somatopologies guide

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materials for a movie-in-the-making
from the Possibe Bodies inventory

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Sources: http://possiblebodies.constantvzw.org/somatopologies

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Vlaanderen
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somatopologies

For Monoskop's catalogue of catalogues at the Seoul Mediacities Biennial, Possible Bodies proposed a set of materials for a movie-in-the-making, selected from the Possible Bodies Inventory.

Somatopologies consists of texts and 3D-renderings with diverse densities, each of them wondering about the regimes of truth that converge in volumetric biomedical images. The materials investigate the coalition at work between tomography and topology which aligns math, flesh, computation, bone, anatomic science, tissue and language. When life is made all too probable, what other "bodies" can be imagined?

In six sequences, Somatopologies moves through the political fictions of somatic matter. Rolling from outside to inside, from a mediated exteriority to a computed interiority and back, it reconsiders the potential of unsupervised somatic depths and (un-)invaded interiors. Unfolding along situated surfaces, this post-cinematic experiment jumps over the probable outcomes of contemporary informatics, towards the possible otherness of a mundane (after)math. It is a trans*feminist exercise in and of disobedient action-research. It cuts agential slices through technocratic paradigms in order to create hyperbolic incisions that stretch, rotate and bend Euclidean nightmares and Cartesian anxieties.

Possible Bodies

The collaborative research project Possible Bodies interrogates the very concrete and at the same time complex and fictional entities that "bodies" are, asking what matter-cultural conditions of possibility render them present. This becomes especially urgent in contact with the technologies, infrastructures and techniques of 3D tracking, modelling and scanning. Intersecting issues of race, gender, class, species, age and ability resurface through these performative as well as representational practices.

The research is concerned with genealogies of how bodies and technologies have been mutually constituted. It interrogates corpo-realities and their orientation through parametric interfaces and looks at anatomies that are computationally constrained by the requirements of mesh-modelling. It invites the generation of concepts and experimental renderings, wild combinations and digital and non-digital prototypes for different embodiments.

Inventorying as a method

Possible Bodies operates along an inventory that contains a mutant set of artworks, scripts, documentation, manuals, guided tours, interfaces, vocabulary, performances, software-demos, tools, physical objects, animations, mathematical concepts, games, renderings, etc. The travelling collection forms a shared context to pay attention to the dimensional, notational, scalable and organisational apparatuses that make so-called-bodies appear and co-relate.

Possible Bodies settled for inventorying as a method to give an account of the structural formations that condition cultural artefacts, capture flesh and co-compose 3D polygon "bodies". It is an attempt to think along the agency of these items, hopefully widening their possibilities beyond pre-designed ways of doing and being. Rather than rarefying the items, as would happen through the practice of collecting, or pinning them down, as in the practice of cartography, or rigidly stabilizing them, as might be a risk through the practice of archiving, inventorying is about continuous updates, and keeping items available.

Among all of the apparatuses of the Modern Project that operate on present world orderings, naming and account-giving, the inventory is chosen with a critical awareness of its etymological origin. It is remarkably colonial and persistently productivist: inventory is linked to invention, and thereby to discovery and acquisition.

The culture of inventorying remits us to the material origins of commercial and industrial capitalism, and connects it with the contemporary database-based cosmology of techno-colonialist turbo-capitalism. Even so, feminist technoscience points out the potentials embedded in modern apparatuses of designation and occupation, and how they can be put to use once carefully unfolded to allow for active problematisation and situated understanding. In the case of Possible Bodies, this means to keep questioning how 'bodies' co-habit and co-compose with technological and scientific practices, historically sustained through diverse axes of inequality. The project is motivated by a need for research practices that go through axes of diversity.

The temporalities of inventorying are discontinuous and its ways of being, pragmatic: it is about finding ways to collectively specify and take stock, to prepare for eventual replacement, repair or replenishment. Inventorying is a hands-on practice of readying for further use, not one of account-giving for the sake of legitimation.

As an "onto-epistemological" practice, it is as much about recognizing what is there (ontological) as it is about trying to understand (epistemological). Additionally, with its roots in the culture of manufacture, an inventory counts on cultural reflection as much as on action.

Inventorying as a method it links to what we call 'disobedient action-research'. It invokes and invites further remediations that can go from the academic paper to the readme, from the narrative to the diagrammatic, from tool mis-use to interface re-design and from bug-report to the dancefloor. It provides us with inscriptions, de-scriptions and re-interpretations of a vocabulary that is under constant development.

http://possiblebodies.constantvzw.org

item 005: Hyperbolic spaces

http://possiblebodies.constantvzw.org/inventory/?005

Remix of the Wikipedia entries on: 'Euclidian' and 'Non-Euclidian math', inspired by the rendering of Hyperbolic Spaces in Donna Haraway, Staying with the trouble (2016)

Euclidean geometry is located at the intersection of metric and affine geometry.

It is based on 5 axioms:

1. A straight line can be drawn between any two points.
2. A straight line drawn between two points can be continued infinitely
3. A circle is defined as all of the points a certain distance (radius) from any point.
4. All right angles are equal.
5. Parallel lines will maintain an equal distance from one another

Non-euclidean geometry is what happens when any of the 5 axioms do not apply. It arises when either the metric requirement is relaxed, or the parallel postulate is replaced with an alternative one.

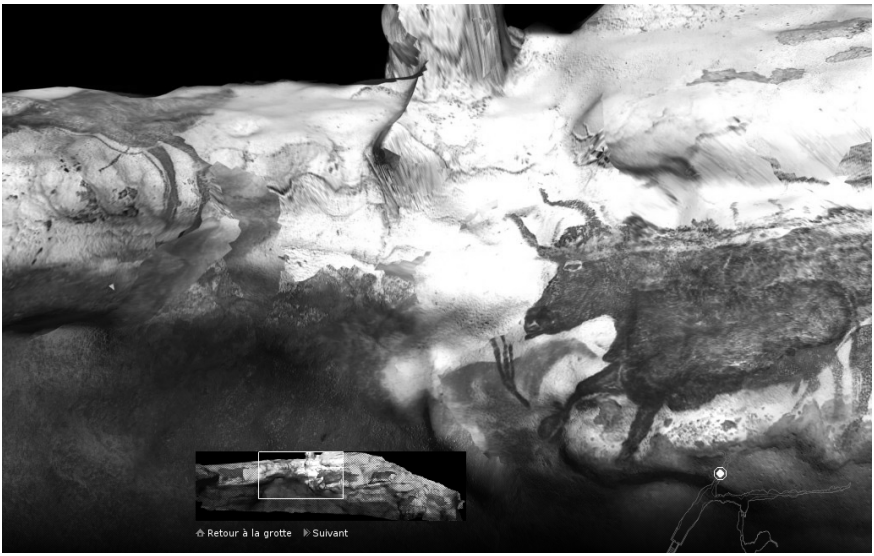
In the latter case one obtains hyperbolic geometry and elliptic geometry, the traditional non-Euclidean geometries.

When the metric requirement is relaxed, then there are affine planes associated with the planar algebras which give rise to kinematic geometries that have also been called non-Euclidean geometry.

item 006: The Eyes of the Rock

http://possiblebodies.constantvzw.org/inventory/?006

Visite virtuel de la grotte de Lascaux http://archeologie.culture.fr/lascaux/



item 012: No Ground

http://possiblebodies.constantvzw.org/inventory/?012

Fragment from: Rocha, Jara, and Snelting, Femke. (2017) The Possible Bodies Inventory: disorientation and its aftermath in "Cuerpos Poliédricos", Inmaterial Journal vol. 2, num. 3

The co-constitution of bodies and technologies shatters all dreams of stability

The co-composition of foreground and background crashes all dreams of perspective

What can we learn from the conditions of floating the virtual transduction of modern perspective

in order to draft an account-giving apparatus of present presences?

How can that account-giving be intersectional with regards

to the agencies implied respectful of the dimensionality of time and ageing and responsible with a political-economical history of groundness?

Floating is the endurance of falling.

It seems that in a computed environment falling is always in some way a floating.

There is no ground to fall towards that limits the time of falling, nor is the trajectory of the fall directed by gravity.

The trajectory of a floating or persistently falling body is always already unknown.

Closer, further, higher, lower: the body arranges itself in perspective, but we must attend the differences inherent in that active positioning.

A thought on agency can neither rely on the ground to fall towards nor on the roots of grass to emerge from.

How can we then invoke a politics of floating not on the surface but within not cornered but around not over but beyond in a collective but not vertical movement

Semiotic-material conditioners are absolutely relational: not autonomous entities but interdependent worldlings.

Ground and feet, land and movement, verticality and time,

situatedness and axes: the more of them we take into consideration

the more degrees of freedom we are going to endow our deterritorialized and reterritorialized lives with.

If the land is for those who work it, then who is working the ground?

Who is working the ground?

item 017: MakeHuman

http://possiblebodies.constantvzw.org/inventory/?017

Screencast of browsing rendered skintopology in MakeHuman, Open Source software for the modelling of 3-Dimensional humanoid characters.

item 028: Circlusion and/or circluding

http://possiblebodies.constantvzw.org/inventory/?028

Fragment from: Bini Adamczak, On Circlusion, 2016 + Kym Ward feat. Possible Bodies (2017) Circluding, Fanziposter

A new term, one that has been missing for a long time:

"circlusion."

It denotes the antonym of penetration. It refers to the same physical process, but from the opposite perspective.

Penetration means pushing something – a shaft or a nipple – into something else – a ring or a tube.

Circlusion means pushing something – a ring or a tube – onto something else – a nipple or a shaft.

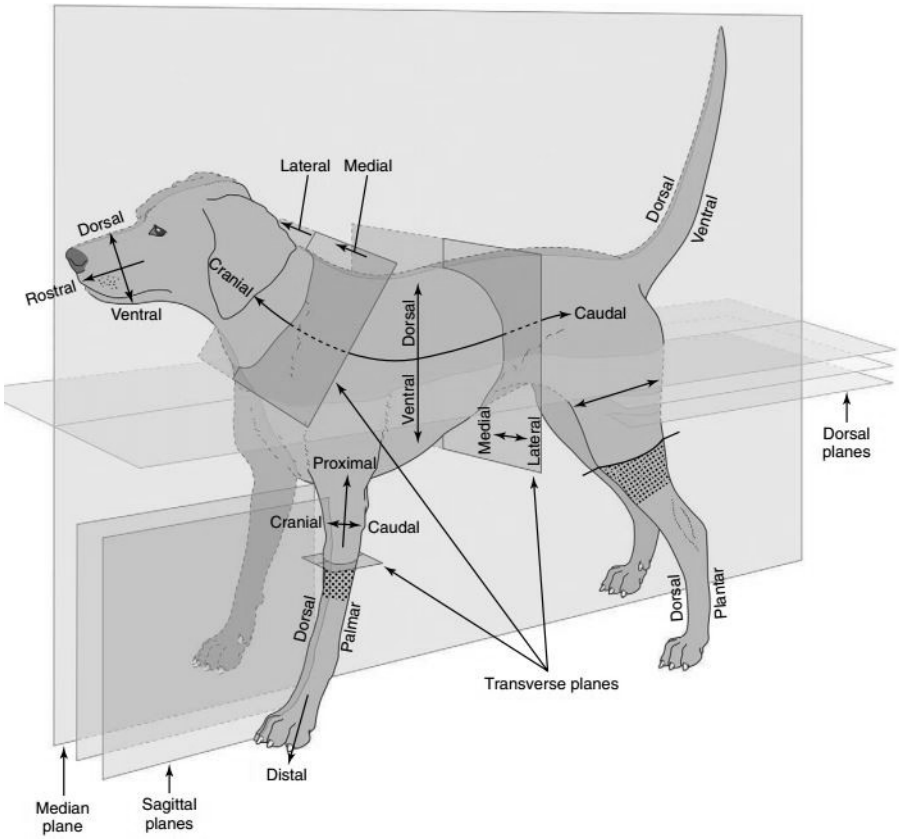
The ring and the tube are rendered active.

That's all there is to it.

item 070: Anatomical planes

http://possiblebodies.constantvzw.org/inventory/?070

Remix of terminology found in the Wikipedia entry on 'Anatomical Planes'. Font: CycleSource, Quentin Jumelin
https://en.wikipedia.org/wiki/Anatomical_plane



item 071: Visible Woman

http://possiblebodies.constantvzw.org/inventory/?071

Transcription of: Visible Woman, American TV-documentary, 1997
https://www.youtube.com/watch?v=ZmDrlJtrByY

No one knows her name. Or why she ended up here. On the internet. In classrooms. In laboratories.

Cut into thousands of slices. Picked over and probed. Every inch analysed and inspected by strangers, around the world. She is the most autopsied woman on earth.

The world's one and only Visible Woman has revealed everything for the sake of modern science.
Except ... her identity.

If anyone knows the identity of the worlds most mysterious woman, it would be this man. Dr. Victor Spitzer runs the Visible Human Project, the state in the art in teaching anatomy.

Dr. Spitzer takes donated cadavers, freezes them, cuts them in thousands of paper thin slices, and then scans each slice on a computer.

"We are asking for a lot of things. We are asking for no large, disruptive surgeries during life. We are asking for a death that does not have no visible cancers or trauma. And than we are asking for a person to donate their body."

The result is a virtual 3D-human. Seen from every angle, inside and out.

"The details there, to support a practicing surgeon learning more about the body ... what we have to do is simplify it, so that a sixth grader can learn something from the same data.

"It is cool because it gives us a chance to see, like, what we actually learn about, instead of, like, a dry ...

The first, most publicised project, was this Visible Human. Joseph Paul Jernigan was a convicted murderer put to death by lethal injection in a Texas prison.

Jernigan wasn't perfect. But for Dr. Spitzer, he was a perfect specimen for the first Visible Human.

item 082: Ultrasonic Dreams

http://possiblebodies.constantvzw.org/inventory/?082

Fragment from: Possible Bodies (2018). Ultrasonic dreams of aclinical renderings in: Ada: A Journal of Gender, New Media, and Technology, No. 13 (2018)

The lights dimmed and the noise grew louder until all solids vibrated: bones, glass, teeth, screws, violently rattling.

They squeezed each other tightly as the machine picked up pace, centrifugal forces flattened their bodies against the curved superconductive screen behind.

The ground dropped away and an electromagnetic coil lit up in the centre.

Now they all moved together, more-than-human components and machines, experiencing an odd sensation: weightlessness and heaviness at the same time.

Limbs stuck to the wall, atoms bristled. Bodies first lost their orientation and then their boundaries, melting into the fast turning tube.

Radiating beams fanned out from the middle, slicing through matter, radically transforming it with increasing intensity as the strength of circlusion decreased.

The sound of the motors became deafening when the symmetric potential excited the rotating matter, pulling the cross-sectional spin-spin couples towards the central coil, forcing atomic spectra to emit their hyperfine structure.

Once all fluids were accounted for, the volumes could be discretely reduced to graphs and the projections added up.

Attenuating varying levels of opacity a white helix formed in the middle which slowly gathered intensity and contrast.

Faster and faster the machine spinned until the cylindric screen lit up in the dark.

When the shadowgraphs appeared, the crowd howled as coyotes.

Laminograms of differently densed matters rendered onto and through each other, projecting iteratively reconstructed insides onto the outer surface area.

Collarbones entangled with vascular systems. Colons encircled spinal chords and a caudal fin, a pair of salivary glands vibrated with a purring larynx at a frequency of 25 to 150 Hertz.

Brain activity sparked cerebral hemispheres creating free-floating colonial tunicates of pulmonary arteries mingling with those of lower legs.

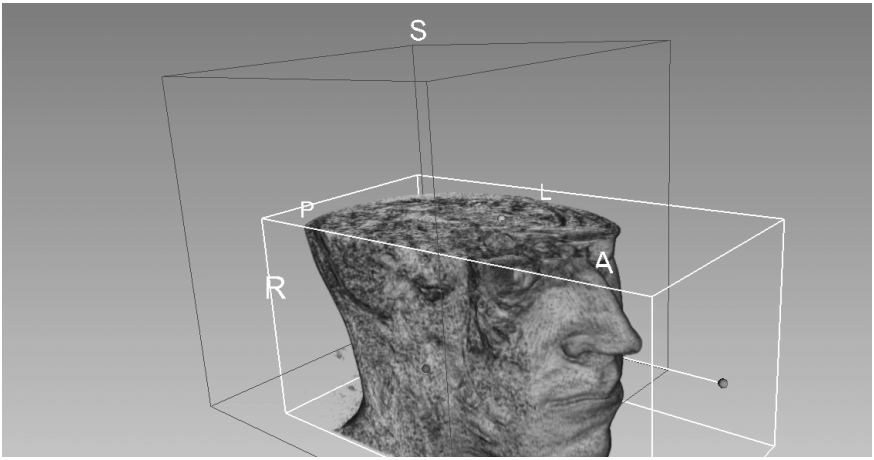
The math was breathtaking.

Volumetric figures pulsated back and forth between two to three dimensions transforming images into accidented surfaces transforming surfaces into ghostly images.

item 098: Region Of Interest

http://possiblebodies.constantvzw.org/inventory/?098

Volume Rendering of CTA-Cardio dataset in Slicer (VTK CPU Ray Casting). Slicer is a free and open source software platform for the analysis and visualization of biomedical images.
http://slicer.org



Transcription of: Patient CT Mandible Segmentation for 3D Print Tutorial (using ITK-Snap)
https://www.youtube.com/watch?v=P44m3MZuv5A

Today, we are going to do the mandible as an example of how to do bone segmentation.

First things first, find your Region Of Interest (ROI). In this case, it is going to be somewhere here for us.

Today, we are not going to do any manual segmentation. We are going to do the entire process in their semi-automated tool.

The semi-automated tool that you can use in ITK-snap is located here:

It is called the Active Contour Selection Tool.

When you click that, you see your Region Of Interest here, in the dotted box. It is going to be available in all planes.

Yours is not going to look like this, it might look like this:
so that it surrounds the entire image.

If that is the case, what you are going to do now, is drag in all four sides, so that you have basically isolated your organ of interest. And

you are going to do that for all the different planes as well, just so you know that we are going to get exactly what we are asking for.

At this point, you notice that if I go through my CT, the Organ Of Interest is actually larger than my bounding box.

So you have two options here: Option one is to resize your bounding box until it completely encapsulates your Organ Of Interest, like this.

Or, what I prefer to do, and you see why in a second, is actually to leave this bounding box fairly small and focused, at least at the start.

So in this case we are going to focus on this part. Something small. Just like that.

Once you are happy with your Region Of Interest like this, you are going to hit Segment in 3D. It is going to bring up a new set of images.

Basically your Region Of Interest from the Active Contours selection has zoomed on your Region Of Interest box.

We are not interested in this view, we are interested in this window, and this window is basically where we set our threshold values.

Our threshold values are going to tell us exactly what we want to keep in terms of segmentation, and what we don't want, so the boundary.

The boundary in this case is everything in blue, and whatever we keep, our Organ Of Interest, is going to be in white.

The way that you set your boundary, or your Region Of Interest, is over here in this panel.

So here we see the lower threshold and upper threshold sliders. These values represent the Houndsfield-units

So the brightness or the contrast in your CT or MRI imaging modality, and when we change these values you can see how your Region Of Interest is actually isolated.

The second step in this entire segmentation process, is called: The Bubble Growth.

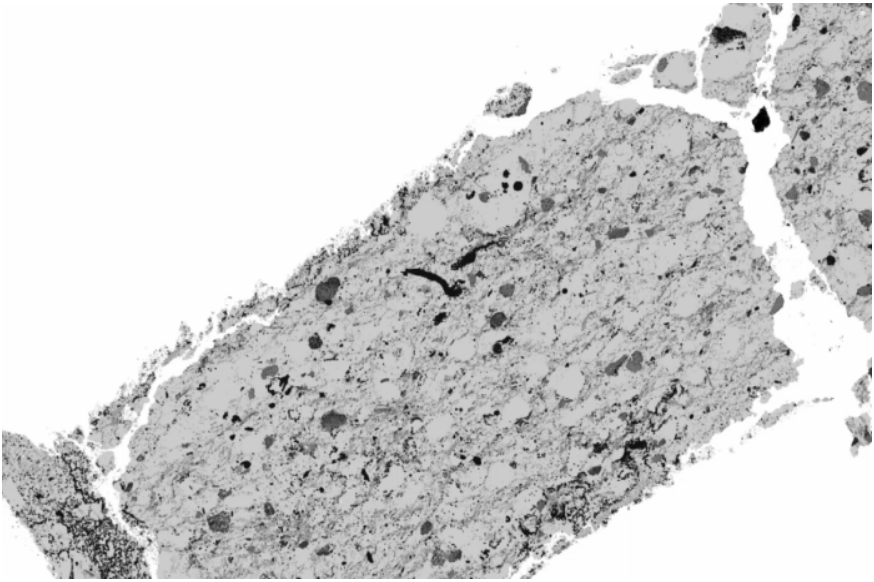
ITK-snap has a semi-automated segmentation module, so click Add Bubble Cursor and it will turn your cursor into a bubble, and what these bubbles are going to do in the following step is to grow into your Region Of Interest by placing down these bubbles, they will stop growing once they hit the blue area.

Essentially this is going to give you a near-perfect 3D-representation of your particular region.

item 099: Porous micro-structures

http://possiblebodies.constantvzw.org/inventory/?099

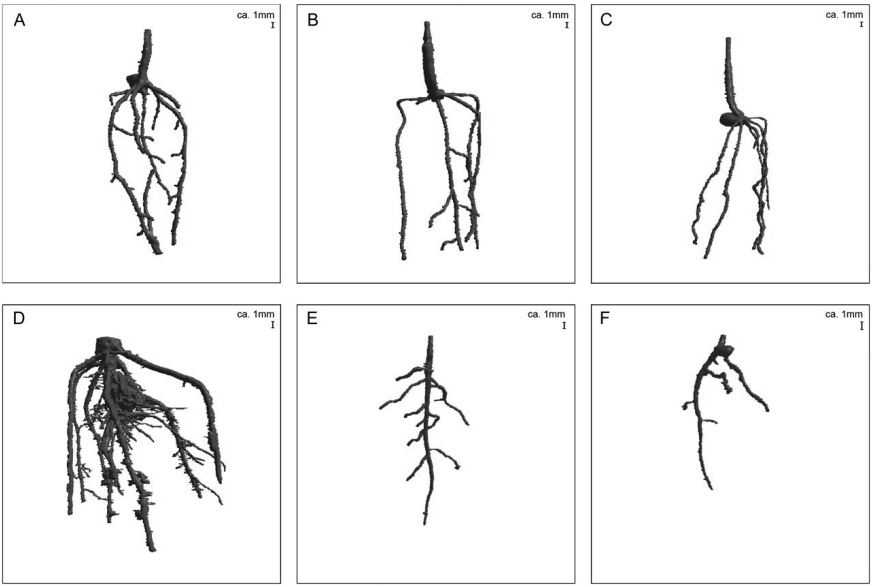
Browsing a digitized rock sample. Andrey Kazak, and Svyatoslav Chugunov. Characterization of Berezov Formation Rock Samples by Digital Core Analysis. Digital Rocks Portal (January 2018). http://www.digitalrocksportal.org/projects/126



item 102: Grassroot rotation

http://possiblebodies.constantvzw.org/inventory/?102

Segmentation of a tomato root from clay loam using RooTrak. In: Stefan Mairhofer, Susan Zappala, Saoirse R. Tracy, Craig Sturrock, Malcolm Bennett, Sacha J. Mooney & Tony Pridmore, RooTrak: Automated Recovery of Three-Dimensional Plant Root Architecture in Soil from X-Ray Microcomputed Tomography Images Using Visual Tracking (2012)
http://www.plantphysiol.org/content/158/2/561



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