowledge. It is not lost on me that this moment arrived when I had started to take better care of myself. I felt so strongly about this exhibition that I became convinced that my second year work would be about light. I continued to research light and optics. Though what I failed to recognise, it was not the light that was so profound but visceral passage of time that I felt.

I ended that first year enjoying a sense of pure contentment and a feeling of success. I knew the choices I had made and the things I had done were good. In fact I would often catch myself walking down the street grinning from ear to ear, a new experience for me. Indeed, how could one not do that during the summertime here in Portugal? There is not a day that goes by that I'm not struck by the beauty of this place; the full blue sky, the warm sun, the windswept sands where the incessant surf meets land. I felt I was in the right place, doing the right thing at the right time. I was taking full advantage of this opportunity, this chance, to expand and learn.

At the end of July 2010 I returned to Canada for a month-long visit which included two weeks in Newfoundland. Returning home to this cool and wet island, its dense forests, peat bogs and rugged north Atlantic coastline, was a melancholy encounter. My island home felt familiar and comforting but at the same time it felt different. The landscape was as I had left it but driving down the highway to the coast, I discovered that the wild horses in the salt marsh were now gone. Fully grown trees were now present where there had once been a forest fire.<sup>14</sup> There were abandoned houses here and others missing there, boarded up schools and wharfs were being slowly sucked down into the sea as out-port living becomes a thing of the past. Seeing these things tempered my mood as the disconnect

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<sup>14</sup> The fire started on June 12<sup>th</sup> 1961 at Hare Bay and then move along the coast. All tolled the fire consumed an estimated 3 million cords of wood and ravished 18 communities. On August 1<sup>st</sup> my Mother's town of Ragged Harbour was evacuated by ship, one which followed the fire, to Fogo Island as the fire entered the town. The roaming fire was finally extinguished in October as the first rain in 6 months began to fall. As a child going to my grandparent's house I remember seeing fields of saplings for as far as the eye could see.

between my memories and what I now saw grew ever greater – I felt like a foreigner on my own island.

Returning to Portugal after this trip was a difficult experience. The bonds formed between the members of our program seemed to have evaporated over the summer, the first month back I often found myself working alone in the studio. The network of support we had built and I had relied upon was no longer there. I felt absence. This compounded with a health problem had me worried that I might need to interrupt my studies and return to Canada, drained my physical and mental energy. I was also struggling with the notion of coupling these two disparate disciplines, art and science. Studying the history of optics was fascinating but it was not inspiring me to use my hands – I faced yet another cycle of creative block. All the confidence I had gained just a few months earlier was escaping me, with this an overwhelming wave of solitude and loneliness engulfed me.

This malaise came to a crucial juncture during the week of the graduate review. After a devastating critique of my studio work and an anaemic review there was only one saving grace – I had secured an exhibition at the Museu da Água, Reservatório da Patriarcal for June 2011 that would be sponsored by the Embassy of Canada in Portugal.

All the research – my sources of inspiration, the studio work and the writing – was until that point contrived in hopes of resolving an art and science duality. Now however, with the location of the exhibition confirmed and the power I sensed in that space, I decided to abandon earlier approaches I had taken. More importantly I put aside the demand I had made of myself that science needed to be my main source of inspiration and evident in my work. I decided that it could now inspire me but it would not necessarily be the subject of my work. Why had I been trying to force myself into a science ‘box’ when I could build my own ‘box’ and slip into it comfortably? My reaction to the brew of circumstances I found myself in at this time unblocked me, allowing me to recapture the freedom to imagine all the possibilities I had within me – the possibility to communicate thoughtful ideas that are close to me.

Subconsciously I began to rekindle ideas I had had before coming to Portugal as I sought out historical maps of Newfoundland and Portugal. I grew up knowing of the cultural connection between Portugal and home, what did that mean to me now? I looked for possible answers in these maps I found, gazing back through time.

A map is something one can turn to when lost. It is a representation of the world one can use to find one’s bearing and a guide for navigating from point to point. It is a way to find out what is around where you stand and what you can expect further along. Knowing this can be a foundation on which to build a plan to voyage out into the unknown.

Finding these old maps allowed me to dream in the past and to imagine what it was like to embark on such an adventure, discovering new lands and taking in new experiences, much like what I was doing here in Portugal. Pondering these images of land and sea reignited the pride and passion for my birth place and offered me a path for new discoveries and expression in an instinctive way. Unearthing

these histories of early exploration by the Portuguese and uncovering the rich iconography of early maps became the means for developing my own visual statements. These then spoke not only of the past but of my present, my desire to connect with my viewers and Portugal. I could begin to set out on my next voyage laden with this knowledge while also taking aboard the inspirations I encountered en route, all helping me towards my destination, my goal. I could finally allow myself to set sail.

I found it interesting that some of these early maps are called 'DESCRIPTIO', meaning descriptions. So too, my thesis exhibition became a kind of description of historical times developed in my mind as a result of the facts and details I gathered during my research.

These maps became my anchor point for expression. Maybe this is the reason I began to make anchors in the hot shop. The anchors seemed to be a logical form, although making them from glass may not appear so logical. After all if an anchor's function is to hold a ship in place, then it must be made of something strong, durable and reliable, whereas a glass anchor is a futile object: fragile, weak and unreliable.

As the overall picture of the exhibition began to reveal itself to me I could also see other places where a tension relationship was manifesting. An example of that is the *Biggest* anchor with its loose rope drifting down to the lower level, there to unravel into a taught network of strings that attach to a mass of *Small* anchors. (Ref. Figure 6) Divided into tenuous strings the rope's purpose would seem undone and yet it holds. Perhaps we need to reverse the direction of consideration, to see the strings uniting to assemble the strong rope that effortlessly holds the heavy anchor. This, it seems to me, is much the way small ideas can come together to form secure and larger knowledge. The course of my studies of science, my now shelved research into the history of optics, my discovery of aspects of myself through making and this research into the history of Portugal and Newfoundland while living abroad, are they not all small anchor points attached to strands which perhaps lead me to a coming together of these strands? Perhaps realizing I had opened myself up to the unknown and to the opportunities this created, I could now secure myself in understanding and let down my defences.

Looking at these historical maps I can see the development of the awareness of the Newfoundland coast we have now. Whereas the very early maps are descriptions of places, the more contemporary maps are labelled 'chart', a graphic representation of data. For example, the Cook Chart was the first time science was used to survey the Newfoundland coastline (10). (Ref. Figure 7) I see awareness develop into accurate and secure geographical knowledge like the one presented to me these days by satellite imagery. This underlines for me the changes that have taken place in the last 500 years. Where once an astrolabe was used to give us a very rudimentary idea of our position, we now can use GPS, Global Positioning System, to tell us our precise location. It is in this last way that we now know our planet, with clear scientific knowledge. Nevertheless, I would love to feel the vastness of our Earth and the romance about it those early explorers may have felt. This is what fuelled my necessity to look back in history to try and touch these passions for the unknown. One place I connected strongly to that feeling was in the historical texts relating to the voyages of the brothers Corte Real and the Cantino Planisphere. I often thought while reading this material and looking at this particular

map, how different the world must have seemed to those people. Then I would remind myself how different Portugal looked when I first arrived or how different Newfoundland seems to me now.

These thoughts evoked a strong feeling of nostalgia in me and I see that nostalgia expressed in the exhibition I created at the Museu da Água. I see this most evidently in the rose petals. (Ref. Figure 8) The rose is a symbol of beauty, strength and passion. More personally for me, roses also spark memories of my Grandmother Goodyear and the roses I would give her on special occasions that she would so carefully dry and keep. Memories of the past kept in brittle rose petals, a link to another time, another place.

In trying to connect myself with the 16<sup>th</sup> century Portuguese sense of their discoveries of the new world, I redrew the Cantino description of Newfoundland in the exhibition space. (Ref. Figure 9) On my paper and with my charcoal I traced the hand of a man who lived five centuries before me who had not seen the island but had it described to him, in his mind's eye imagined and produced his rendering of this distant place. Depicted is a simple island, topped with large trees, with many bays and smaller islands before it. In a real geographical sense it has nothing to do with Newfoundland but as an idea of the place, I feel, it is completely accurate. The idea of a place, what your mind or memory constructs, is never a truth but an invention of the mind. The details remembered, whether your own or someone else's, is your connection to that place. The nostalgia evoked by these fragments of history gave me the opportunity to wander in the past and imagine those experiences, albeit in my own romanticized conception.

Maybe this is the concept of *saudade*<sup>15</sup> that defines an essential aspect of Portuguese culture and history? I understand *saudade* to mean a longing or yearning for something or someone which is lost and likely will never return and the feeling of emptiness that then results. This feeling could also be evoked by something that has never been experienced (17). Looking at these maps and reading the histories of both Newfoundland and Portugal, I felt that desire for the lost past, so much so it became the primary fuel for my work. I feel this sentiment was strongest in the drawing of the lone cod fish. (Ref. Figure 10) The end of the cod fishery had little direct impact on my family as I am from Gander, one of the few inland towns in Newfoundland, whose history is founded in aviation. My parents' occupations were directly linked to the skies and not the seas. But the disappearance of the fishing industry affected deeply the psyche of all Newfoundlanders, we collectively knew a core segment of our culture was lost and most likely would never return.

I can imagine that the same might be true for the Portuguese. For 500 years they had control of their cod fishery, as Portuguese set out across the Atlantic to harvest this cheap and plentiful food, one which became a staple. I was told when I first arrived here, that there is a recipe for *Bacalhau*, Portuguese for dried salted cod, for every day of the year. Now the Portuguese no longer fish cod but are forced to import this food staple (18), one they called *fiel amigo* or faithful friend. The collapse of the Newfoundland cod fishery equally altered the tradition of *Bacalhau* as it became an increasingly

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<sup>15</sup> I realized this possible connection after attending the opening of my colleague, Kojiro Toyoda, thesis exhibition "SAUDADE" presented at Galeria Diferença May 28<sup>th</sup> to July 2<sup>nd</sup> 2011.

expensive import. (19) (20) As the Portuguese White Fleet<sup>16</sup> stopped crossing the Atlantic to harvest cod, it also ended a way of life for these Portuguese fishermen who used the fishery to provide a better life for them and their families. (21)

This occurred to me for the first time while walking on Rua do Arsenal in Lisbon. There are three shops in a row that sell salt cod. Passing these places I was struck by the smell, sending my thoughts back to my childhood with memories of barrels layered with salt and cod and flakes of fish drying in the sun. It is the scent riding the clean summer air and the aroma of my Grandmother Goodyear's kitchen. There must be people and families in Portugal with similar memories triggered by this smell, whose grandfathers, fathers and uncles crossed the ocean in search of an income, whose way of life was based on cod.

This divorced reality, that of fishermen now to their past livelihood and me to my past home of Newfoundland, my feels of loneliness in Portugal, are captured for me, by the twin boats in my thesis exhibition. The one outside in the city floating in a neglected fountain, now referred to as the pond, is all but invisible. The clear glass held together by the fine lines of lead makes this object look more like a fine contour drawing. (Ref. Figure 11) The only chance that one's eye could be drawn to it is the red rope contrasted against the swampy green water. I realize that most people will pass this object by but for those who discover it, I hope, they will be curious about what they see and maybe think about its story.

The boat inside is part of the past, the history I have gathered. It floats in still waters; these waters are a remnant of the former use of this historic place. (Ref. Figure 12) The boat is anchored above on the platform added to the structure to make it useful once again in that people might know and feel history. I wanted visitors, particularly the Portuguese, to think about these histories I explored, perhaps wander in them as I did, feeling a connection to a departed past.

I followed time with my research and my exhibition. In my mind I sorted through five centuries of experiences, from the written descriptions of the brothers Corte Real to my meeting with their descendants at my opening. Meeting the modern day Corte Reals completed my experience, it made it real, as it generated an even greater connection between me and the history I had explored.

The Portuguese title of the exhibition, *Velas Içadas*, is somewhat ironically meant. In English it means sails hoisted. I offered no sails, but rather a room filled with anchors and out-dated descriptions of places we have now much more precisely measured and defined using modern science and technology. The title was a metaphor for exploration and learning, imagination and openness to discovery, as I had hoisted my sails in search for meaning.

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<sup>16</sup> The Portuguese White Fleet is woven into the folkloric history of Newfoundland and known as the White Fleet for these schooner's white sails. In the 20th century, cod fishing off Newfoundland became the driving force of the Portuguese economy and culture. Here was the worker who suffered the long days of work, hand-lining for cod from his dory boat all day, only to return to the ship at sun down to spend hours splitting, gutting and salting the day's catch. The dory-man was a heroic figure, a constant image of propaganda in the Portuguese national media and traditional ceremony. The annual departure of the fleet from Portugal took on the proportions of an epic production. While the ships waited, rigged and ready, mass was performed for the captains, officers, fishermen, families, and dignitaries of Church and state. (25)

## Conclusion

This master was a tremendous and demanding undertaking. Almost every moment presented a challenge, from navigating the labyrinth of SEF<sup>17</sup> and Portuguese bureaucracy to balancing valence electrons in chemical equations. Pushing through these tests of resilience and accepting whatever might come my way built and grew my character. This development allowed me to take on ambitious goals and bring them to completion. It was a time to persevere, cut loose old moorings that I no longer needed and take on board new knowledge that transformed my inner voice and my outward expression to what I believe is a deeper and richer level of engagement.

Although my thesis exhibition did not overtly discuss or present an aspect of science, for me science is nonetheless present. My science studies have given me an extensive knowledge of the material glass but studying science has also altered the way in which I understand my existence and the miraculous interconnection of everything from the most distant star to the gold nanoparticle that changes my glass from clear to red (22). I am in on the great puzzle humankind has set out to solve, if in only a minor way. This has changed the way I experience red in my glass. It is no longer just a colour but a nanoparticle reflecting electromagnetic radiation through space into the lens of my eye registering on cones and rods on my retina, creating an electrical signal on the optic nerve, that my visual cortex then interprets as red (23). Red is part of a system and no longer a thing in itself. I too am part of that system as is all human history and culture.

An event while preparing my thesis exhibition exemplifies this for me. I took a day off and went to the beach to relax and recharge before the final sprint to my opening. Lying there in the sand with my eyes closed I became acutely aware of the sun on my skin. I was drifting into sleep while my mind began to wander: striking my skin were photons resulting from nuclear fusion in a star, our Sun. Those particles had traveled 150 million kilometers in about eight minutes. But those same photons had first taken tens of thousands of years to make their way to the surface of the sun before crossing this vast distance in space and striking me! (24) Being in that moment, relaxed by the warmth of the sun, feeling its energizing effects, but also knowing and thinking about how this system worked, I felt not only a physical pleasure but also an intellectual one. Having spent time in the labs doing science, making calculations, reading the history and understanding the philosophies of science were all necessary in making a satisfying momentary experience like that one on the beach possible for me.

Science is now a lens I can look at the world through. Having that lens has added to my overall awareness and has allowed me to develop as an artist, making my work more accessible and engaging for a broader spectrum of people. I feel I have developed a complexity in my artistic voice that delivers more than just glass objects. Now I offer a type of narrative to a viewer, one they can wade into, imagine in their own minds possible meanings for and hopefully find both visual and intellectual pleasure.

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<sup>17</sup> Serviço de Estrangeiros e Fronteiras, which is the Portuguese immigration administration.

The premise that nothing is real unless it can be measured or verifiably described is problematic for me. The beauty of humanity is in our feeling and emotions and how we can harness them to express powerful ideas. I feel now that as an artist, if I feel something strongly enough and show what I feel clearly, it will be accepted almost unquestioningly as an important reality for everyone else as well. It is a reality outside of logic and based in human emotion, as ephemeral and intangible as that is.

What is the connection between art and science? For most of my time here I felt there should be a connection, one I have searched for desperately. Not finding it and nonetheless discovering that I was able to get myself out of a series of creative blocks, I rejected any possible connection between the two disciplines. Now however, at the end of the process an idea has emerged; this connection is an understanding of balance. When I studied science I was struck by the balance in every system it has explored and explained. Because of this I cannot believe that scientists are all logic and process. To watch them do what they do, I feel that there must be a rich source of creativity they draw from, one they must use judiciously so that it does not exceed the boundaries of the strictly controlled methods and rules necessary in science. Equally as an artist I must use my creativity to find my own logic and processes to show what I feel clearly. But if I overwhelm my creativity with rigidly imposed methods and the need for logic, my work will become detached from the feeling I wish to express. Finding this balance, I now feel, is the answer. I hope I have now come closer to that elusive balance in myself and my art.

In conceiving and making *Glass/Glace* I withdrew into my mind, a sort of stepping out of time to find my personal balance. In *Observations* I felt Time as I experienced an important mental shift both regarding my own place in the Universe and the importance of chance in my work. With *Velas Içadas* I followed time by looking back into history. For me as a Newfoundland in Portugal, exploring the common history between Portugal and Newfoundland could be no more personal than it was. It became a conduit for my feelings about my life in Portugal, my psychological distance from Newfoundland and the regular turbulence and joys of life. The development of this exhibition became a focal point where I could negotiate a fine balance between my insistence on logic, the need for a plan, and the necessity of emotion in my work while using chance to discover through making. Perhaps the homesickness, nostalgia, loneliness and *saudade* I had felt was necessary, prompting me to recognize things I had to leave behind in order to arrive at a better awareness of myself and my choices as an artist.

I feel that I am transformed because of the total experience of these last two years. I now begin to recognize changes within me which are caused by my deeper understanding of science, myself and my art. I have developed strengths and conquered weaknesses by using my resourcefulness and opening myself up to chance and this new way of seeing. With more distance from this experience I will surely come to understand better the impact this time in Portugal has had on me. For now I see that when I left Montréal, I hoisted my sails to the wind, and everything I have experienced and faced since then has brought me here to this point, at this moment in time, with a rich cargo of new memories, experiences and knowledge.

## Appendix I: Laser Engraver Settings

Settings for Trotec Speedy 100 CO<sub>2</sub> laser with JobControl software.

### Engraving on 2 mm float glass:

Category: Glass

Name: Plate Glass

Thickness: 2 mm

	Color	Power	Speed	PPI/Hz	PPI/Hz	Passes	Air assist	Correction	Z-Offset
Engrave	1	100%	50	1000	PPI	--	on	0	0.00mm

### Engraving on Colorama heavy backdrop paper:

Category: Paper

Name: Paper

Thickness: 1.5 mm

	Color	Power	Speed	PPI/Hz	PPI/Hz	Passes	Air assist	Correction	Z-Offset
Engrave	1	50%	50	500	PPI	--	On	0	0.00 mm

### Engraving on rose petals:

Category: Paper

Name: Paper

Thickness: 0.5 mm

	Color	Power	Speed	PPI/Hz	PPI/Hz	Passes	Air assist	Correction	Z-Offset
Engrave	1	50%	100	500	PPI	--	On	0	0.0 mm

### Cutting adhesive backed vinyl:

Category: Paper

Name: Paper Tape

Thickness: 0.05 mm

	Color	Power	Speed	PPI/Hz	PPI/Hz	Passes	Air assist	Correction	Z-Offset
Engrave	1	55%	65	500	PPI	--	On	0	0.00 mm

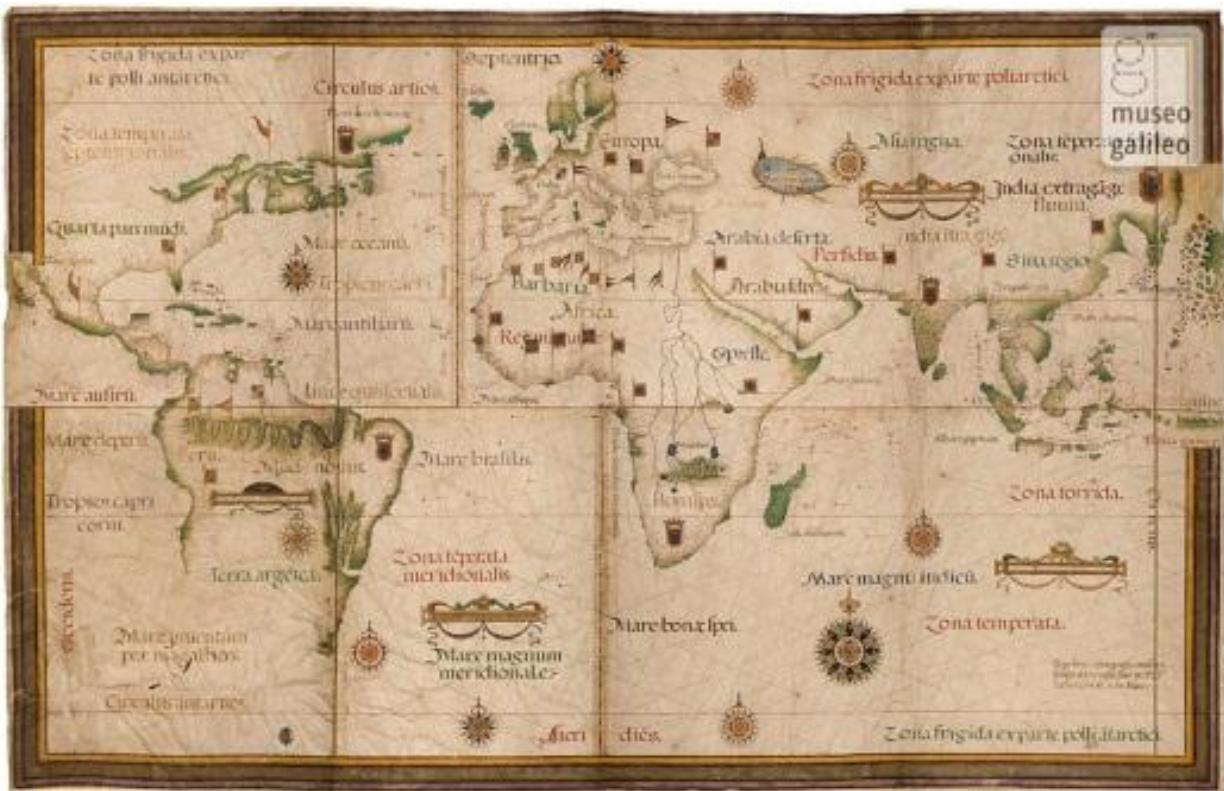
## **Appendix II: Historical Maps**



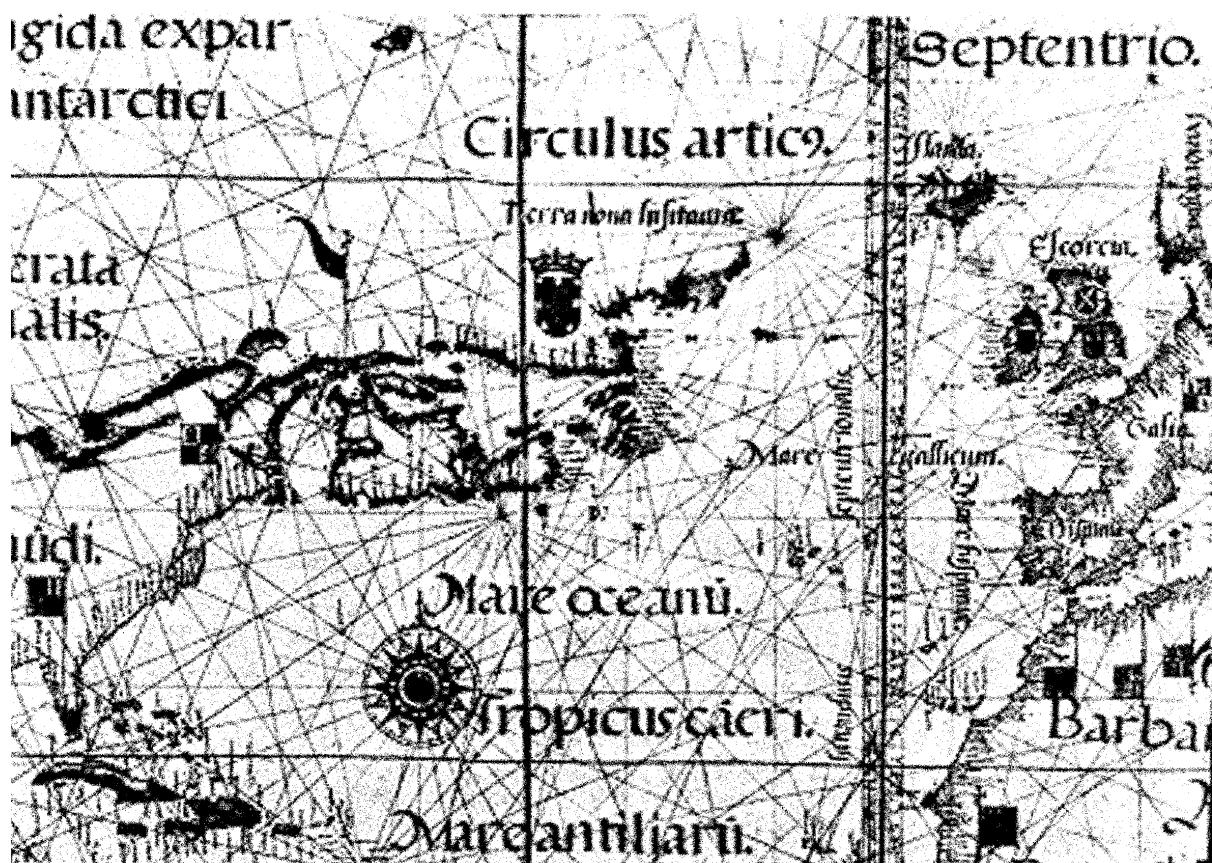
#### A. Terra Nova, Barnet Langenes' Caert-Thresoor 1602 (4)



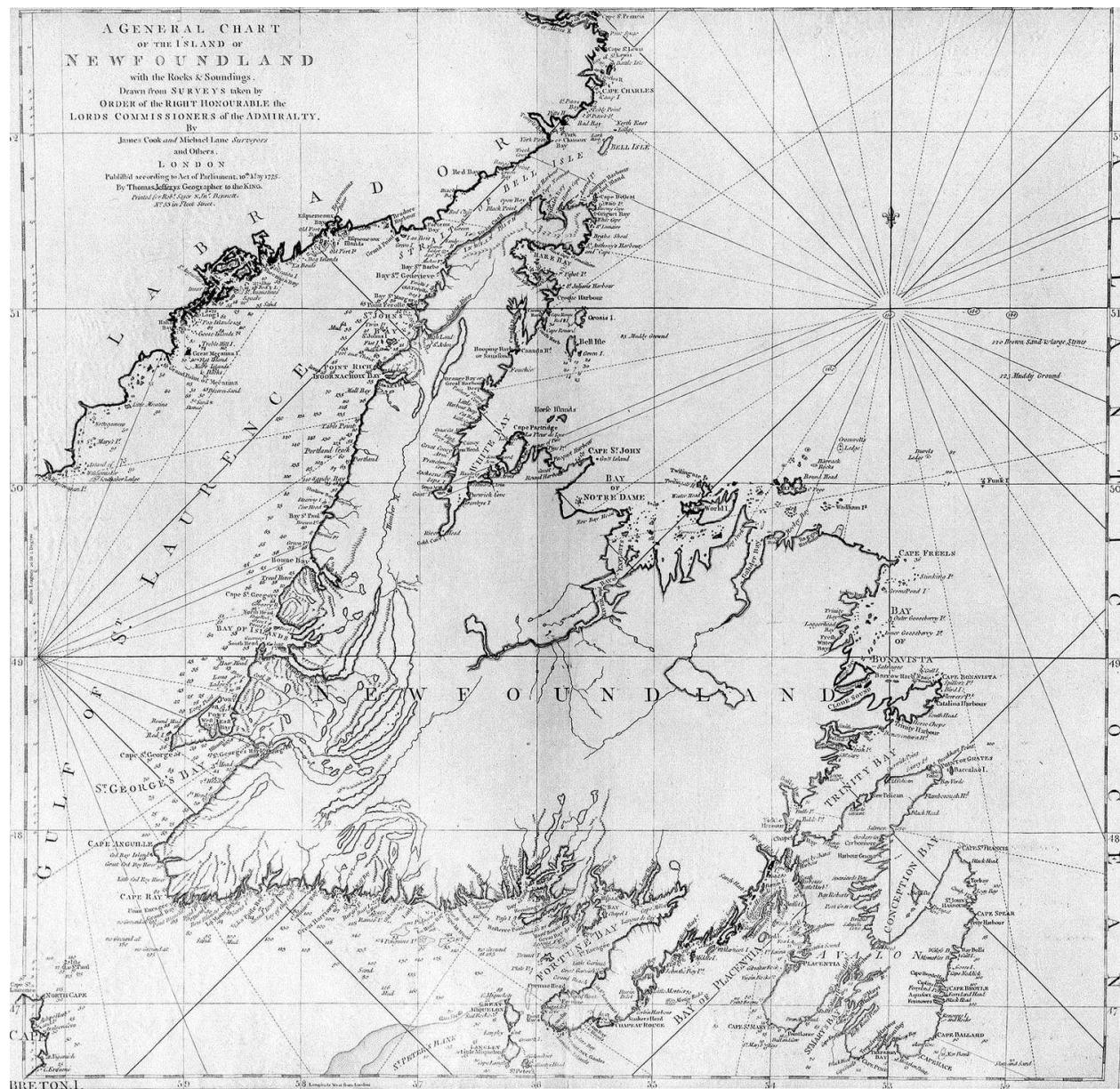
#### B. Portugallia, Barnet Langenes' Caert-Thresoor 1602 (4)



C. Lopo Homem Planisphere 1554 (5)



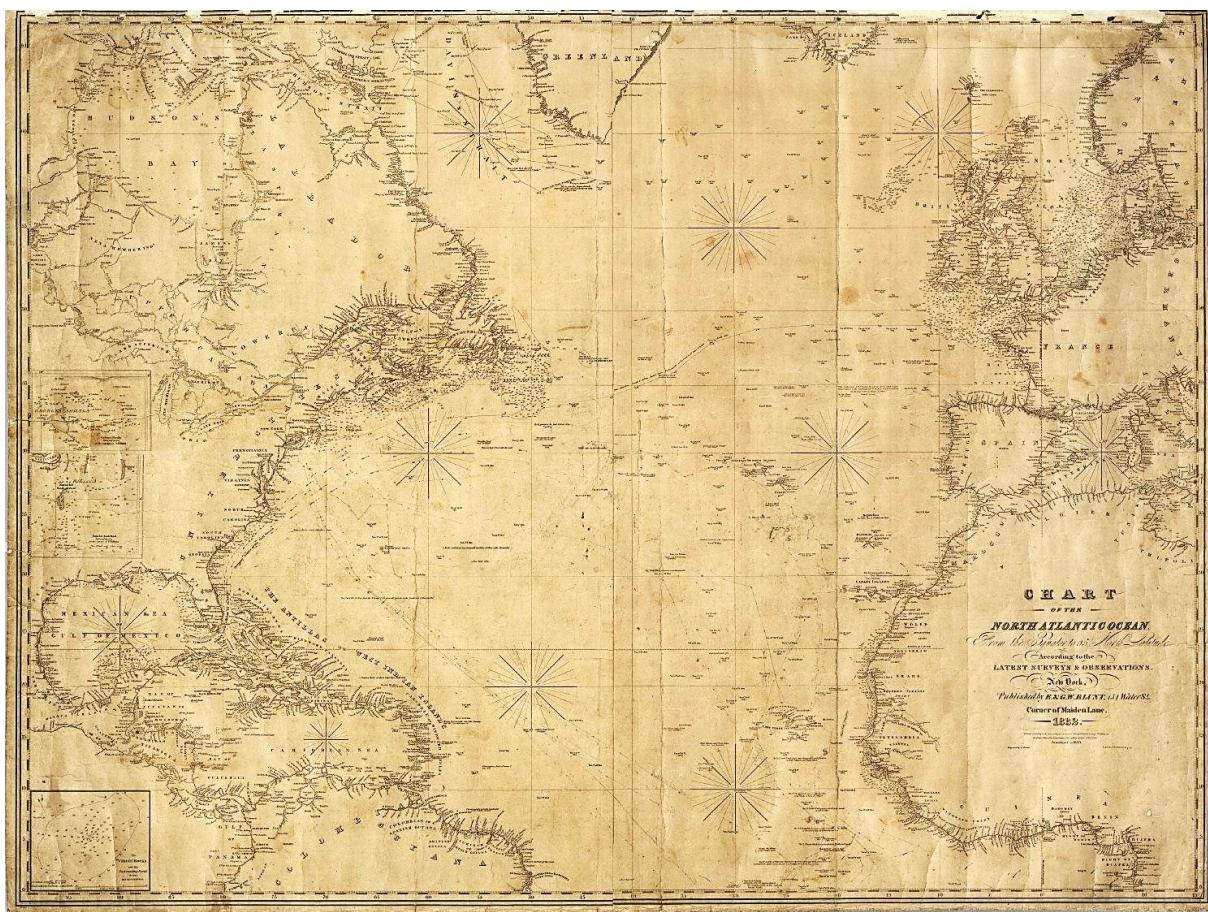
D. Homem section used for exhibition



E. James Cook map of Newfoundland 1775 (6)



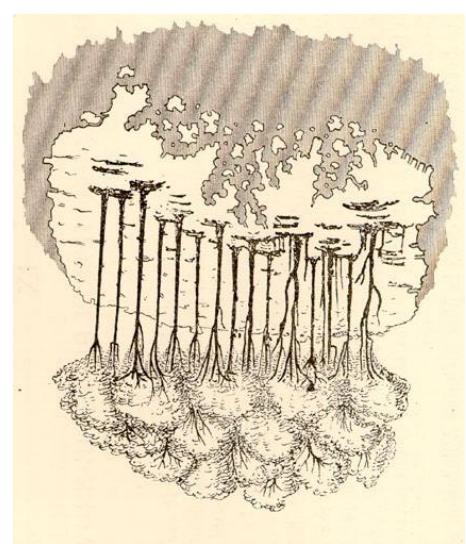
F. Antonio Zatta map of Portugal 1775 (7)



G. Edmund M. Blunt map of the North Atlantic 1835 (8)



H. Alberto Cantino Planisphere 1502 (9)

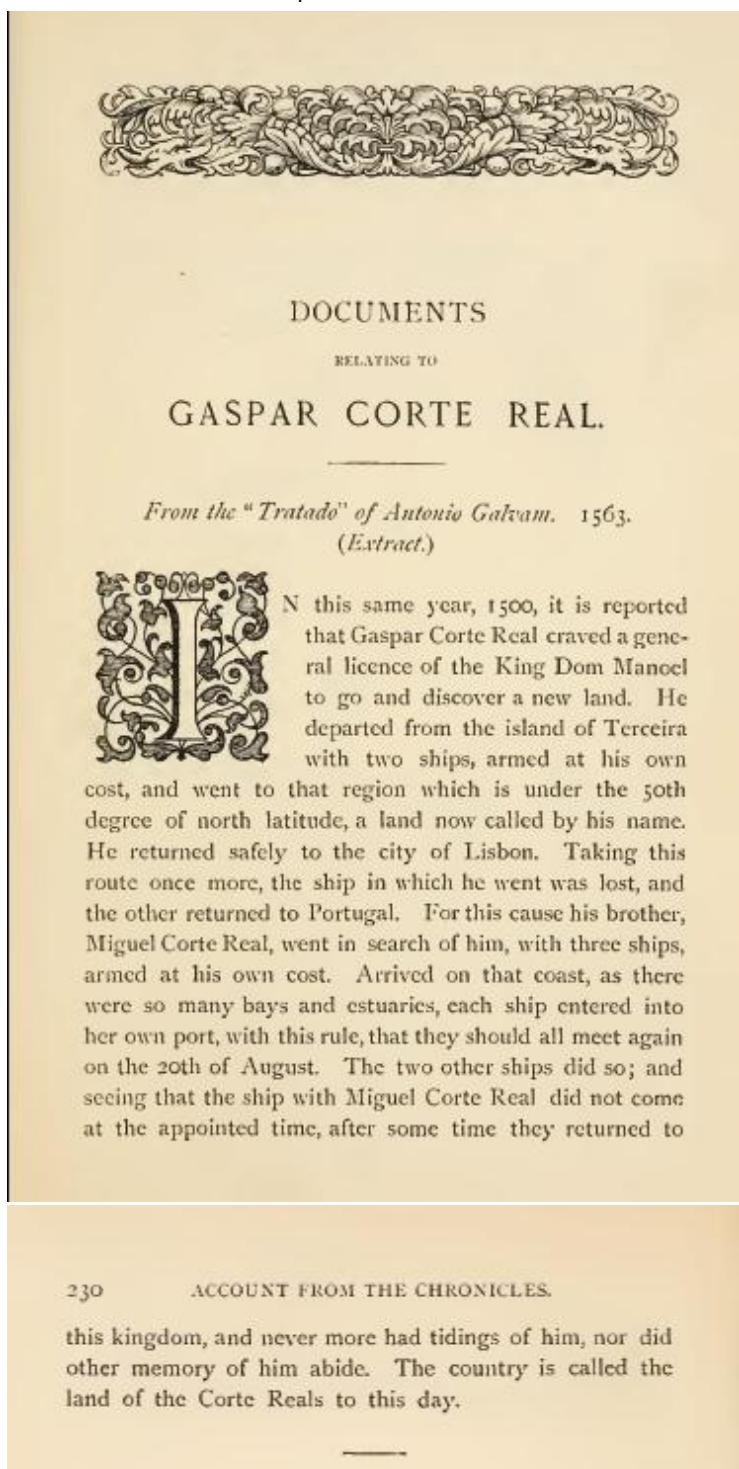


I. Cantino's description of Terra  
Nova used for drawing

## Appendix III: Historical Texts

The following three texts are the source material used in the exhibition and come from Clements Markham's book *The Journal of Christopher Columbus and Documents Relating to the Voyages of John Cabot and Gaspar Corte Real* published in 1893. (11)

### A. Excerpt from the *Tratado*



Most Illustrious and Most Excellent Prince, and my very singular good Lord,

Lisbon, October 17th, 1501.

It is now nine months since this most serene king sent to the northern part two well-armed ships, to ascertain if it would be possible to discover land or some islands in that direction. On the 11th of the present month one of them returned, and has brought people and tidings, which it appeared to me ought not to pass without the knowledge of your Excellence. Therefore all that was related by the captain to the king, I being present, is here clearly written down. First they stated that, after leaving Lisbon, they always went on that course and towards that pole for four months, nor during all that time did they see anything. In the fifth month, still wishing to push on, they say that they came upon enormous masses of congealed snow floating upon the sea, and moving under the influence of the waves. Owing to the heat of the sun, sweet and clear water is melted on their summits, and,

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descending by small channels formed by the water itself, it eats away at the base where it falls. The ships now being in want of water, the boats were sent in, and in that way as much was taken as was needed. Fearing to remain in that place by reason of their danger, they intended to turn back; but they consulted what was their best course, and, aided by hope, they resolved to go forward for some days. Proceeding on the voyage, they arrived at the frozen sea on the second day, and were forced to abandon their intention. So they began to turn towards the north-west and west, and were three months continuing in that direction, always with fine weather. On the first day of the fourth month they came in sight, between these two courses, of a very great country, which they approached with the greatest joy. Many large rivers of fresh water flowed through this region into the sea, one of them sending its waters for perhaps a league from the land. When they landed they found delicious fruits of various kinds, trees and pines of marvellous height and girth, suited for masts of the largest ships that float in the sea. Here there is no corn of any kind, but the men of that country say that they only live by fishing and hunting animals, in which the land abounds. There are very large stags with long hair, the skins of which they use for clothes, and make houses and boats of them. There are also wolves, foxes, tigers, and sables. They affirm that the peregrine falcons are so numerous that it appears to me to be a miracle, like those in our country. I have seen them, and they are very fine. They kidnapped nearly 50 of the men and women of that land by force, and brought them to the king. I have seen them, touched and examined them. Beginning with their size, I say they are bigger than our people, with well-formed limbs to correspond. The hair of the men is long, as we wear it, letting it hang in plaited rings. They have the face marked with great

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signs, like those of the Indians. Their eyes incline to green, and when they look from them it gives a great fierceness to the whole countenance. Their speech cannot be understood, but, however, there is no sharpness in it, and it is altogether human. Their behaviour and gestures are very gentle; they laugh a good deal, and show great delight. So much for the men. The woman has small breasts and a very beautiful body. She has a very gentle countenance, and its colour may be said to be more white than any other tint, but that of the men is much darker. In fine, except for the fierce look of the men, they are very like ourselves. They are naked except for a small covering made of deer-skin. They have no arms nor iron, but for working or fashioning anything, they use a very hard and sharp stone, with which there is nothing so hard as that they cannot cut it. This ship has come from thence to this place in a month, and they say that the distance is 2,800 miles. The other consort has decided to go so far along the coast, with the desire of ascertaining whether it is an island or mainland. The king awaits the arrival of the others with much anxiety, and as soon as they come, bringing news worthy of your Excellency's attention, I will at once send the particulars.<sup>1</sup>

Servant,

ALBERTO CANTINO.

## B. Letter from Alberto Cantino

LEGENDS ON THE CANTINO MAP.

*Legend by the Coast of Newfoundland.*

Land of the King of Portugal.

This land was discovered by order of the very high and most excellent Prince, the King Dom Manoel, King of Portugal. It was discovered by Gaspar de Corte Real, Gentleman of the Household of the said king, who, when he had discovered it, sent thence a ship with certain men and women found in that country, and he remained with the other ship, and never more was seen. It is believed that he perished. Here there are many masts.<sup>2</sup>

<sup>1</sup> Printed by Mr. Harrisson in his work on Corte Real, p. 216, from a manuscript in the Archives of the House of Este at Modena. It has been translated from Mr. Harrisson's text, with his permission.

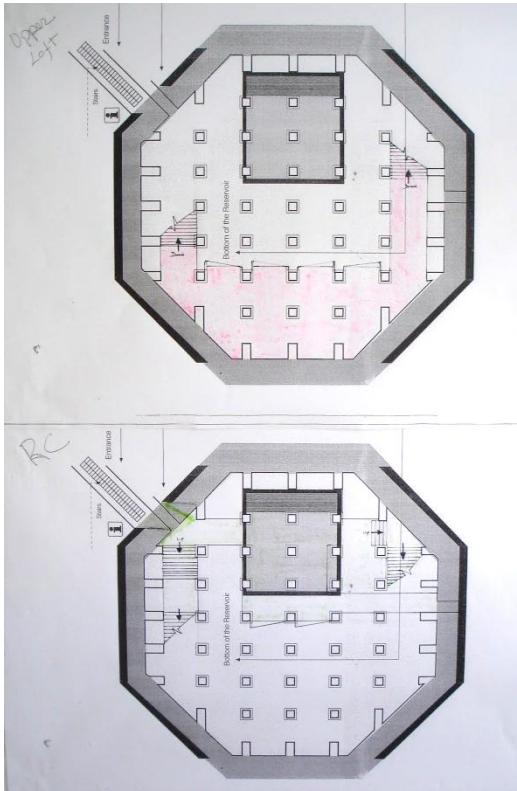
<sup>2</sup> Trees for making masts (?).

A ponta d. (assia).

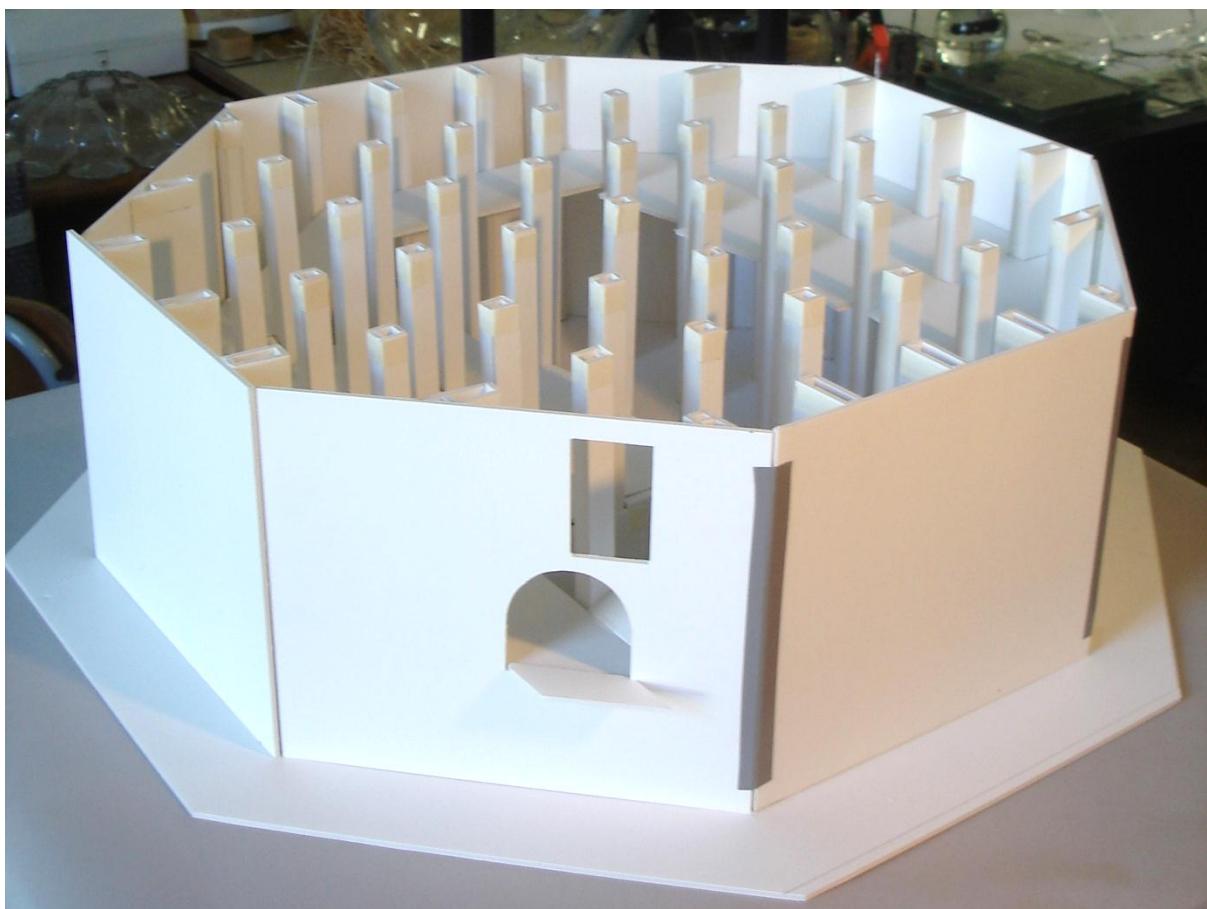
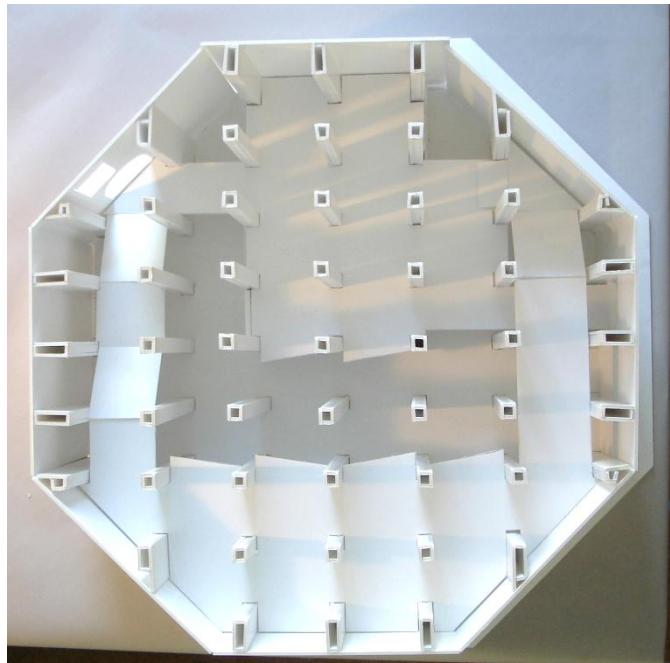
This land was discovered by order of the very excellent Prince Dom Manoel, King of Portugal, which it is believed is a point of Asia. Those who discovered it did not land, but they saw very serrated mountains; it is for this reason, according to the opinion of cosmographers, that it is believed that this is the extremity of Asia.

C. Legend on the Cantino Map

## Appendix IV: Model



1:50 Scale Studio Model of Reservatório da Patriarcal



## Figures



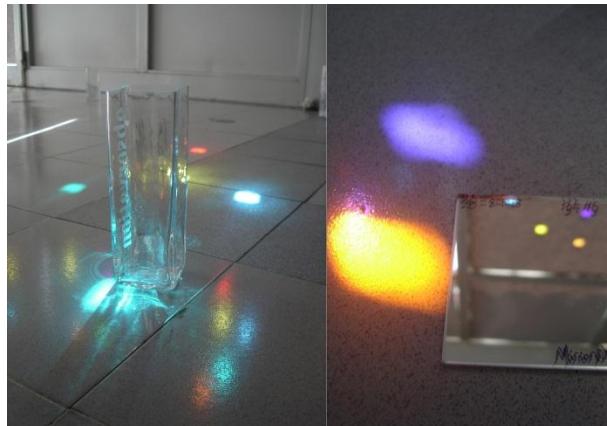
**Figure 1:** *Glass/Glace* in progress



**Figure 2:** *Glass/Glace* completed installation



**Figure 3:** *Observations* interior full view from entry, mid-afternoon on day 3



**Figure 4:** a) bottle

b) mirror



**Figure 5:** a) observation station b) observed notes

Mirror N° 16 - Orange 17h33  
Panel N° 12, on grey border  
Light now starting to 17h34  
shine directly onto wall.  
Mirror N° 17 - Purple 17h34  
Panel N° 10, between wall 17h40  
Mirror N° 12 - Red 17h44  
Panel N° 13, yellow wall  
Question N° 4 - Yellow 17h45  
Panel N° 14  
Mirror N° 18 - Red 17h50  
Panel N° 10, wall between  
As the cloud cover moves 17h55  
one can see the shape  
of the cloud passing through sample



**Figure 6:** Biggest anchor with 45 Small anchors



Figure 7: Newfoundland 1775

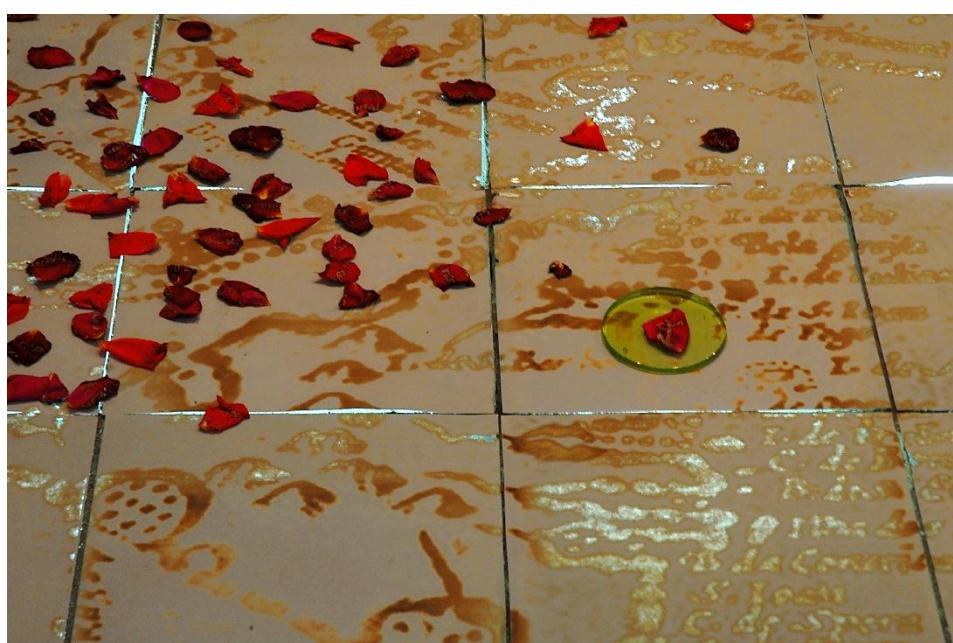
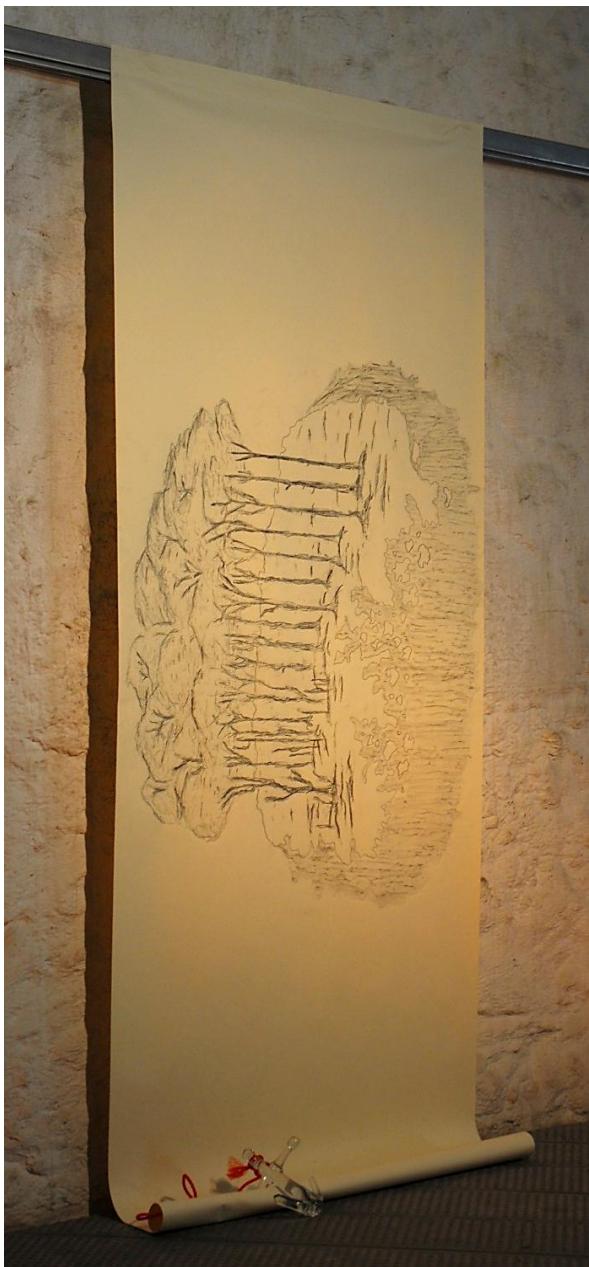


Figure 8: Terra Nova  
1602 (detail with anchor  
rose petal over Fogo  
Island)



**Figure 9:** *Terra Nova* 1502



**Figure 10:** *Lone Cod*



**Figure 11: Outside Boat**



**Figure 12: Inside Boat**

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# Curriculum Vitae

## Education

October 2011

### **Master of Glass Arts and Science** (Mestrado em Arte e Ciências do Vidro)

Universidade Nova de Lisboa, Faculdade de Ciências e Tecnologia, Monte de Caparica, Portugal.

August 2009

### **Teaching English as an Other Language Certification**

Oxford Seminars, Montréal, Québec.

May 2009

### **Diplôme d'études collégiales : techniques de métiers d'art, option verre**

(Diploma of college studies: fine craft, glass option)

Espace Verre & Cégep du Vieux Montréal, Montréal, Québec.

April 1996

### **Bachelor of Fine Arts in fine art, Studio major, Valedictorian**

Nova Scotia College of Art and Design, Halifax (Nova Scotia); Sept. 1994-April 1996.

Exchange student (Dept. of Music), McGill University, Montréal (Québec); May-August 1995.

BFA program, Sir Wilfred Grenfell College, Corner Brook (Newfoundland); Sept. 1992-April 1994.

## Exhibitions

June-July 2011 *Velas /çadas*

Solo exhibition (graduate thesis exhibition, installation)

Museu da Água, Reservatório da Patriarcal (Lisboa, Portugal)

April 2011 *More Art Faster*

Group exhibition (hot sculpted glass, mixed media)

Universidade Nova de Lisboa, FCT (Monte de Caparica, Portugal)

January 2011 *Glassarte*

Group exhibition (cast glass & video), Imagem (Pragal, Portugal)

April 2010 *Observations*

Solo exhibition (mold blown glass in installation)

Universidade Nova de Lisboa, FCT (Monte de Caparica, Portugal)

Jan-April 2010 *Glass/Glace*

Installation (400kg of industrial glass frit & plate glass)

Universidade Nova de Lisboa, FCT (Monte de Caparica, Portugal)

July 2009 *Orientations<sup>4</sup>*

Group exhibition (kiln cast and hot cast glass), Art Mûr (Montréal, Québec)

June 2009 *Glass Arts Society International Student Exhibition*

Group exhibition (kiln casting), Cedar Arts Center (Corning, New York)

June 2008 *En route*

Group exhibition, (blown glass - graal & kiln formed glass)

Gallery Espace Verre (Montréal, Québec)

June 2004 Photography form the creation of *Appliance of Man*, Nikolas Dixon, choreographer  
Solo exhibition, L. L. Lozeau (Montréal, Québec)

May 2004 Photography form the creation of *Appliance of Man*, Nikolas Dixon, choreographer  
Solo exhibition in conjunction with *Moment'homme: danses gaies*  
Tangente (Montréal, Québec)

- June 2002      *Je T'ecrit du ciel*  
                   Organ concert by Denis Bonenfant with exhibition of stained glass  
                   Eglise St-Pierre l'Apôtre (Montréal, Québec)
- February 2002    *Tits & Art*  
                   Group exhibition curated by Magalie Guerin (stained glass)  
                   GV/AS Gallery (Greenpoint Brooklyn, New York)
- October 2001     *Queer Skins*  
                   Radio documentary, producer, CBC Radio 1 – **OutFront** (national radio service)
- June 2000        *Festival des Arts du Village* (now FIMA)  
                   Exhibitor (photo), temporary gallery (Montréal, Québec)
- May 1998        *Jack Was Every Inch A Sailor*  
                   Group exhibition curated by Gabrielle Kemp (digital images & installation)  
                   Eastern Edge Gallery (St. John's, Newfoundland)
- April 1998       *IDYS Exhibition*  
                   Group exhibition (video installation), Galerie V.A.V. Gallery (Montréal, Québec)
- July 1997        *Queer Expressions* (Devers/Cité)  
                   Group exhibition (digital images), Chéry Art (Montréal, Québec)
- January 1997     *Corps: Les livres d'artistes*  
                   Group exhibition curated by Grey Fraser (hand-made book)  
                   Galerie 303 (Montréal, Québec)
- July 1996        *Queer Expressions* (Divers/Cité)  
                   Group exhibition curated by Salman M. Husain (photo), Loft 4535 (Montréal, Québec)
- April 1996       *Boys On the Half Shell: a look at queer masculinity*  
                   Group exhibition (hand-made book)  
                   Anna Leonowens Gallery, NSCAD (Halifax, Nova Scotia)
- April 1996       *Soup*  
                   Spring 1996 Graduation Exhibition (photo)  
                   Anna Leonowens Gallery, NSCAD (Halifax, Nova Scotia)
- April 1996       *Tightrope*  
                   Video, 1<sup>st</sup> public screening, NSCAD (Halifax, Nova Scotia)
- Dec 1995        *Stereotype*  
                   Group exhibition curated by Maximiliana Henze (digital images)  
                   Anna Leonowens Gallery, NSCAD (Halifax, Nova Scotia)
- April 1995       *Colour Your World*  
                   Group exhibition (photo), Khyber Centre for the Arts (Halifax, Nova Scotia)
- April 1995       *Remember* (16mm film) & *K: a film portrait* (S-8 film)  
                   (16mm film was a juried project with the Nova Scotia Film Coop)  
                   1<sup>st</sup> public screening, NSCAD (Halifax, Nova Scotia)
- Dec 1994        *Grasp Bird's Tail*  
                   S-8 film, 1<sup>st</sup> public screening, NSCAD (Halifax, Nova Scotia)
- August 1994      *Waiting...*  
                   Performance series curated by Jennifer Pohl for *Not Broken Crockery*  
                   (performance art) temporary space (St. John's, Newfoundland)

July 1994	<i>If I Fall Before I Wake...</i> (video installation performance) Eastern Edge Gallery (St. John's, Newfoundland)
March 1994	<i>Memories of Smell Through Sound</i> (sound performance) Sir Wilfred Grenfell College Gallery (Corner Brook, Newfoundland)
Feb 1994	<i>A Woman, A Man, and A Boxing Match</i> (performance) Sir Wilfred Grenfell College Gallery (Corner Brook, Newfoundland)
Dec 1993	<i>Holocaust and Other Recent Memories</i> (video installation performance) Sir Wilfred Grenfell College Theater (Corner Brook, Newfoundland)
August 1993	<i>One In Ten</i> (performance art) Eastern Edge Gallery (St. John's, Newfoundland)

#### **Curatorial Projects & Exhibition Coordination**

June 2008	<i>En route</i> Group exhibition coordinator, Gallery Espace Verre (Montréal, Québec)
April 2000	<i>Nature - Couleur - Lumière</i> Coordinator, works by Laura Porcelli, Galerie 427, Belgo (Montréal, Québec)
Dec 1999	<i>Myths &amp; Dreams</i> Curator, works by Giorgio Galeotti, Galerie 324, Belgo (Montréal, Québec)
July 1997	<i>Queer Expressions</i> (Devers/Cité) Curator, group exhibition, Chéry Art (Montréal, Québec)
Sept 1996	<i>Queer Chimera</i> Curator, works by Sheldon Goldburg, Galerie V.A.V. Gallery (Montréal, Québec)
April 1996	<i>Boys On the Half Shell: a look at queer masculinity</i> Curator, group exhibition, Anna Leonowens Gallery, NSCAD (Halifax, Nova Scotia)
June–Aug 1994	<i>Art in Windows</i> Curator, public art project, St. John's Downtown Development Commission, (St. John's, NL)
August 1993	<i>Splash'93</i> (performance festival) Curator & coordinator (performance art) Eastern Edge Gallery/LSPU Hall (St. John's, NL)

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#### **Publications**

- Velas Içadas* (exhibition catalogue), Museu da Água/EPAL (Lisbon Portugal), 2011.  
*Becoming Light: works by Jamie Wilson Goodyear* (exhibition catalogue), Espace Verre (Montréal Québec), 2009.  
*Myths & Dreams: Giorgio Galeotti* (exhibition catalogue) Galerie 324, Belgo (Montréal Québec), 1999.  
*Boys On the Half Shell: a look at queer masculinity* (exhibition catalogue) Anna Leonowens Gallery/ NSCAD, Halifax, 1996.

#### **Professional Affiliations**

Glass Art Society, Glass Art Association of Canada

#### **Experience**

- Sept 08–May 09 Espace Verre, Montréal, Québec, Technician, Teaching Assistant, Public Relations & Demonstrations.  
 Jan 04–Aug 05 A.R.M., Montréal, Québec, Videographer/Photographer in residence for contemporary dance company.  
 June 01–June 03 VITRUM (stained glass studio) Terrebonne, Québec, Owner.  
 Sept 99–Jan 02 Montréal, Québec - Personal Assistant to Giorgio Galeotti (painter).  
 May 96–July 05 Montréal, Québec - Photographer, Curator and Graphic Artist.  
 Jan–April 96 Anna Leonowens Gallery, NSCAD, Halifax, Nova Scotia, Curatorial Intern.  
 June–August 93 Eastern Edge Gallery, St. John's, Newfoundland, Gallery Assistant.  
 Jan–April 93 Department of Community Studies, MUN, Corner Brook, NL, Visual Arts Teaching Assistant.