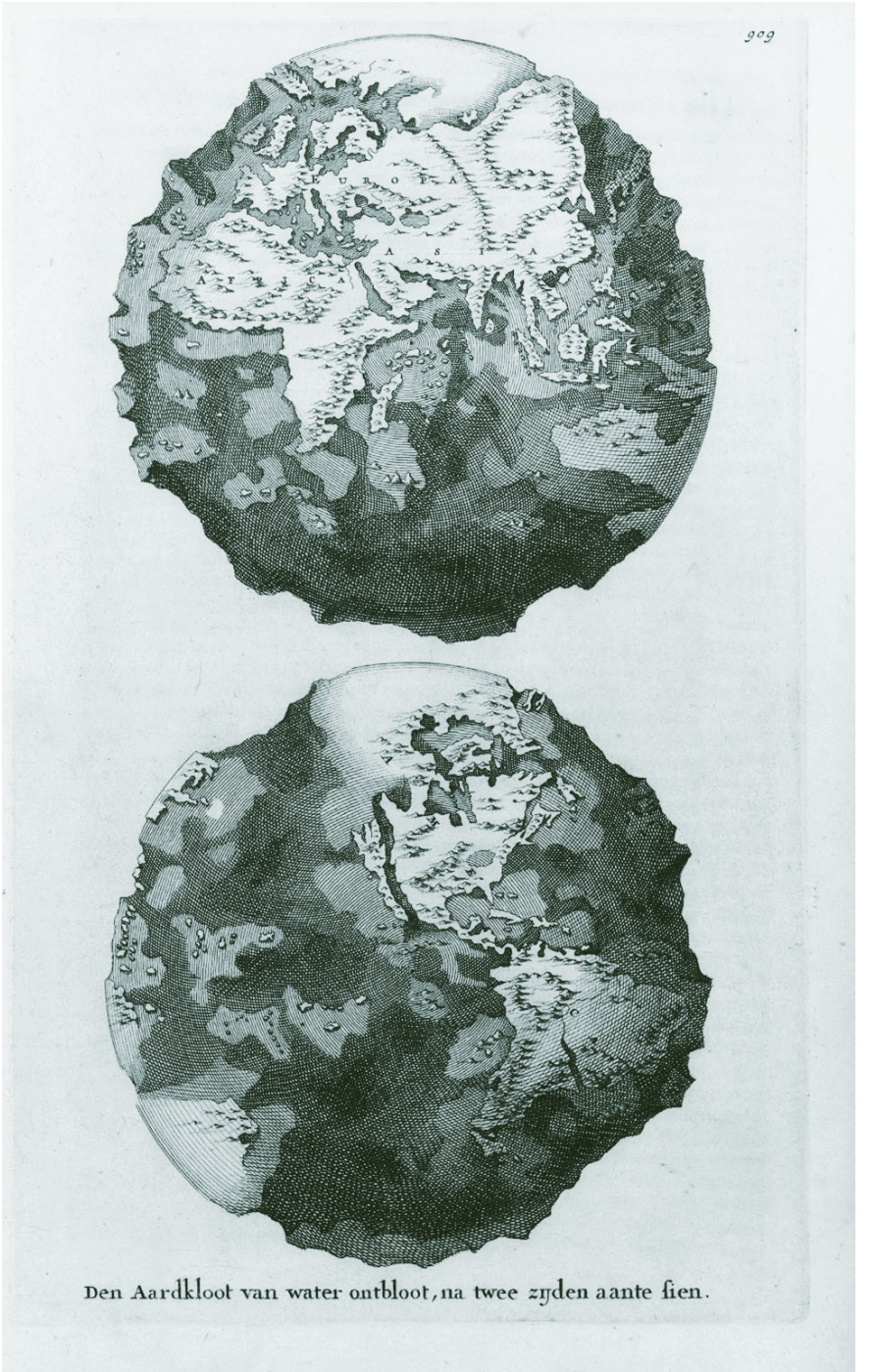


The first map of the lithosphere. Willem Goeree, *Voor-Bereidselen Tot de Bybelsche Wysheid en Gebruik der Heilige…*, Amsterdam 1690.

1) Re-visioning The World: Mapping The Lithosphere

Adam Lowe and Jerry Brotton

Everything is dynamic about the planet we inhabit, from its rotation and trajectory to being orbited. The weather changes from day to day, while the climate changes over a longer time scale. The 'epochs' of geological time are getting shorter as they approach the present. The next is likely to be the shortest of all: the Anthropocene epoch, an age of ever-greater 'terra-forming', as humanity intervenes with the rhythms of terrestrial life on earth. We are a terra-forming species, and though we might dream of making other planets habitable, at our current moment in time we are most active in reshaping our own earth; the planet is now a human artifact in many significant ways. In what follows we offer a genealogy of 'terra-forming', based on our collaborative work that combines academia, artistic practice and digital mediation. It can be read in one way as a contribution to recent cartographic history into mapping of the whole earth since classical times (indeed this is the primary subject of Brotton's recent book *A History of theWorld in Twelve Maps*). However, Lowe's recent work with Factum in realizing various large three-dimensional artistic objects – including maps – also enables us to combine an understanding of cartographic histories of the globe with ways of remodeling the earth, and with it offering a new 'world picture'. As a consequence this essay culminates in a proposal for an installation that we argue will offer a critical and artistic reflection on the emerging Anthropocene moment.

The earth is in flux, irrevocably marked by humanity's depredations, and so is its physical composition. Do we consider the ice on the polar caps to be part of the hydrosphere or the lithosphere? Is the pedosphere a subset of the lithosphere? How can bathometric topographic readings be taken with any accuracy when the lithosphere itself is not stable? The lithosphere is the rigid outermost shell of a rocky planet which is influenced by the dynamic nature of the asthenosphere, the viscous but mechanically weak and ductilily-deforming 'sphere' responsible for the movement of the tectonic plates and isostatic adjustments.

In 1694 Willem Goeree produced one of the first images of the globe without water. It is based closely on a map that appeared a few years earlier in Thomas Burnet's speculative cosmogony *Telluris Theoria Sacra* ('The Sacred Theory of the Earth') but by nibbling away at the edges he produced a representation of

the surface of the globe without water in the seas. Both Goeree and Burnet were concerned with the biblical account of the formation of the planet in Genesis. Goeree attempts to represents the moment before the waters covered the land and depicts the undulations of the ocean floor. Burnett imagined a 'hollow earth' model with all the water on the inside prior to The Flood. However, his calculations reveal that there was not enough water in the combined 'spheres' to cover the entire land mass.

Removing the water and considering 'hard' stuff from which the earth is formed is not new. It has crossed the mind of many thinkers who have thought about the earth as anything other than a resource to be exploited. But mapped onto the outside of a sphere, it remains a concept that does not resemble the world as we experience it. As a result, it cannot be walked over and engaged with, it needs to be *projected*. The globe needs to become a landscape that can be traversed and discussed as we engage with it from different points of view. The act of projecting the surface of the globe onto a rectangle is a representation that belongs in the ethnosphere. From the first clay maps of the earth found in modern-day Iraq dating from the Babylonian period (sixth-century BCE), to Google Earth's digital cartographic mediations, we need to occupy the central point in our own world.

The first systematic attempt to map the whole earth based on Greco-Roman knowledge is actually surprisingly late: it comes in 150 AD, in Alexandria, at the very end of a period of Hellenic culture that had dominated so much of the Mediterranean: Claudius Ptolemy's *Geography*. The book described the Greek *ecumene* ('settled communities'), as well as how to draw world maps, and a gazetteer of over 8,000 locations known to the Hellenic World. Ptolemy made two important assumptions. Firstly, that the earth is a globe, though his focus was only on what the Greeks believed was its inhabited areas. He did not believe the inhabited world extended more than 16 degrees south of the equator. Secondly, he acknowledged that any attempt to map the whole globe onto a flat surface would create distortions and cartographers would have to make compromises. His solution was to offer two methods of projecting the known world onto a flat surface.

His first projection looks like a cone. It has straight meridians that fan out from a point above the North Pole, and curved parallels. Ptolemy pointed out that this method had the advantage of being easier to draw. But it caused serious distortion just south of the equator, where the meridians suddenly turn into acute angles in a clumsy attempt to mimic the earth's curvature. Ptolemy then goes on to offer a second projection. It covers the same space, but represents both parallels and meridians as curved arcs in a closer imitation

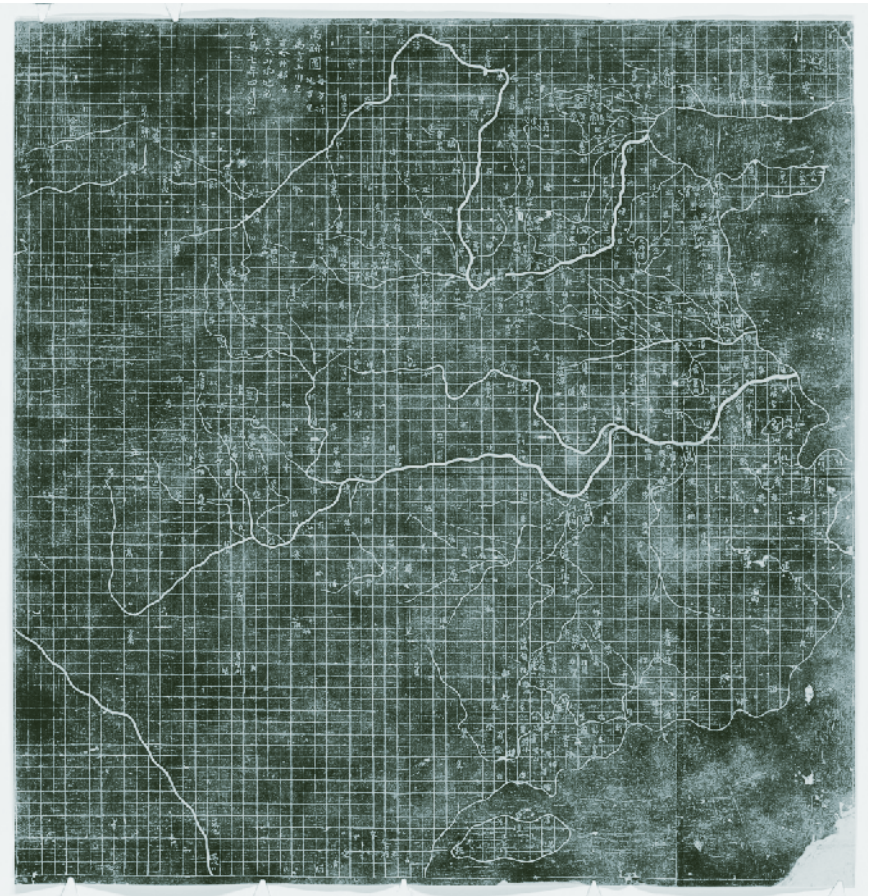
of a sphere. Ptolemy preferred this method, but admitted that it still retained distortions, although his main worry was that it was more difficult to draw curved parallels *and* meridians.

Ptolemy was not terribly concerned with representing the whole sphere. His only interest was in representing the Greek *ecumene*, or the known inhabited world. This stretches from the Canary Islands in the west to Korea in the east, around 60 degrees north (Scandinavia) and 16 degrees south of the equator. This is classic 'egocentric' mapping, working outwards from a culturally defined centre, from which space is imagined as empty and homogenous. Both projections are based on defining principles of Greek geocentric and geometric belief (inherited from Aristotle and Euclid) that valorized the circle as the perfect plane figure, and the sphere as a perfect solid. As a result the world 'out there' can be mapped according to a purely geometrical template, using a graticule of latitude and longitude, within which it is possible to plug in locations, a process which is infinitely extensible.

Other cultures used different forms of 'subliminal geometry' to imaginatively abstract the whole earth. In early imperial China, the foundational cosmological principle was that of the nonary square. This was divided into nine squares to make a 3 x 3 grid. The nonary square was used in the allocation of agricultural land, and the number nine shaped most elements of Chinese culture (like fields of heaven and divisions of the body). This found its way into regional and ultimately world maps, like the 'Yu Ji Tu' map of China, composed of a cartographic grid of 5,000 squares, each side representing approximately 50 km. These maps influenced later Korean examples, like the Kangnido Map. Their orientation is to the north, based on imperial ideology: the emperor looks 'down' (or 'south') on his subjects who look 'up' ('north').

At the same time the rise of the theological geography of Christianity and Islam showing the whole earth abandoned 'geometry' in favor of narratives of faith and salvation. In Christianity this led to world maps with east at top. In Islam many (not all) world maps were oriented with south at the top, because most converts to Islam lived north of Mecca, leading them to regard the *qibla* or sacred direction as due south. The rediscovery of Ptolemy and its application to the period of European seaborne expansion and discovery led to a whole range of global projections which struggled to accommodate the geometrical legacy of the Greeks and Ptolemy in particular.

Martin Waldseemüller's 1507 world map is celebrated as not only the first known map to name 'America', but also the first to represent the Pacific Ocean. Its title is a 'Universal Cosmography according to the tradition of



'Yu Ji Tu' ('Map of the Tracks of Yu), 1136.

Martin Waldseemüller's map of the world, 1507.

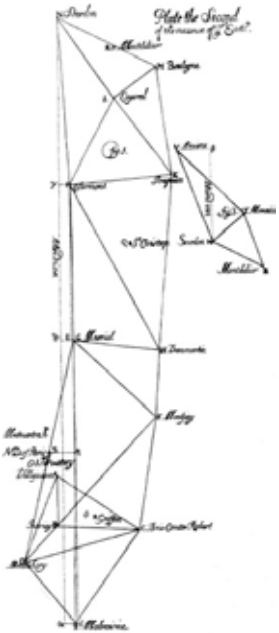
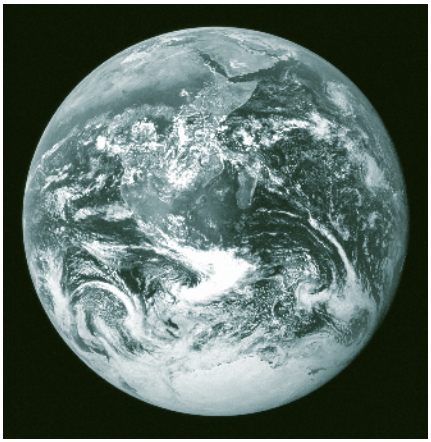


Diagram of triangles, by Jean Picard, used to measure the meridian south of Paris, *Le Mesure de la Terre,* 1671.

Ptolemy and the voyages of Americus Vespuccius and others'. Although Waldseemüller knew that the *content* of Ptolemy's *Geography* was wrong – Vespucci's discoveries proved that – he still returned to the *form* of Ptolemy's projection to frame his new map, a modified version of Ptolemy's second projection, which Ptolemy said was better for retaining the shape of the globe. The result is an awkward distortion of the meridians to the south, and even greater distortion in the far west and east. Waldseemüller tried to force the new discoveries into the frame of Ptolemy's 1500 year-old methods, stretching them to breaking point.

The Greeks had revered the circle, the Chinese the square, and by the late seventeenth century it was the application of the triangle that, as far as the French were concerned, would ultimately make the earth's surface knowable. The development of surveying methods using triangulation in France in the late seventeenth century led to the great national surveys of first the Cassini dynasty of several generations of mapmakers, and then the nineteenth-century Ordnance Survey in the British Isles.

If there is one moment we can identify as capturing a shift in this imaginative perspective, then it must be December 1972, with the release of a photograph taken by astronauts on board NASA's Apollo 17 spacecraft. Here, finally, was the subject of geography, captured not by a map or a geographer, but an astronaut using a Hasselblad camera. The photo of the fragile 'blue earth' floating in space is usually seen as inspiring the environmental movement. But we can see now that it also anticipated the emergence of another very new cartographic initiative: digital mapping, driven by the availability of geodetic data of the earth, already being captured by satellites and used in military intelligence, but by the end of the twentieth century commercially available to computer software companies with the capacity to build applications like Bing, Google and Apple Maps. Rather than struggling upwards through layers of geography to rise above the earth in an act of transcendence, these geospatial technologies zoomed down on it, with techniques characterized by miniaturization, compression and the annihilation of distance.

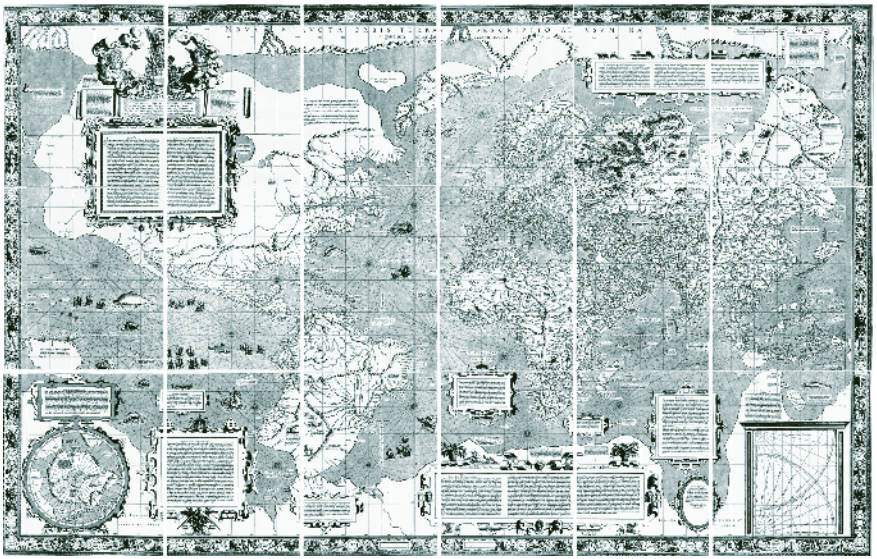


The first photograph of the whole earth, taken by the crew of Apollo 17, 1972.

'Eye of History' series, painting by Marc Quinn, 2012.

Google grasped earlier than anyone else the synergy between the digital representation of the globe and globalization. Once they began to see that over a third of all Google searches contained explicit geographical content, they began 'monetizing' mapping as never before, by making digital geographical data *fungible* (capable of quantification and mutual substitution with other commodities). So a typical online map can include: direct advertising; search advertising; paid listings; payment for sales point display; Payment for Application Programming Interface (API, enabling the map to be displayed on a third-party website); and various other syndication and licensing to third parties. In 2007 Michael T Jones, Google's Chief Technology Advocate claimed that Google 'inverts the role of web browser as application and map as content, resulting in an experience where the planet itself is the browser'. But of course when conducting such a search, the user is not just consulting Google's data, they are adding to it: and that's the kind of fungible data that advertisers will pay for.

We could say that the map is now mapping us. This is exemplified in a series of Marc Quinn's recent paintings, 'The Eye of History'. Are we looking *out* or *in* at a world of global surveillance and personal data collection? This is also a globalized world defined by parochialism rather than geographical expansiveness. The mantra of geospatial technology is Waldo Tobler's First Law of Geography (1970): "Everything is related to everything else, but near things are more related than distant things." Globalization valorizes what is near to us, because the law of demand suggests that we are more likely to buy things that are near to us rather than further away. And as if to underline this fact,



Gerald Mercator's map of the world using his famous 1569 projection.

what is the first thing most of us do when we use an online mapping service? We zoom in on what is near at hand, usually our own home.

We have become over-familiar with projections that put the north at the top and the south at the bottom. There are many different ways of projecting the globe onto a flat map, but what triumphed was Mercator's method.

Mercator offered a projection that enables navigators to sail east to west, so he 'stretched' the map from north to south, creating his infamous distortions. From where Mercator stood, the world is driven by an east-west commercial and navigational axis, so north comes at the top and south at the bottom, influenced by magnetism. Mercator's global projection was challenged explicitly in 1973, when the German Socialist Arno Peters produced what he called an equal-area world map. Peters accused Mercator's map of being imperialist and Eurocentric. His method offered a different way of projecting the globe onto a flat surface. Its most important element was the equality of surface area. This, Peters believed, put the 'Third World' on an equal footing with the 'First World'. But just like Mercator, Peters magnified some things at the expense of others. The poles are still distorted to infinity. Peters showed that no global projection could ever be neutral, or completely accurate.

The distortions caused by both Mercator and Peters projection reveal a great deal. The polar ice caps are stretched to infinity losing both their shape and sig-

nificance. The region occupied by the developed and trading world corresponds to 'eye level' sitting comfortably in the top third, disproportionately large and dominant. The Mediterranean occupies the central position. This was a comforting and familiar position for the European cartographers who were primarily serving the needs of the trading nations. There was nothing of commercial importance in the Polar Regions; their gross distortion was a small price to pay for the prioritization of economic imperatives.

Now our needs are different. The icecaps are both important for the speed at which they are melting and for the minerals and resources they hold. Taking an equi-rectangular projection and revolving the point of view so that only sea occupies the zone at the top and the bottom changes our point of view in significant ways. Antarctica appears on the right of the map, a significant landmass with a clear relationship with Australia. If the vast thickness of ice were removed, the two landmasses would form one surface as they did before the movement of the tectonic plates drove them apart. The familiar shape of Africa has become unsettlingly warped but it has assumed a size that reflects its physical importance. The relationship between Europe, Russia, Canada, Greenland and Alaska around the North Pole makes it clear why this is rapidly becoming a disputed zone.

Every representation is partial and of its time. The projection produced at Factum Arte in 2012 is an equi-rectangular projection like Mercator's. North is no longer on top, south no longer at the bottom. This is a 'terra-centric' projection that mainly stretches water to infinity at top and bottom. The movement of Argentina and Chile away from Antarctica is alienating to the modern eye; Japan is harder to identify as it moves towards the top of the map; and Tristan da Cuna (at the bottom) and Midway Atoll (at the top) have effectively disappeared as they undergo an elastic stretch beyond the bounds of our ability to identify them. This projection may seem initially unsettling, but this is part of its purpose, as well as providing a more compelling image of our world in the 21st Century than the familiar 'north-up' projection.

Like many maps it uses tone to express information. In this case white represents the highest points on the map and black the lowest. Mt Everest is the whitest point, the Mariana Trench the blackest - between these two points a gradation of tone represents height. Current sea level is shown as slightly lighter than mid-tone grey. The topographic data is accurate to one measured point every 500 meters and the bathymetric data is accurate to one measured point every kilometer. Unlike in most maps there is no water in the oceans. This is a map of the 'hard stuff', not the fluid stuff. The X and Y-axis are at the same scale but the Z-axis has been magnified 100 times. The physical map reproduced here has

been made by carving a gradated block of pigmented plaster on a CNC router, but it could have been built in layers using an additive process of cut paper with contour lines to describe the changes in height. While this is in keeping with the language of cartography, it was decided that the subtractive process resonated better with the way the earth was formed.

During the research and development phase there were many influences that conditioned the final form of both the projection and the resulting relief map: the giant silver map made by Al-Idrisi (and since lost) for Roger II of Sicily in the twelfth century; James Wyld's Great Globe which stood in Leicester Square from 1851-1862; Elisée Reclus's proposal for the World Expo in Paris in 1900; Cyrus Reed Teed's compelling arguments for a Hollow Earth in the early twentieth century; Tom Van Sant's famous map of the world without clouds; the remarkable scale-models of fortified French cities made in the seventeenth and eighteenth centuries; Herbert Bayer's World Geo-Graphic atlas; Biosphere II; the stories of Borges; and new discoveries in neuro-science and geospatial technologies.

However, there is another important factor. The emergence of 3D input and output devices is changing the way we think about and materialize models of our environment. This is a new era in which photographic image making and map-making have merged. The world out there can be recorded as a three-dimensional form as easily as it is flattened into a picture plane.

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CARTOGRAPHIC AMBITIONS

In early 2012 the exhibition *La France en Relief – Chefs d'oeuvre de la collection des plans-reliefs de Louis XIV à Napoléon III* was held in the Grand Palais, Paris. It contained sixteen of the 1:600 scale models that are normally displayed or stored in the attic spaces of the Hôtel des Invalides. They are models of the fortified cities of France and their primary purpose was military. But they provide a remarkably accurate insight into how these towns looked at the time they were surveyed. The largest model is Cherbourg and its surrounds – 160 square meters of highly detailed modeling. Linden wood buildings with papier-mâché decoration, shredded silk vegetation, sifted soil and oil paint are some of the materials that animate this Lilliputian world. At the exhibition's entrance was a detailed map on the floor of France. As people walked in they could be watched, circling around, orientating and then homing in, kneeling on the floor to find the small black rectangle that marked their home – a pre-digital Google Earth. Google Culture was involved in the exhibition, providing multi-screen displays,

but it was clear that the virtual could not compete with the physical in this instance. Factum Arte assisted Google Culture in an attempt to make a miniature 'Google Earth' from the models. The technical challenges were complex and a panoramic photographic system was used, mounted onto a linear guide. Multiple photographs were taken, focused at different distances – a process known as focus stacking. Only the sharpest pixels are selected, using software called Helicon Focus in order to define the plane of focus for each focusing distance. Once you can identify the exact position of both the plane and the edge of the object, a 3D model can be constructed - effectively laminar building in reverse. As 3D printing technologies develop and become familiar the metaphors of additive and subtractive 'materialization' processes enter common usage and focus attention, changing the way we think about the formation of the world itself.

> The planet writes some of its most important history through long sequences of layers of sedimented rocks. Where the two sets of layers meet, one upon the other, geologists find unconformities. In 1787-1788 the wealthy Scottish farmer James Hutton searched for these junctions between layers to prove his theory that the earth has seen eternal cycles oscillating between periods when the strata were laid down in ancient sea beds and periods when inner heat and pressure forced them upwards and changed their direction.
>
> Simon Schaffer, *Unconformity and Entropy*.

Geological time stimulates the imagination. During the 1790s, Sir James Hall, an atheist, democrat, and friend of the young Napoleon Bonaparte ran a long series of trials to show how Hutton's processes of sedimentation, erosion and volcanic uplift would work in practice. He started with lava and with limestone heated and reconstituted in the furnace of an iron foundry (the furnace blew up at least once). Then Hall mimicked strata formation by putting vast weights on layers of clay. Finally, he claimed in a famous paper of June 1812 that huge tsunamis produced by sudden upheavals of the ocean floor could have reshaped the earth's surface (especially round Edinburgh) and carried vast boulders across it. In 1812 he wrote: "I have made a few experiments lately with explosions of some pounds of gunpowder under water, in order to try the effect of sudden impulse. In every case, a very manifest heave of the surface was produced at the instant of the explosion, and at that same instant, a very smart percussion was felt. This was always followed in two or three seconds by a distinct and separate

agitation of the water, occasioned by the rising of the permanently elastic gases produced in the explosion."

Laminar building is never straightforward and the geological time scale relating stratigraphy to time is beyond normal comprehension. In 2016 the international Commission on Stratigraphy will decide if we have entered a new geological epoch, the Anthropocene. If they approve the change the Anthropocene epoch will succeed the Holocene Interglacial Period that began 11,500 years ago. When did the Anthropocene epoch start? This will be a point of heated debate. Perhaps it started in Ur in present day Iraq, or with the industrial revolution in Coalbrookdale or with the Apollo17 photograph of 1972 taken from a known position in space – the most likely contender is the dropping of the first atom bomb on Hiroshima on August 6th 1945 – traces of this explosion can be found the world over – a local event with a global fallout. What seems likely is that the Anthropocene will be the shortest geological timespan on record. Traditionally the change from one era or epoch to another has been celebrated by driving a gold spike into the exact point that bears witness to the exact moment of change. But the monument to the Anthropocene may be less physically defined – negotiations are already ongoing.

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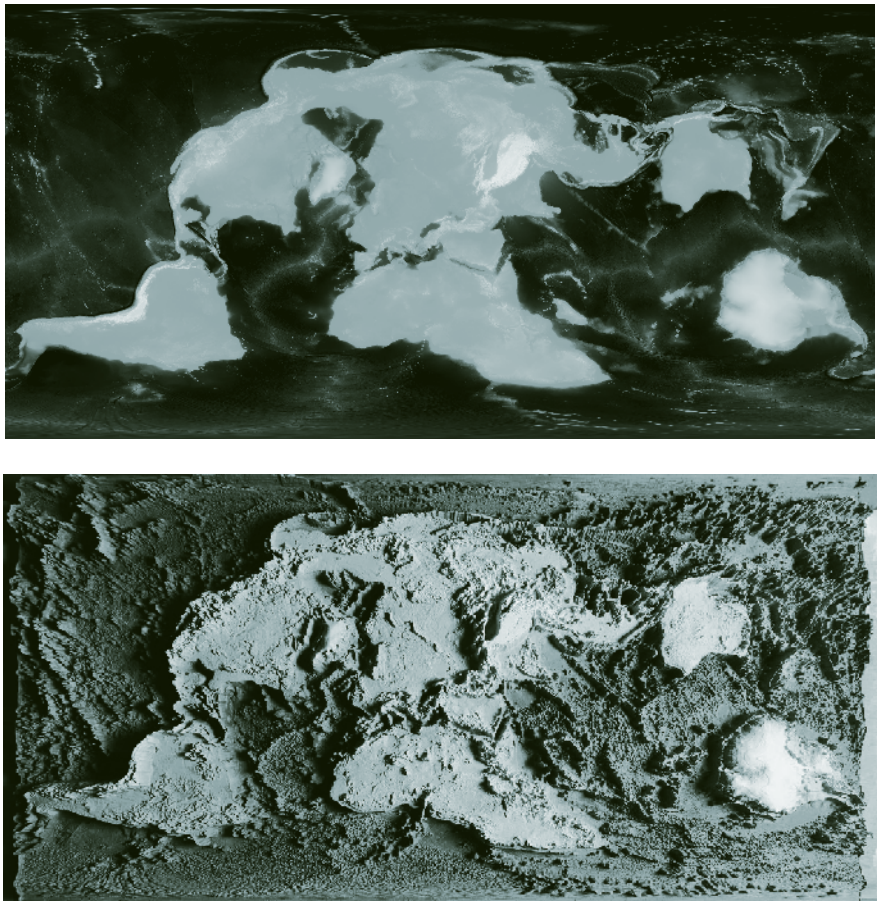
THE GLOBE AS A MODEL OF ITSELF: THE REMOVAL OF THE HYDROSPHERE.

The construction of a relief map of the surface of the globe without water is our attempt to address the aesthetic dimension of such an act while dissolving distinctions between art and science. It will be transformative and visually compelling; its scale is an important part of its sculptural form. While it is a mathematically accurate map in terms of both the topographic and bathymetric data, its aims are not limited by the rules that govern scientific research and statistical analysis. This is a visceral and poetic proposal that aims to provoke a sublime reaction in which questions and reactions 'well up' and physically and emotionally shape our perception of the world. It will be dynamic. As the water slowly covers the surface in simulation of the great flood, it will hopefully suggest many applications and provoke a surge of conversations and ideas.

After several years discussing, presenting and refining the idea, the hydrophilic world is finding its form. It has only recently become possible to merge the bathymetric and topographical data at high enough resolutions to be meaningful. Many scientists need a relief map of this resolution as an experimental



Terra-centric equi-rectangular projection of the map of the world. Digital (top) and routed (bottom).

tool and many artists are imagining its poetic potential. Changing the orientation, exaggerating the relief and removing the water confront the viewer with a world that initially appears unfamiliar. The coastlines and boundaries everyone normally assumes are gone. They are replaced with an alien, spiky terrain that visitors can walk around, re-engaging with a world they thought they knew, but had forgotten.

The first scale models in three dimensions have already been completed in Madrid. The land-centric equi-rectangular projection has been carved into a tonally layered block of plaster at 50 x 100 cm. The highest points are white. They are 8 cm above the darkest points that represent depth. In this model the relief of the surface has been exaggerated by a factor of 100 in order to draw attention to the relief on the surface of the planet. With no exaggeration, when represented

Routed equi-rectangular projection of the map of the world with the z axis (height) exaggerated 100 times.

at this scale, the surface would be as smooth as a billiard ball. The scale-model has been carved on an accurate CNC routing machine. The act of making a scale model focussed many conversations about the right materials, the ideal distortion of the Z axis, and size of the installation, the most effective way to introduce the water and the most imaginative approach to dynamic mapping that can be projected onto the flooded world.

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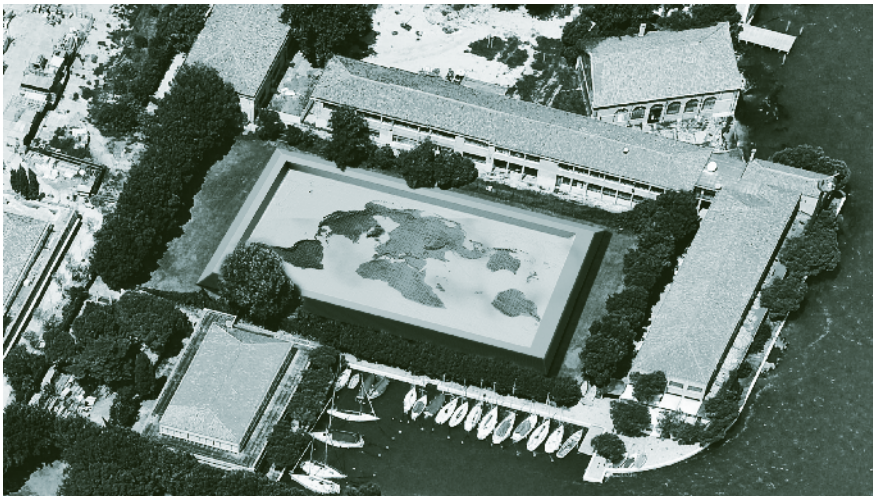
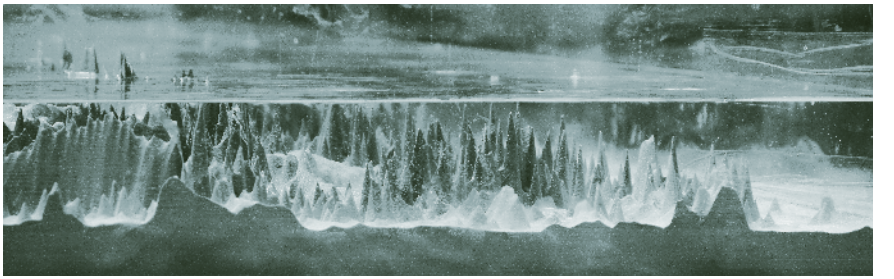




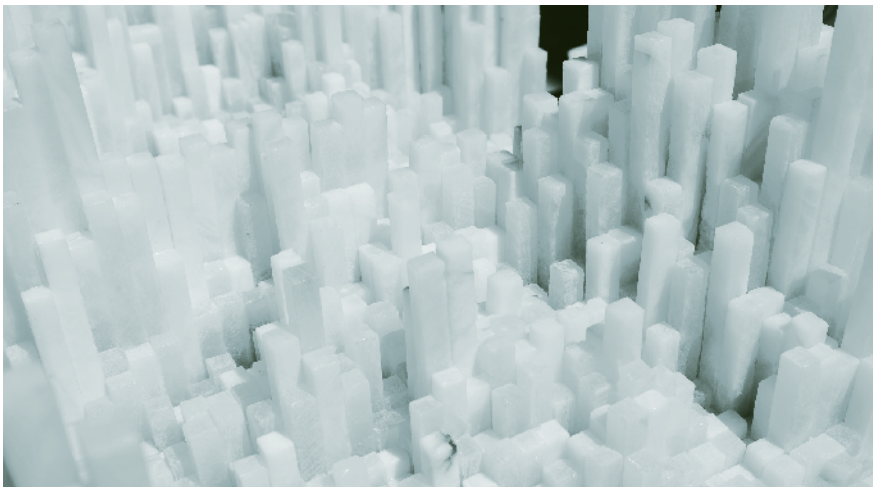
Top and Middle: Terra-Forming montage. The proposed site in the Fondazione Giorgio Cini on the island of San Giorgio Maggiore, Venice.
Bottom: A detail of the 2 x 4 meter model that can be flooded and drained. The model was made for the *Anthropocene Monument,* an exhibition curated by Bruno Latour and Bronislaw Szerszynski at Les Abattiors, Toulouse, October 2014

THE PROPOSED EVENT

It is proposed that the relief world map will be installed on the Island of San Giorgio Maggiore in Venice. It will be made in alabaster and will be 20 × 40 x 3 meters. It is intended as a temporary installation. The water of the lagoon will be slowly pumped onto the flattened earth over a period of six days until, in a moment of sublime intensity, the tip of Mount Everest is covered and the relief surface is only partially visible under the murky water. There will be points of drama and interest, such as when the current sea level presents a reassuringly familiar world. But there will be other moments that alarm and disturb, as Bangladesh or Siberia disappear. The cycle of flood and recession will continue at a regular pace. This poetic act alludes to the emotional debate about climate change, while revealing a shocking new image of our globe seen from above. When full of water the vast sculpture will be used as a screen, and videos, both factual and artistic, will be projected onto the surface of the lagoon water. Mapping has concentrated on things that are fixed and don't move but increasingly it is impotant to map dynamic things like the salinity of the oceans, the temperature of the oceans at different depths, movement of people, the disappearance of some species and the rapid growth of others and the movement of the weather. It will then drain over a two-day period and the cycle will repeat until the end of the installation period.

The terra-forming relief map is a platform for art and politics, education and innovation. The performance can be seen from ground level as you walk around the structure. It will be filmed from a camera fitted on the bell tower of San Giorgio and from a balloon tethered above the map. The image of the flood will be relayed onto screens and broadcast live over the Internet in an event that will be designed to capture and hold the public imagination. Public links to different cities will be established. Social media will be used to communicate the dramatic nature of the installation. Some moments will have more impact than others. These will be published in advance and communicated to an international audience. Such communications would include the time the flooding begins, historical information (for example, the height of the sea level ten million years ago), the current level, and future projections. With the correct planning the dynamic and transformative nature of this installation has the potential to attract and capture the imagination of millions of people around the world.

Terra-Forming - Engineering the Sublime is the title of an exhibition that we are proposing to accompany the world map. It will contain objects, images, installations,



A detail of a test made from 1.5 cm sq alabaster rods. The first square meter of a projected world map of 20 x 40 metres with the Z axis exaggerated 100 times.

videos and cartographies. It does not propose simply to re-present our environment: rather, it insists on the processes through which it is performed and made.

It will present a journey through time and space to see how our world has been imagined and built by artists and scientists, saints and cartographers. The aim of *Terra-Forming* is to present a re-evaluation of terrestrial representations and interventions and show that in times of change aesthetics and politics can work together.

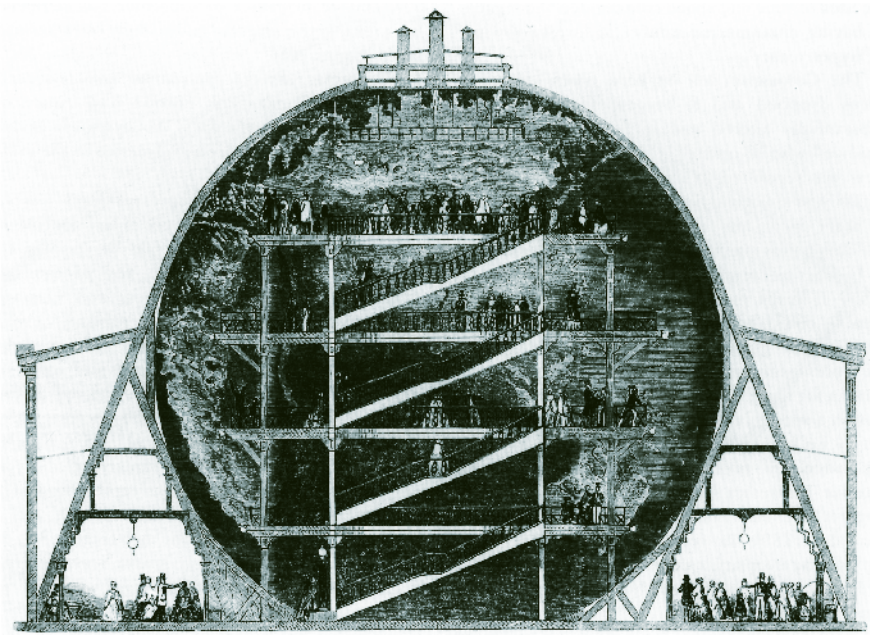
Taking the globe as its starting point, *Terra-Forming* will provide a creative response to the problem that has bedeviled creative minds for centuries: when faced with the staggering size and scale of the earth, how do we present a comprehensive view of the world without distorting it? We know that the earth, just like the human face, is something that exists; we look at both every day, but we can never truly 'see' ourselves, or the world in which we live, without graphic mediation. For mapmakers, mediation produces some form of abstraction. The earth is reduced in size and distorted according to particular mathematical projections, religious beliefs, or political ideologies. The choices we make in representing the world are as much artistic and aesthetic as political and ideological. *Terra-Forming* will provide both an historical and conceptual response to the ways in which we have, and in future might shape the world.

The exhibition will explore how in artistic responses information might be condensed, rather than abstracted, providing new understandings of the global and the local, offering a more hopeful way of preserving our shared spaces. It will engage (across time) with conceptual responses to the way we shape

our environment and will offer some thought provoking comparisons. A reconstruction after the *Jerusalem Chapel* in Santa Crocein Gerusalemme (Rome) will return it to the way it was described by a sixteenth-century observer with its floor and walls covered with earth gathered at the site of the crucifixion by Saint Helena, the mother of Emperor Constanitine. This early example of terra-forming will be juxtaposed with Robert Smithson's earth work 5730 - *Red Earth from Hebron Placed at Mt Moriah*. While Saint Helena transported the earth reputed to contain the blood of Christ from Jerusalem to Rome, Smithson transports the soil with which God formed man to the navel of the world, where tradition has it he moulded man.

A selection of Smithson's terra-forming acts and entropic interventions (in photographic and documentary recordings) will be juxtaposed with the terra-forming acts of the Icelandic community on the Island of Heimaey. The 1973 volcanic eruption is a classic example of the sublime, an epic struggle between man and nature. With heroic effort the people of Iceland saved the town of Vestmannaeyjar and the country's most important fishing port by redirecting the flow of the lava. For days and nights they sprayed cold sea-water onto the face of the lava flow and not only averted disaster but also created a new sea wall to protect the harbour – these actions were recorded on still and moving film.

Images have the potential to pinpoint, articulate and focus matters of concern. The imperative behind *Terra- Forming*, is change: changing priorities, changing values, and a changing relationship with our environment. It will be an exhibition of how we map, project and mediate diverse points of view, creating different forms of realism that connect us to our environment, both local and global – It is an exhibition about representation and its transformative function. The exhibition will celebrate the artistic fabrication of worlds – exploring the importance of art at a time of profound global uncertainty.



James Wyld, 18.9 meter relief globe, London 1851.

WYLD WORLD

The great imaginative cartographic projects have often captured the public imagination. The model built in 1851 at 18.9 meters in diameter in Leicester Square by James Wyld is a good example. It was originally intended to open in time for the Great Exhibition but the construction proved complicated. The sphere, almost 19 meters in diameter was made from cast-iron sections that bolted together. The relief globe on the inside of the sphere was modelled in plaster of Paris with the mountain ranges and rivers all to scale. The hydraulic platform that lifted people up and down to see the detail of the map was an example of Victorian engineering at its best. All of this was housed in an elegant building – a temple to cartography in the heart of London. When it did open it became an instant sensation attracting paying visitors in large numbers. The complicated nature of the lease led to the creation of the Cosmos Institute and hopes of opening a national geographic and ethnological museum. But these failed and the globe was demolished and sold for scrap in 1862.