

“FIELDS OF IMAGE. GRAPHIC REPRESENTATIONS OF FACTS AND THOUGHT”

MORPHOGRAPHY

Analysis and creation of forms. Dynamic configurations of the creative act in both nature and art. Pursuit and recording of all types of flows, transformations, forces.

El sistema de barrera-laguna de Louro (The Louro barrier-lagoon system), 2012

Photograph

XM1 Group

Department of Marine Sciences

Marta Pérez-Arlucea and Rita González-Villanueva

University of Vigo

The study of coastal environments is extremely important because of the coast's general scenic, socio-political and economic interest. Barrier-lagoon systems like the one in Louro have an additional interest for their ecological value. Most of these systems belong to special Protected Areas according to the laws of different countries. Mount Louro and Louro Lagoon are a Natura 2000 Network SCI Protected Area and was classified as a national point of geological interest (PIG C-116). Knowledge about how the area works in terms of different parameters is crucial in order to correctly manage it. Louro Lagoon experiences substantial variations in water level which depends on the state of the sporadic channel that opens through the barrier (dune/beach system). This channel is controlled by the marine climate and storm conditions. Rains and evaporation control the level of the lagoon when the channel is closed (good weather). Water circulates freely in the lagoon and the water level varies with the tides when the channel is open (storms). [M.P.A. and R.G.V.]

Loreto Blanco Salgueiro

Atlántico (Atlantic), 2014

Illustration on paper and methacrylate on dibond/video animation

This work belongs to the *Seres de la Naturaleza (Beings of Nature)* series, developed through mirror images that create visual palindromes. I start with photographic images of nature that I then continue developing through computer programs. These images become points of departure for a journey inward, on one hand deepening the way we look and interact with nature and the natural environment while offering a path to our unconscious by bringing out hidden aspects of our self on the other. In *Atlántico (Atlantic)*, ocean beings are introduced that make us face our fears and the masks we have created to not see them. The purpose of the journey is to release emotions that weigh us down. Through this series I suggest a new connection with nature which in turn implies a new intercommunication with our own nature, our purest and most primal essence, our human condition. [L.B.S.]

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Fernando Casás

***Sem título (Untitled)*, 1977**

Wood eaten by termites and graffiti on wood eaten by termites

***Reciclo 24 (Recycle 24)*, 1978**

Wood eaten by termites on wood

These two pieces by Fernando Casás belong to a series that is mainly composed of materials eaten away by termites and other insects that make seemingly illegible maps in the wood in their search for food and procreation, their wood-transforming processes starting with an order pre-designed by the artist.

Anne Heyvaert

***Replis Selon Plis*, 2014**

Drawing, photolithography, illustration, digital printing paper

Record-double / transformation-unfold

- 1: The recording (perceptive method) of the “folded paper” motif is drawn.
- 2: The image is recorded on a matrix (engraving or lithograph).
- 3: It is printed on its tautological support, the paper. The real image is doubled.
- 4: The image obtained is recorded, this time by a scanner (numerical transformation, pixelated).
- 5: The unfolding kaleidoscopic (mirrors) is recreated through computer techniques: the fragmented image multiplies. The initial image is transformed, the folds are unfolded to infinity, creating fascinating geometric shapes. The unfolding is transformed as the image fragment is rotated.
- 6: The “unfolding kaleidoscope” is digitally printed on paper with a large-format printer (plotter). Different versions are created according to the rotations.
- 7: The printed paper is folded following the drawn record (shaded) of the represented folds. The recorded folds are fragmented, thus the physical fold will cross blank areas, creating new shadows (real) of the real folds. A degree of confusion between the drawn folds and the true folds is created. [A.H.]

Elena Lapeña

Serie Corintia (Corintia series)

***Allium sativum*, 2012 / *Laserpitium siler*, 2013 / *Prosopis juliflora*, 2012**

Photographs

Corintia is a journey backwards, in which nature seems to imitate art, *natura artem fingit*. In this line of research I looked for the Mycenaean, Byzantine and Corinthian in vine shoots, lilies and acanthus. Art in nature, botanical forms where the law of minimal effort, simplicity, geometry, naturalness and a profusion of Renaissance and Baroque details are observed. Inflorescences, stems, corolla become cylinders, cones and spheres. Natural paradises become artificial paradises. I selected those plants that are not bought and sold, the most despised, those that grow in roadside ditches and vacant lots, the weeds, thorns, thistles; at first glance insignificant proletarian beauties that, inviting contemplation and reflection, appear in art and literature. The thistle that Dürer held in his hand in his self-portrait in 1493 or the asphodels reminiscent of Greece, Homer, Book XI of the Odyssey.

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I isolated the plants on uniform or empty backgrounds in these photographs in the manner of eighteenth-century herbalists. The plants thus transform into ordered and solitary architectures, freed from the uncertainty and chaos of nature. [E.L.]

Mónica Ortuzar

***Miembro clan (Clan member)*, 1999**

Blue Indian ink on paper

This piece is composed of sixteen 33x29, 2x3 cm frames. Framed inside are sixteen papers with the lyrics of the most popular song at Bilbao festivals printed in Braille. I brushed blue ink unevenly over the most of the paper and on sixteen of its infinite possibilities. The result are surfaces unevenly-covered in blue ink that always leaves the punched holes projecting like small chimneys through which the light of the white paper in the background shines through in the same tone as the original Braille paper.

Perejaume

***Pantalla (Screen)*, 2007**

Video installation

Courtesy of the Joan Prats Gallery, Barcelona

***Cartografía de L’Onatge Marí (Mapping of L’Onatge Marí)*, 2007**

Digital Animation

Courtesy of the Joan Prats Gallery, Barcelona

In these two videos by Perejaume the interest the Catalan artist has in nature can be noted. Nature, understood in the manner of the first German Romanticists or Goethe himself, as an immense living and flowing organism of which man himself forms part as a creature capable of visualising and representing these dynamic forces and flows through which the world expresses itself and unfolds. In *Cartografía de l’onatge Marí (Mapping of L’Onatge Marí)* we discover the persistence and variability of ocean waves that create mutations and feelings with their age-old rhythm and endless successions, where an interplay of emotions and different synaesthesia takes place: the disturbance of air, the strength of the rising mountain, the imbalance of a crystal that becomes liquid.

Pantalla (Screen) is a projection on a stretched white fabric whose folds change into shades of whites and greys with the wind. Curves, straight lines, the static and dynamic, the snap of the fabric as it is whipped by the wind, refers both to the wind and the sea, both the cast and the tissue, silence and natural noise. The world becomes an enormous organ through which air continuously circulates, giving voice to all types of holes.

Both pieces condense Perejaume’s ethereal and earthy poetics and his understanding of the visual whole as a legible symbol, more or less pronounceable and interpretable.

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Ignacio Pérez-Jofre

***Lluvia (Rain)*, 2014**

Ink on paper

All my recent work is based on the direct observation of a fragment of reality and its translation into a painting or drawing, which organically led me to work in the urban space. But there are factors of weather that make it difficult to work when painting outdoors: cold, wind, rain. I recently decided to make this inconvenience work in my favour, making a virtue of necessity, as they say. So I began to work on this series of drawings of pedestrians and urban elements made *in situ*, in the rain, using Indian ink on paper, so that the raindrops left their mark as they fell over the painted surface, diluting the ink. The scene is thus depicted in a dual manner: through an iconic procedure that reproduces what can be visibly seen, and an indexical procedure through the trace that the physical action of the rain leaves on the painting.

The information of the drawing as mimesis is amplified by the record of the meteorological phenomenon. The images of the pedestrians, some with an umbrellas and others without, of banks, cars and lampposts are transformed by raindrops that partially blur the image, leaving sharp shapes and diffused blots. The interaction between both modes of representation is crucial for the meaning of the work. The iconic drawing is the result of observation; it is descriptive and alludes both to the surrounding reality and the way in which that reality is perceived by the subject, lending a definition and connotation of control. The marks from the raindrops introduce a random factor; the drops fall in unpredictable parts of the drawing and as its author I must accept this uncontrollable form. The weather conditions also create different patterns according to rain's density and intensity. The result is a tension between control and disorder, between determination and chance. Moreover, the work refers to this performative action, the strange act of drawing in the rain, through which it was created. [I.P.J.]

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GEOGRAPHY

Measurements and changes of scale. Study of the coast, reliefs, volumes. Geographical expeditions. Perspective.

Román Corbato

Playa ordenada (Ordered beach), 2014

Wood and sand

Once the basic needs of finding food and crucial information necessary for survival are fulfilled the act of walking becomes a symbolic action that allows man to know and inhabit the territory through which he moves. Thus, the idea of collecting and accumulating objects found on the land is developed. In this case, sticks from different beaches on the Galician and Asturian coasts record the artistic and aesthetic experience of walking, of crossing land, as an instrument of knowledge and symbolic interpretation of the landscape. There is an interest in knowing and understanding the landscape through which one walks. This knowledge is obtained by ordering and cataloguing the evidence gathered on walks on different beaches. [R.C.]

Christian García Bello

Codo, linde, ocase (Beside, border, sunset), 2014

Sackcloth, wood, granite, glass, salt

Codo, linde, ocase (Beside, border, sunset) arises from an investigation into the idea of landscape and the concept of horizon. Based on the landscape as something that happens in the eyes of the individual starting from a given spot, my hypothesis is found on a relationship between the Galician landscape, its relief, a sense of nostalgia and the fact that we only find a horizon that is flat and flush with the sea, making it unreachable. To create this installation I began my research in a specific spot: the PO-552 road between Baiona and Camposancos. With a marked North-South direction, it walks parallel to a horizon that is imposing and vast in the west and enveloped by the idea of boundary in various dimensions: the border between Galicia and Portugal, the border between land and sea, and the boundary between what we see before the horizon and what the horizon hides from us. This idea of border or threshold — the central visual and etymological pillar of this piece— also envelops the work itself, as it is found in an isolated spot, a balcony which is activated by the elements of the installation itself.

The landscape of the area on which this piece is based is geologically dominated by the abundant and mountainous presence of two-mica granite. Many of the walls between plots in the area are constructed with these types of rocks and the root of the name of the town of Camposancos (Campos-en-codo or “side-by-side-fields”) is a reference to the nearby mountainous terrain and the sea, represented in the installation by both the woollen sackcloth material —a material with extensive biblical and traditional connotations— and the 36 grams of salt, which represent the concentration of salt per litre in the Atlantic Ocean itself. In *Codo, linde, ocase (Beside, border, sunset)* I use a common strategy of my work: I take specific elements from the landscape and I use them as visual rhetorical figures, trying to articulate them in the direction marked by my research. [C.G.B.]

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Fran Herbello and Manuel Sendón

***Mil ríos. Expediciones al Verdugo (A thousand rivers. Expedition to Verdugo)*, 2013**

Photographs, text and artistic intervention

Why reduce the rivers' landscape to photographs taken from river banks? The landscape can be more than a static visual representation. The most important element in *Mil ríos (A thousand rivers)* is the river's experience; photographs are part of that experience, the graphic representation its footprint, the logbooks the blog and the exhibitions its representation. In Vigo a miller carved the route travelled on the wall, image became light in Cambados by recycling a large light box and a resin object parallel to the wall resulted in Ferrol.

For years the knowledge gained directly through expeditions, trips and excursions was practically the only way to get to know the territory. This direct knowledge soon gave way to written accounts and even guides and maps. But it is only in modern times when the progressive and rapid advance of technology replaced this experience with photography, the cinema, television and ultimately new media like the internet, in such a way that now it can be said that our knowledge of the territory is fundamentally indirect. We cannot touch nor feel what we see. Even when we physically travel to a place we cannot —and probably do not want— to let go of the idea previously gleaned from film, television and photography.

Our intention is to recover the experience of the expedition with this project. We decided to travel the rivers, approaching the unknown from what is more familiar to us, the sea. To travel upriver as far as we could to get a feel for it: one-on-one. How could we do so anywhere else but in the “country of the thousand rivers”?

We sailed in a 12-foot-long yellow canoe that, although it made us uncomfortable in twenty minutes and numb in two hours, it allowed us to take the journey with a point of view that was very close to the water, on the same plane.

When we decided to launch the project we only thought about the experience. The interest in recording the routes and investigating the possibilities that could arise from these records emerged later.

We start by using the GPS, a magnificent instrument for drawing. We could not give up the opportunities offered by new technologies. How could not see how these strokes recall a child's first drawing?

After we had made a few sailing trips we felt the need to capture the extraordinary perception of the territory from the river and began to take photographs.

The route ends up configuring its representations: the landscapes. This is our experience and our vision, which we would now like to share with you. [F. H. and M. S.]

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Lola Marazuela and Paco Mesa

Paralelo 45º25” Norte: Mongolia (45º 25’ North Parallel: Mongolia), 2010

Map and photographs

Paralelo 45º25” Norte: Mongolia (45º 25’ North Parallel: Mongolia) is a project that circles the world along this parallel —which passes through France, Italy, Croatia, Serbia, Romania, Ukraine, Russia, Kazakhstan, Uzbekistan, China, Mongolia, Japan, the United States and Canada— marking it every 100 km or so with a metal plate.

45º 25’ North Parallel is:

- a radical idea of drawing
- a sculpture of space and time
- a method
- a discipline
- an adventure
- a mission of geographical exploration
- a line where Art and Life meet

We placed 28 plates in Mongolia along a line of more than 2,000 miles from the western border with China (Xinjiang) in the Khovd region, crossing the Gobi “Strictly protected natural area” and the regions of Gov-Altai, Bayankhongor, Övörkhongai, Dundgov, Dornogov and Sukhabaatar until the eastern border of Inner Mongolia (China). Much of journey passes through desert landscapes where the only manmade path was the track our old Soviet van left on the land and grass we crossed. Of all the plates placed in Gobi only four, the ones we nailed onto electricity poles conveniently located on the parallel, are probably left. The rest have presumably been moved and buried by sandstorms after serving as convenient scratchers for herds of wild donkeys, Przewalski’s horses, gazelles, goats, wolves and camels. Occasionally we built a small pile of rocks around the plates to imitate small *oovos* (stone cairns that formed sacred landmarks located at crossroads, near springs and on the tops of mountains). [L.M. and P.M.]

Francisco de Sales Covelo

Bocetos para proyecto de jardín privado en Vigo (Sketches for a private garden project in Vigo), 1965

Drawing

Courtesy of the Sales Foundation

Boceto para el Jardín Español de la Exposición Internacional Garden and Greenery, Osaka (Sketch for the Spanish Garden at the International Garden and Greenery Exhibition, Osaka), 1990



Drawing

Courtesy of Olga Méndez Arias de Sales

Francisco de Sales Covelo (1931-2001), landscape painter and the pioneer of Galician landscaping, also developed much of his work in the field of architecture and horticulture. His work as a landscaper, which increased in the 1970s, includes the design of many parks and gardens in Galicia (such as Castrelos, the A Bouza park and the Camilo José Cela garden in Vigo as well as numerous private gardens like the Pazo de Sistallo in Cospeito, Lugo).

Proxecto Baliza


O proxecto Baliza está financiado polo Ministerio de Educación, Cultura y Deporte no marco do Subprograma de Fortalecemento CEI 2011

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Other examples of his work can be found across Spain and abroad in countries like Cuba and Japan. One of his most significant works is undoubtedly the Botanical Garden in Vigo, which serves as headquarters for the Sales Foundation. In 1990, when he designed the Spanish Garden at the International "Garden and Greenery" Exhibition in Osaka (along with Gabriel and Manuel Pradel Spalla), he was recognised for his creativity and received the silver medal in that category. [Eva Barcala. Head of a research project on the life and work of Francisco de Sales Covelo].



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CHRONOGRAPHY

Measurements and registrations of time, in time.

Esclerocronología. 8 Otolitos (Sclerochronology. 8 Otoliths), 2006-2012

Photograph

Fishing Ecology Group (IIM-CSIC)

Fran Saborido Rey

Vigo Institute of Marine Research

University of Vigo

Muestras de otolitos. Bacalao Flemish cap 2012, lance 81 / S. Mentella Flemish Cap 2006 lance 134 (Samples of otoliths. Flemish cap cod 2012, lance 81 / S. Mentella Flemish Cap 2006 lance 134).

Fishing Ecology Group (IIM-CSIC)

Fran Saborido Rey

Vigo Institute of Marine Research

University of Vigo

Sclerochronology (from the Greek *scleros* — hard, *crono* — time, *logos* — science) is the study of the calcified structures of organisms to reconstruct their life story.

Otoliths (from the Greek *oto* — ear, *lithos* — stone) are calcareous concretions in the inner ear of vertebrates. They are used by the body as movement, balance, gravity and acceleration indicators.

Fish grow throughout their lives, as do otoliths by forming concentric rings that resemble tree rings. This characteristic growth allows ichthyologists to use otoliths to determine the age of a fish by counting the rings that are formed annually. This is a widely-used technique in the study of fisheries, fish population dynamics and demography. Interpreting growth rings is not a simple task and requires experience and training and often relies on image analysis. [F.S.R.]

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Juan Loeck

Proceso nº 9: Deshielo de cabeza clásica con testigo (Process no 9: Melting of a classical head with witness), 1983

Photograph

Proceso nº 52: Construcciones P/A. Construcción con vientos (Process no 52: Constructions P/A. Construction with winds), 1986

Photograph

Proceso nº 100: Vánitas (Process no 100: Vanitas), 1990

Photograph

There is a recurring attitude in a considerable number of contemporary artists for whom the notion of process is understood as artistic creation. The important thing is not the construction of aesthetic objects but to assess the processes that take place during the making of art. Documentation in this type of work is essential. The virtual absence of a sculptural element as objectual residue in these creative processes makes it necessary to confirm that they took place through a record. Ultimately this record of “what happened” is another type of residue, in our case a narrative of the experience or a graphic document.

The three processes exhibited fall into two basic stages of my research. Processes 9 and 52 correspond to the initial stage, while process 100, the *Vanitas*, was carried out in a more mature stage in which a greater complexity of reading is intended, while the procedures used are technically developed. [J. L.]

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ANATOMOGRAPHY

Measurements and records of the body.

María Castellanos Vicente

***Cuerpo-realidad (Body-reality)*, 2013**

Installation

Dress that looks transparent under infrared light

Documentation of the performance by the naked eye and through a video camera at the Sala Astragal. Gijón (Asturias)

Work produced with the Astragal Award. Ministry of Culture of the Principality of Asturias

Cuerpo-realidad (Body-reality) investigates human sensory perception and limitations, specifically the vision of the human eye in contrast to the mechanised eye, the video camera. This perception is related to a basic action in our daily lives: getting dressed. This is a procedural work in which two dresses, the main focus of the action being performed, are made, thus reflecting on dressing-undressing, on the relationship between the skin and the dress itself, and on the large part human perception plays in this process.

One of the dresses made specifically for this project is made of a plastic material transparent under infrared light but opaque to the human eye. Thus, the artist appears dressed to the viewers, but if they look through the monitors where the image is being reproduced they will see that the dress is completely transparent. The second dress has infrared LED lights incorporated that light up when the clasps on the straps are attached to the collar of the dress, which close the circuit and allow the LED lights to turn on. However, as in the first case, the light of the dress is only noticeable if seen through the monitor, since the human eye is incapable of perceiving the infrared light emitted by the LED lights. [M.C.V.]

[On this occasion only the dress that is transparent under infrared light is exhibited, although both may be seen in the video of the performance.]

John Coplans

***Self Portrait, Lying Figure, Holding Leg —Four panels—*, 1990**

Black and white photograph on salted paper

Courtesy of the Telefónica Collection

The four photographs in the *Self Portrait, Lying Figure, Holding Leg —Four panels—* series, hung side-by-side in order, show the artists entire body lying down. As usual in his photographs only his head and face are missing, as Coplans tries to maintain a certain impersonal air in his self-portraits. The images, viewed separately, offer pieces of a body that appear out of context, as if they do not belong to a complete being. Aligned, the four photographs show the naked and fragmented body of a middle-aged man. The reclining condition of the portrait necessarily connotes the idea of a living organism doomed to finitude. As a contemporary *vanitas* these anatomical images highlight our mortal condition.

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Silvia García

***Rastro material (Material trace)*, 2014**

Archival documents and photography

Rastro material (Material trace) is literally the trace that my paternal grandfather Manuel Eugenio García Piñeiro left in the form of a box full of papers in his home in San Martiño, Moaña. The trace, the traces left in a pile of papers, traces of bureaucratic processes, a war council, but also many small papers related to the sea trade, notebooks, and accounts of the supplies that were needed on board. [S. G.]

Yolanda Herranz Pascual

***Phísico Químico Psíquico (Physical Chemical Psychical)*, 1994-2004**

Text, glass, mercury, aluminium, ink and paper

Three concepts delimit the conceptual framework of this work:

Physical relates to the corporeal constitution and nature. It makes reference to the tangible, to those physically real realities. *Physical* also encompasses the biological and the psychological. *Physical* designates a way of being. *Physical* is the access that opens to thought, to conscience, to feeling, to the sense that refers to the entire body of knowledge.

To make real — To make conscious — To make cohesive



Chemical, as opposed to physical, is concerned with the composition of bodies: it studies the structure, properties, and transformations of matter. Functions and psychological content belong to *Psychical*: the soul and activity. The *psychical* concept covers the immaterial, perceptive, subjective... the emotional, spiritual, moral... consciousness, thought, feeling...

The *Phísico Químico Psíquico (Physical Chemical Psychical)* installation is configured in a horizontal row of eleven thermometers and ten frames with data. The thermometer, an instrument that measures changes in body heat, tracker of the oscillations of energy, functions as a metaphor for an impossible scientific record which aims to objectify itself in transcribed annotations. Measuring the intangible is done by a metal, liquid, heavy, toxic, disorderly and enigmatic: mercury, which is enclosed in glass.

Phísico Químico Psíquico (Physical Chemical Psychical) focuses its reflection on the body, on our body, and we define it like a battlefield and we formulate it as an accurate weapon aimed at expanding the vision of humans. We artists have the body as a common centre of interest, as a problem and as a core material of the artistic project, we can approximate these aspects from different concepts: the body as a territory, the body as a model, the body as action, the body as passion, the body as a limit, the body as a relationship, the body as resistance, the body as a proposition. [Y.H.P.]

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Juan Carlos Meana

***Naturaleza por morir (Nature to die)*, 2014**

Print on photography paper on dibond

Photographs taken at the Brain Bank at the School of Medicine of the University of the Basque Country. They are images of the autopsy room facilities and refrigerators where human material is extracted and preserved for study. A space is presented in which the human material, donated brains, is being used for study and research. The aim is not so much to show the facilities and infrastructure as to delve into the idea of the storage of thoughts that have to be studied, since in many cases these are the brains of people who suffered mental illnesses or who died in strange circumstances, like suicides. The intention is to show the place where the brain processes ran in inverted time; that is, once it has completed its activity trace what it recorded and what led to its status at the time of death. The idea of waiting is contained in the images, a certain latent rest which invites reflection on the thoughts as material for medicine to analyse and study. No longer is only the body a material of study, but the ideas that lie behind the carnal. [J.C.M.]



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MACROGRAPHY

Capturing larger images or graphic records in relation to the selected object.

Uomo Vitruviano grabado sobre moneda (Vitruvian Man engraved on a coin), 2014

Video, 1 min

Código binario grabado en Audio CD (Binary code engraved on an audio CD), 2014

Video, 1 min

Nanotechnology and Surface Analysis Service - CACTI

Carmen Serra Rodríguez

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The Vitruvian Man is the anatomical study by Leonardo da Vinci that seeks the proportionality of the human body. The drawing represents not only the possible proportions of the body but is also a vision of man, inscribed in a circle and a square, as the centre of the universe. This drawing was engraved on the Italian €1 coin in such a way that we see the drawing in relief. The interferometric optical profilometer with which the image was made allows us to reconstruct the surface of this relief without touching it and represent it three-dimensionally. It is an extraordinary 3D optical metrology tool which facilitates the study of any solid surface. Specifically, it is an instrument that monitors and checks the quality and the different steps in the process of creating coins since, for example, it allows complex studies of the surface relief of the coin by resolving structures with sizes in the range of a micrometre or even sub-micrometres. Mints and stamp printers in most countries tend to use these types of instruments.

A series of small, almost microscopic holes and flat areas are engraved on a CD. Each of these holes is a piece of information. A hole represents the “1” in binary code and the flat surfaces on the CD are considered the “0” in binary code. These dots form a sort of Morse code which will be reinterpreted in the reproductive stage during the digital to analog conversion. These are engraved in a single spiral that begins on the inside of the disc (near the centre), and ends on the outside. The dots are so small that the length of each is about half of a millionth part of a millimetre, too small for the human eye or a mechanical device to see but big enough for a laser to read. The laser reads the series of zeroes and ones which are interpreted by a processor to assemble bytes of data that are sent to a computer. The 3D image is obtained with an interferometric optical profiler that allows the entire relief on the disc to be obtained pixel-by-pixel. With a profilometry image processing program a 3D image is animated, coming closer and moving away. The profiler is a tool that can test for the defects that can occur when the discs are manufactured and is a tool to study the topography of any surface without touching it and digitally represent it in 3D. [C.S.R.]

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Fernando Casás

***Araguaia*, 1995**

Phosphorescent paint and polyurethane foam, scrap wood on fiberglass and polyester resin, thread
Courtesy of the artist

Araguaia is part of a series of works in which the poetry of Fernando Casás points to feelings and dimensions of cosmic character. Using absolutely everyday materials, in some cases materials of an even technical and industrial nature to which he provides a hypnotic phosphorescence through the use of white light, the artist performs a transformation of a sort we might call alchemical, in which the most humble, tiny and earthly becomes a cosmic, terrestrial and sidereal reality.

***Las condiciones meteorológicas del Océano (Ocean weather conditions)*, 2006**

Video, 3 min

Beatriz Mouriño and Denise McGillicuddy
(Woods Hole Oceanographic Institution, USA)
Department of Ecology and Animal Biology
University of Vigo

From space, the ocean surface appears as a series of elevations and depressions, detectable even if only a few centimetres. These small perturbations of the sea level are the result of gyres, which can cover several hundred kilometres, and in the northern hemisphere rotate clockwise (anticyclones) or counter-clockwise (cyclones) depending on the temperature of the water at its centre. Comparable to the high- and low-pressure systems observed in the atmosphere, gyres are the weather of the ocean and are involved in the transport of numerous physical, chemical and biological properties. The video shows the intense activity of cyclonic and anticyclonic gyres in the Sargasso Sea (North Atlantic), which, being in the northern hemisphere, moves towards the west. [B. M.]

Rubén Ramos Balsa

***Boceto de un telescopio para un microscopio para observar un círculo (Sketch of a telescope for a microscope to observe a circle)*, 2014**

Furniture and optics

Un telescopio para un microscopio para observar un círculo (en una gota de agua) (Sketch of a telescope for a microscope to observe a circle [in a drop of water]) is a hybrid of tables with bronze vertical supports holding optical elements (lenses) that simulate the structure of a earth-based telescope connected to a monocular microscope focused on a central observation point. It is here that the edge of an encapsulated drop of water is placed. Thus, the optimal display of the pieces as a whole produces the sensory mix of different systems: the system of light and water (drop) with which reflections are projected. [A.R.S.]



“FIELDS OF IMAGE. GRAPHIC REPRESENTATIONS OF FACTS AND THOUGHT”

MICROGRAPHY

Processes of capturing images of objects invisible to optical or electronic instruments like magnifying glasses and microscopes

Fernando García Correa

Serie “Azúcar”: c 51-AZI (*“Azúcar” series: c 51-AZI*), 2006

Acrylic and lacquer on plastic and paper

Serie “Azúcar”: c 91-AZIII (*“Azúcar” series: c 91-AZIII*), 2007

Acrylic and lacquer on plastic and paper

Sombra de Bosque (L) (Forest shadow), 2010

Indian ink on paper

Serie “Suculentas”: número 1 (*“Succulents” series: number 1*), 2012

Serie “Suculentas”: número 3 (*“Succulents” series: number 3*), 2012

Serie “Suculentas”: número 4 (*“Succulents” series: number 4*), 2012

Laser cut, 5 sheets

Courtesy of the artist and Arróniz Arte Contemporáneo

The works by Fernando García Correa move in the field of geometric and organic languages which the artist obsessively make problematic. Repetition and seriality are a key element of his practice and, in parallel, he creates an ambivalent field of action between body-language and abstraction. From an initial geometric presence, the painter’s zeal for the microscopic begins an infinite, almost maddening development or diversion. Branches begin to grow from the circle, like a virus or a subtle screen that draws the eye. The line mutates into ripples and endless successions. Like a tiny microcosm, a tapestry or fabric or cell without end or respite, García Correa opens up a space in which concealed and latent connections hidden behind the slightest sculptural decision arise. [A.R.S.]

Microfósiles que explican los océanos del pasado (Microfossils which explain the oceans of the past),

2014

Photograph

XM1 Group

Guillermo Francés, Irene Alejo, Miguel Á. Nombela and Marta Pérez-Arlucea

University of Vigo

SEM images: Alessandro Benedetti (CACTI Microscopy Service)

Microfossils, like the foraminifera that appear in the images, are very sensitive to changes in the properties of oceanic bodies of water. Depending on the temperature, acidity, depth, nutrient content, etc. of these waters, different species appear or change the chemical composition of their calcium carbonate shells. Therefore, the study of these organisms in ocean soundings allows us to reconstruct in detail how the oceans have evolved over millions of years. Anything from glacial and interglacial periods to shorter fluctuations (less than 1000 years) can be detected by these techniques. [A. I.]

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***Gambierdiscus excentricus*, 2014**

Photograph

Spanish Institute of Oceanography

Santiago Fraga

In collaboration with Suso Méndez and Inés Pazos

Oceanographic Centre of Vigo

***Gambierdiscus excentricus*, 2014**

Video animation

Spanish Institute of Oceanography

Santiago Fraga

In collaboration with Suso Méndez and Inés Pazos

Oceanographic Centre of Vigo

Living species are distinguished mainly by their shapes, which are a reflection of their genetic differences. These are scientifically explained through texts and graphical representations. *Gambierdiscus excentricus* is a toxic microalgae that lives on the sea floor on macroalgae, or other substrates, and has a 0.1 mm diameter lenticular shape. It causes ciguatera, a food-borne illness caused by eating fish common in tropical countries. Microscopes are required to see the microalgae because of its small size and it is covered by very ornate cellulose plates. If stained with calcofluor (a dye that binds to cellulose) they emit a blue light when illuminated by UV light, which can be recorded with a confocal microscope. A confocal microscope can take optical slices of the cells and reconstruct its shape in 3D by computer, observe the microalgae from different angles in virtual mode and even make animated videos. The microalgae can also be observed with the scanning electron microscope (SEM) when set and covered in a thin layer of gold. [S.F.]

Materiales superconductores (Superconductive materials)

Photograph

Alessandro Benedetti

In collaboration with Marta Gibert and Xavier Obradors

Institute of Material Science of Barcelona - CSIC

Department of Applied Physics – CACTI

Due to their superconducting properties these strips of superconductive material are used to transmit electricity with virtually no loss. They consist of several layers. One of the most important is the CeO₂ layer (cerium oxide). Its morphology is critical because it determines the characteristics of the superconducting layer it grows on top. Figure 2 shows an image of the surface taken with a scanning microscope.

Figure 3 is a high-resolution image of a cross section of the same layer taken with transmission microscopy (TEM). Through a mathematical operation called “Fourier transform” it is possible to reconstruct an image of the same region where only the atomic planes of a single type, (110) in this case, appear. With further mathematical manipulations a “phase image” and the distribution of CeO₂ distortion can be obtained. In the final image, areas of black and white represent extremely distorted regions. The area surrounded by blue circle represents a displacement, that is, a linear defect of the crystal. [A.B.]

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Cromosomas en bivalvos (Chromosomes in bivalves), 2014

Photograph

Department of Biochemistry, Genetics and Immunology

Concepcion Pérez-García, Paloma Morán and Juan J. Pasantes

University of Vigo

Xenostrobus securis is a species of mussels native to New Zealand, Australia and Southeast Asia that has invaded coastal regions of Japan, Italy and Spain in recent years. Combating biological invasions requires a thorough knowledge of the invasive species, from the features of its lifecycle to the organisation of its hereditary material.

The study of chromosomes requires microscopes that have connected CCD cameras that can take pictures in different wavelengths and combine them. This involves staining the chromosomes, or regions of chromosomes, with fluorescent substances that emit different colours. Thus, you can locate a specific region of a species' chromosomes and compare it with other roughly similar species. [J.J.P.]

Las arenas de las playas y dunas de Cíes (Parque Nacional Islas Atlánticas): un viaje del "Macro" al "Micro" (The sands of the beaches and dunes of Cíes (Atlantic Islands National Park): a journey from "Macro" to "Micro"), 2014

Photograph

XM1 Group

Irene Alejo, Corinne Pérez-Estévez, Marta Pérez-Arlucea, Miguel Á. Nombela and Guillermo Francés

University of Vigo

Magnified images: Susana Costas and Irene Alejo

SEM images: Alessandro Benedetti (CACTI Microscopy Service)

The most unique sedimentary environment in the Atlantic Islands National Park of Galicia, the “barrier-lagoon system of Rodas”, is located on the Cíes archipelago and currently links the islands of Monteagudo and Faro. The sandy barrier is formed by the dunes and beach of Rodas that encircle a lagoon known as Lagoa dos Nenos. The study of the dynamics and evolution of this type of sedimentary environment makes knowledge about how the coastline evolves possible (on a scale of a few to thousands of years) as well as predictions of its future evolution and how to establish the key variables to preserve these types of natural environments. Many of these studies focus on the topographic monitoring of the beach and dunes (before and after storms, for example) as well as in the analysis of their material, i.e., the grains of sand that make up the sediment, which provides information on their origin and how it was transported. [I.A.]



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SPECTROGRAPHY

Images obtained through the process of analysing the spectrum of frequencies characteristic of wave motion. The frequency spectrum is characterised by the distribution of amplitudes for each frequency of a wave phenomenon (sound, light or electromagnetic). The frequency spectrum or spectral decomposition of frequencies can be applied to any concept associated with frequency or wave motions such as colours, musical notes, electromagnetic radio or television waves and even the regular rotation of the earth.

Ramiro Álvarez Clavero

Imágenes termográficas (Thermographic images)

Photograph

Remote Sensing Services – CACTI

Thermography is a technique that can remotely and accurately measure temperatures without requiring physical contact with the object under study. The thermal camera records the intensity of the radiation in the infrared region of the electromagnetic spectrum and converts it into a visible image. [R.A.C.]

Arturo Moya

CUT, 2014

Interactive sound installation

Interaction design and development: Kwendenarmo

In collaboration with Carlos Hernández and the Colectivo Synusia <http://www.synusia.es>

Audio design and development: Arturo Moya Villén and Álvaro Muñozledo

Voices of: Joaquín Sobrino, Eliette Calatrava, Pilar Farelo, Teresa del Cerro, Sebastián Rubio, Santiago Cortázar, Pilar Vals, Ada Martínez, Yolanda del Pino, Raquel Calatrava, Pablo López and Pilar Heras.

CUT, from electronic composer and multi-media artist Arturo Moya, is an interactive audio-visual installation that uses the sounds and movements of the participants to create sound paths.

Knowledge begins with a cut above the chaos and it is from this piece that meaning is derived. Fracture, wound, disruption, difference and fragility are some of the poetic resonances of the cut in *CUT*. The work suggests a map of silences. In the emptiness that generate the behaviour of sound in space, suspended knives show the geometry of a dangerous listening. These images contain the threat of a new withdrawal of the cut: the story about identity; your own and that of “the other”. In *CUT*, the encounter with this intimate form of the externality —never fully accessible— points to the violence in fractures, the danger of otherness to the compactness of the self, the need to cut through the self to find sense. [Ruth Abellán]

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Representación de sonidos (Representation of sounds), 2014

Multimedia Technologies Group
AtlantTIC Technology Centre
University of Vigo

LINE OF RESEARCH: localisation and identification of marine mammals

DATA SOURCE: database for research courtesy of CEMMA

<http://www.cemma.org/principal.htm>

BRIEF DESCRIPTION:

FiestaDelfines.wav
GME1.wav
LlamadasYubarta.mp3

LINE OF RESEARCH: sound quality test, analysis and speech recognition

DATA SOURCE: Sonitum – Acoustic engineering, Multimedia Technologies Group, AtlantTIC Technology Centre, 2013

BRIEF DESCRIPTION:

locutor_15round1.wav

LINE OF RESEARCH: study of the acoustics of musical instruments

DATA SOURCE: Sonitum - Acoustic engineering, Multimedia Technologies Group, AtlantTIC Technology Centre, 2013

BRIEF DESCRIPTION:

arpa_escal_a_z0_elev0.wav
arpa_melodia_az0_elev0.wav
gaita_melodia_az0_elev0m.wav
zanfoña_melodia_az30_elev30_song.wav

LINE OF RESEARCH: acoustic testing of construction materials

DATA SOURCE: Sonitum - Acoustic engineering, Multimedia Technologies Group, AtlantTIC Technology Centre, 2009

BRIEF DESCRIPTION:

E2_Suelo1_Pos2_Mic2.wav

LINE OF RESEARCH: extraction of characteristics in sound

DATA SOURCE: freesound.org

<https://www.freesound.org>

BRIEF DESCRIPTION:

117121__unclesigmund__siren-short.wav
161691__felix-blume__dolphin-screaming-underwater-in-caribbean-sea-mexico.wav
184623__landub__ambulance-siren.wav