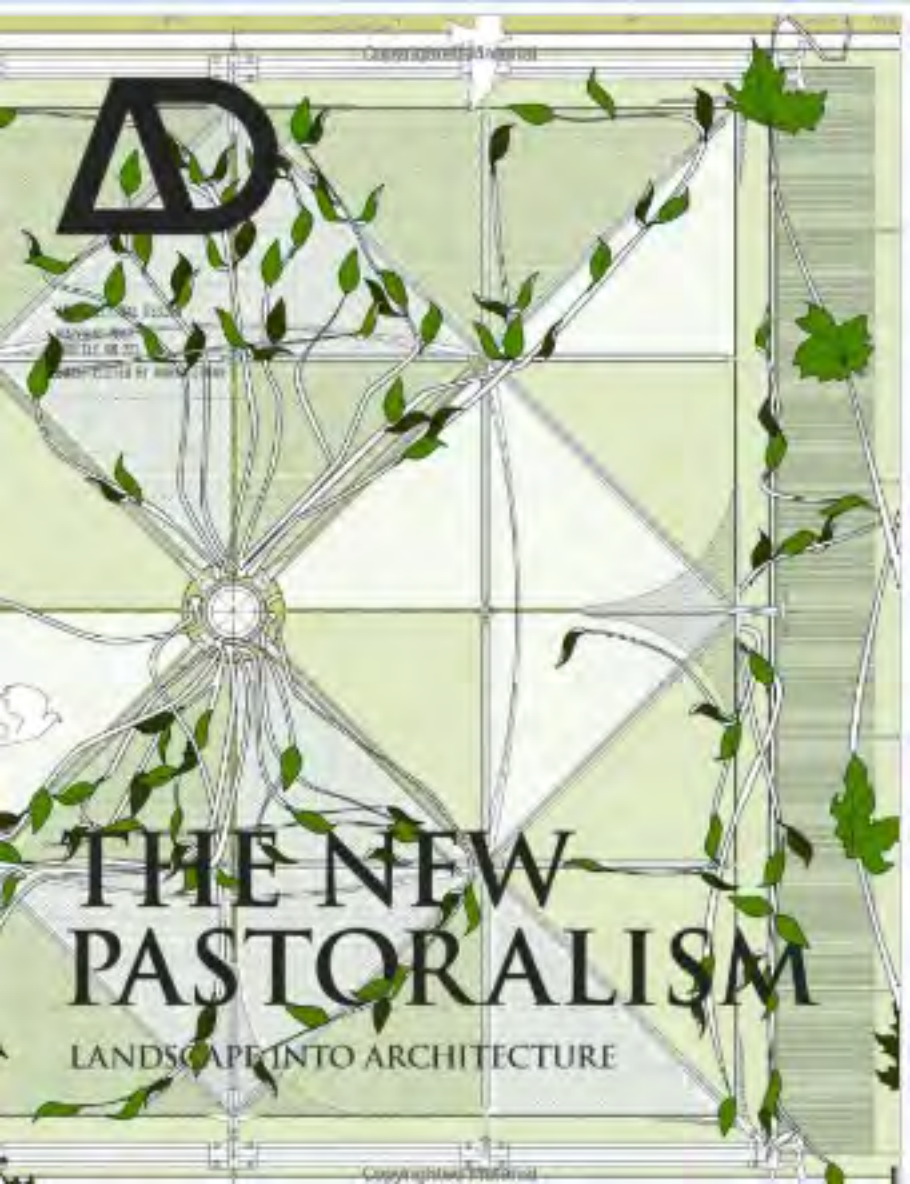
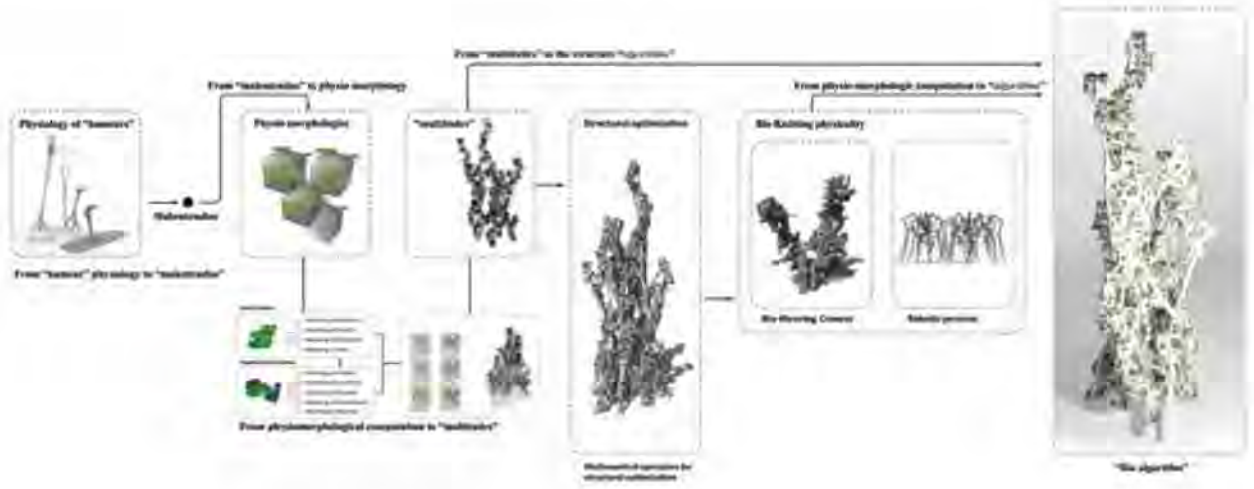

THE NEW
PASTORALISM
LANDSCAPE INTO ARCHITECTURE

NEXT-DOOR INSTRUCTIONS



When pastoralism is trapped by Chaosmosis,[1] this increases the schizoid negotiation of double belonging and double membership, simultaneously framed by local instructions on 'living together' and, at the same time, a furious need to escape, to anywhere, similar to Dan Simmons' 'Transdoor',[2] opening a double window between the 'here, but …' and the 'but elsewhere', to escape from the stuttering of the local forces of permanencies and immobility seeking to conserve a supposed 'authenticity' – that is, the existing situation – regulated by rules and policies … to stop time … a kind of revived Puritanism driven by society-friendly standards for 'good behaviour' and phony eco-friendly attitudes, moralistic totalising scrutiny, recipes for organic health food and over-moisturised soap for a perfect body in the ideal village, like the Truman Show, and in escaping all that, to fulfil irreducible needs like reaching, touching the forbidden, jumping through the only windows that authorise objectionable behaviour in the multiple infra-zones of the doors in electronic machinery (socialising, virtualising, fictionalising, pornoising, criminalising, and gaming the game) … the legitimate need to HOPEFULLY be somebody else, the recognition of a contradictory, Siamese dualism, a symmetrical antagonism between the physical hoax of sedentary statements and the illusion of dematerialised nomadism, a permanent schizoid contingency, naturally intertwined.

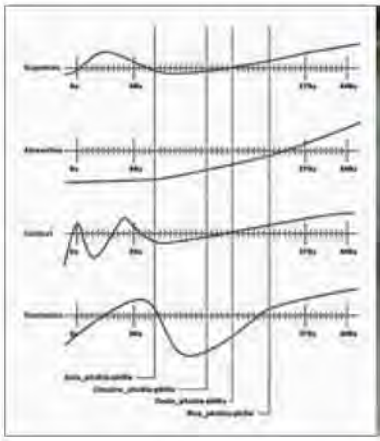
It seems that our times have invited the two demons to the same cozy dinner party, thus provoking a divorce between the next door and the door after that – a permanent schizophrenia.

But this basic and symptomatic opposition imposes itself like a cliché, or more than a cliché – a new standard for 'life', or a caricature of life in which on the one hand there is the petrification of the local, and on the other side the artificialised eroticism of the illusory but necessary objective of freedom, like some natural compensation for the stone-edged statement of the former.[3]

For example, we could easily spend time in the 'bricolage-DIY-village-mall' to buy the perpetuation of what is already existing, to maintain the sclerosis of the environment by adding two limited screws and nails. We could easily buy a condo in downtown Chicago-Bangkok-Shanghai to simulate the happiness of 1950s urbanism transposed into a 'Peyton Place' or 'Pleasantville' vertical village, including swimming pools, the sports centre, the health-food shop and the security cameras, self-adapting to your shape for the ultimate comfort in sleeping equipment, with trendy 'flagshit' design selected by the latest issue of *Wallpaper*, including the latest ice-cube crushing fridge for your imported 20-year-old island Scotch, like the settings in Bret Easton Ellis' novel *American Psycho*,[4] but eviscerated of any psycho-human dimension, and in both cases meant to compensate for the degree of repressed emotion and sensation

New Territories/R&Sie(n), An Architecture 'des humeurs', 2010–
opposite: Step-by-step research: psycho-morpho analyses, protocols of aggregation, structural optimisation, biochemistry extrusion and robotics.

Bio-interview station. The physiological test sets a baseline by measuring mind and bodily (de-)equilibrium over during a 15-minute interview as a bio-scan. It works as an emotions sensor, collecting the biochemical reactions (mainly molecules such as dopamine, adrenaline, serotonin and hydrocortisone) that indicate the atavism reaction of the subject (degree of pleasure or repulsion, attraction or absence of interest) to approach the cartography of unformulated desire, re-questioning the gap, the malentendu between two types of language, bio-psychism and free will. During the test a kind of vapour (nanoparticles) is released.



by providing a kind of discharging catharsis in the other window, operating in the depths of the network infra-zone, in the intimacy of the keyboard, the endlessness possibilities of personal and collective neurosis-psychosis that renegotiate human pathologies, the multiple identities syndrome, the temptation of insurrection through 'inappropriate language and attitudes' no longer tolerated in the physical planetary petit-bourgeois village.

This predictable, Manichaean yo-yoing between 'the next door and another door beyond' poses as the opposite of post-puritanical capitalism by simultaneously marketing the local and the global. This Siamese business plan traps our free will in a new double mass production of products and desires, from moralistic values about 'living together' to scatological, eschatological, compulsive and pathological gimmicks meant to serve as compensation, a transfer of missing parts.

In opposition, or just on the side, could we run an experiment in which the 'village' is a matrix across multiple doors, articulating the conflict immanent in living together without denying the uncertain, unpredictable nature of this conflict, directly revealing the sophistication or the lack of social contract, of neighbourhood protocols, to be adjusted in real time, articulating phantasm and reality, ugliness and beauty, obstacles and possibilities, garbage and fresh blooms, threats and various forms of protection, technicist prowess and forces of nature, interlocked, in keeping with the vitality of the species inhabiting them.

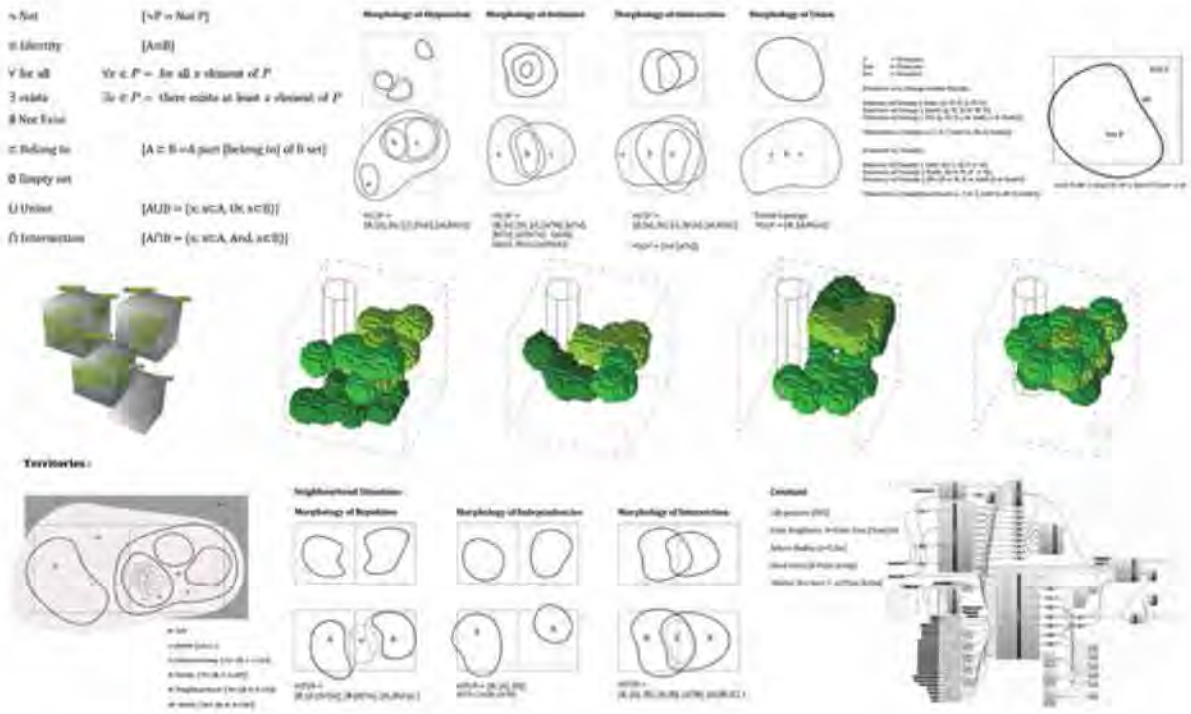
Could we test some experimentation where 'architecture' is used as a strategy to subjectivise the real, the daily jingle, to negotiate simultaneously the contingencies of these dual-dimension needs of sedentary and nomadism, of security and risk, of certitudes and adaptations, as the antidote of the 'model owner', flattery that caresses human atavism, the weakness where we are most fragile, the ostentatious sycophancy of bogus social status that lies at the heart of the obscenity of the new 'world condo village'.

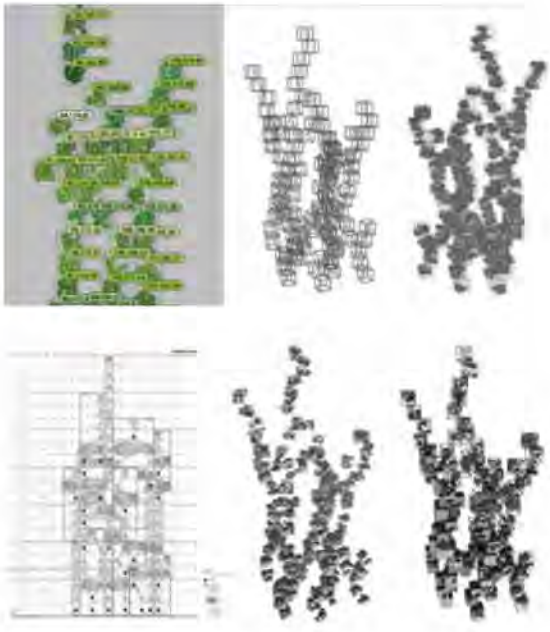
An Architecture 'des humeurs'

An Architecture 'des humeurs', a research project initiated in 2010 by New Territories/R&Sie(n),[5] seeks to create a kind of alphabet book of apparatuses, of knowledge strategies, to protocolise a counterproposal. It cannot be developed without re-evaluating all the tools, strategies, processes and the very raison d'être of technologies. As it navigates, it drifts from the psycho-methodology of collecting desires to the mathematics that interpret them as relationships, set-belonging situations, from psycho-chemistry to the logic of aggregation, from the physio-morphological computation of the multitude to C++ operators for structural optimisation as an artefact of a logic of discovery, from bio-knit physicality for the operation of a

below and bottom: Physio + aggregative morphologies. Mathematical tools to translate the initial *malentendus* (contradictory desires) of belonging with set theory tools (inclusion, intersection, difference, etc.) to extract a cartography of the mind (attraction, exclusion, touching, repulsion, indifference, etc) as a negotiation of 'distances' between the human beings (from themselves to their near environment).

Each initial habitable volume is composed of a 12-metre (39-foot) cube. The colonisation of this void is resolved by negotiation on distance between clusters (family members)/distance to distribution (lift-escape)/distance to the limits (facades)/distance to neighbourhood, interlacing the relationship between phobia/philia from the *malentendus* report.



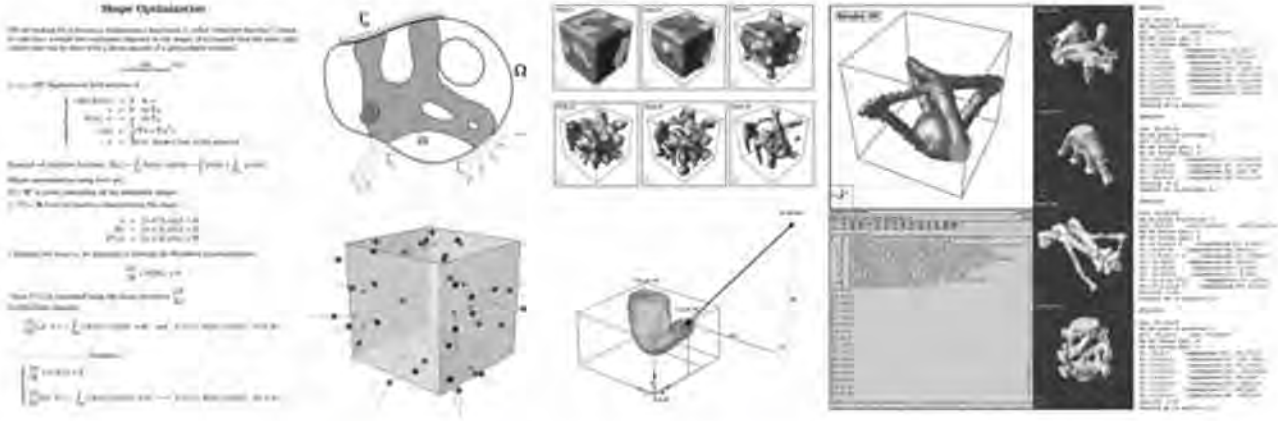


nonlinear geometry to a robotic process and behaviour, and from biochemical research to robotic design and G-code algorithms for automated manufacture.

Being political today is not a lazy fascination with slums, a social-political whitewashing such as was seen at the last Venice Biennale, in perfect symmetry with the mainstream, or the ridiculous PS1 programme over the last two years, trying to manipulate neighbourhood interest with a ping-pong table and a spiky Smurf to wash away the local pollution. It means defining a line of conflict, the aesthetics of conflict, a line of resistance and resilience,[6] a line of creation that infiltrates the cracks, the interstices between the chapel of power and the self-assurance of the powerful, questioning the order of discourse, human free will, the uses and abuses of mathematics, technological imperialism and necessity, machinist arrogance and the potential of narration to infiltrate and de-alienate the ghetto of expertise and control promoted by power – and, at the same time, contradictorily, to work for the emergence of a bottom-up strategy of knowledge by means of computational/DIY urbanism, neither mimicking favelas nor denying science, adopting neither positivism and its mysticism nor its opposite, a regressive nostalgia, but, through a mimesis of their evolutionary vitality with its (un)certain trajectories, human pathology, conflictual apparatuses and contingencies, seeking to achieve a sophisticated and unique assemblage of and for the people that architecture was originally supposed to 'dominate'.

below top: Structural optimisation strategies and procedures. Mathematical process to obtain incremental and recursive optimisation (exo-local, local and hyper-local) that simultaneously calculates and designs the structural elements supporting the physio-morphologies. The shapes are made only through successive iterations that join the morphologies by physically and structurally coagulating the space between them, so that they can support each other both individually (local calculations) and as clusters (exo-local calculation). The calculation meets precise inputs (constraints and characteristics of the building material, initial state, dead load and transfer of forces, intensity and vectorisation of these forces).

below bottom: 3-D print of outputs from the previous calculation.



Top Down and Bottom Up

How can we reconsider the notion of space, a term used to death by modernity, of a 'living zone' understood not in terms of repetitive stereotypes or a modernistic promenade, but as a way to generate multiple singularities, a polyphony of multiplicity, a multitude, where architecture engages and generates empathy, sympathy and, naturally, antipathy as a factor in relationships, a transactional operator, a vector of negotiation between each of us and others to bring back together the 'elsewhere' and the 'here, and yet', the 'near and far', stability and nomadism, the 'village' as a secure sensation, a whispering *Heimat* ,[7] and at the same time to hear the scream of its intrinsic forces of transformation as its vitality overflows.

Looking beyond a strictly scientific and architectural horizon, and reading beyond the usual philosophical benchmarks, it is tempting and, indeed, enlightening to envisage a modus operandi from a metaphorical and strategic angle in which exploring the 'chemistry of bodies' often envisaged as an element liable to disturb and alter linear, authoritarian logics, can achieve what we might call aggregations of 'swarm'[9] intelligence. Similarly, it is tempting to look at the relationship of the body to space, and even more, of bodies in their social relations: not just their interrelation within a given cell, but also their intra-relations as part of an osmosis with others. This results in an architecture that plays with conformism and conventions, and instead offers an 'undisciplined' conception of production in its articulation of the collective and the political.

An Architecture 'des humeurs' constitutes the second leg (after I've heard about, in 2005)[10] of an architectural voyage (in the spirit of Thomas More's *Utopia* of 1516) federating the skills of scientists from a host of disciplines (mathematics, physics, neurobiology, computations, scripts, nanotechnologies,[11] robotics). This exploration is an attempt to articulate the real and/or fictional link between geographical situations and the narrative structures capable of transforming them. Specifically, the focus here is on using nanotechnology to collect physiological data from all participants to prepare and model, by means of these 'moods' – a (post)modern translation of Hippocrates' four humours – the foundations of an architecture in permanent mutation, modelled (and modulated) by our unconscious. It is an investigation into an architecture of uncertainty and indetermination.

An Architecture 'des humeurs' is an interrogation of the confused region of the psyche that lies between pleasure/desire and need/want. It works by detecting physiological signals based on neurobiological secretions and thus achieving a 'chemistry of humours', treating future property buyers as inputs who generate a range of diverse, inhabitable morphologies and the relationships between them. The groundwork comes from a rereading of the *malentendus* inherent in the expression of human desire. Those that traverse public space through the ability to express a choice

3-D print of structural optimisation outputs.

The possibility of structure as a logic of resistance,[12] emerging a posteriori to become inhabitable morphologies, calls into question the traditional client-architect relationship and offers an alternative way of generating forms.

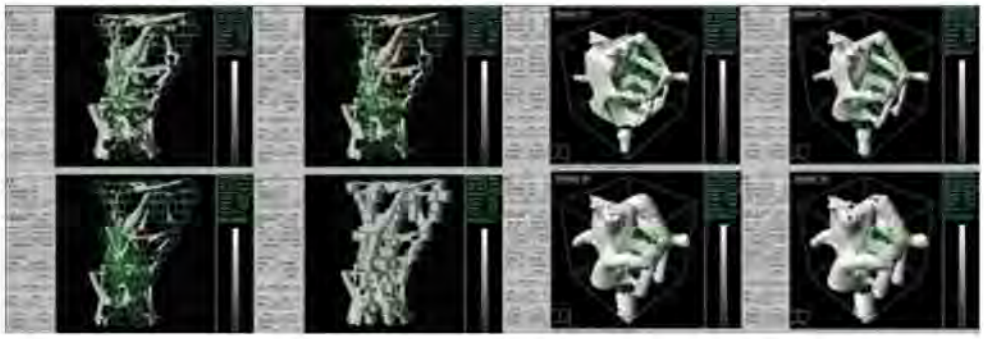
by means of language, on the surface of things, and those that are underlying and perhaps more disturbing but just as valid. By means of the latter we can appraise the body as a desiring machine with its own chemistry: dopamine, hydrocortisone, melatonin, adrenaline and other molecules secreted by the body itself that are imperceptibly anterior to the consciousness these substances generate. Thus, the making of architecture is inflected by another reality, another complexity, breaking and entering into language's mechanism of dissimulation in order to physically construct its *malentendus*, including the data that the acephalous body collects that can tell us about its adaptation, its sympathy and empathy, in the face of specific situations and environments.

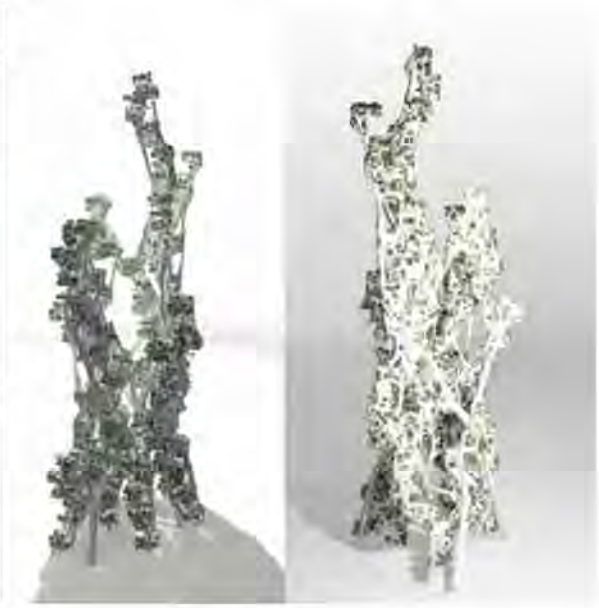
The collection of humours is organised on the basis of interviews with a hundred people that make visible the conflict and even schizophrenic qualities of desire, between those secreted (biochemical and neurobiological) and those expressed through the interface of languages, to make palpable and prehensible the emotional transaction of the 'animal body', the headless body, confronted with the mutation of a situation, the drifting of an environment. The protocol was to generate a reactive emphasis of phobia-philia inputs and to record, using the emitter-sensor-detector feature, the biochemical evolution of the 'mind' and read this data as relationship outputs comprising psycho-perturbation and psycho-stuttering as a result of attractor-repulsor emotional contingencies.

Mathematical concepts borrowed from set theory are used as a strategic relational tool to extract from these multiple 'misunderstandings', a morphological potential (attraction, exclusion, touching, repulsion, indifference) as a negotiation of the 'distances' between humans and humans, humans and limits, humans and access that constitute these collective aggregates.

This branch of mathematics was founded by Georg Cantor in the late 19th century. Its aim is to define the concepts of sets and belonging (union, inclusion, intersection and disjunction). This theory can be used to describe the structure of each situation as a kind of collective defining the relationships between the parts and the whole, while taking into consideration that the latter is not reducible to the sum of its part (or even the ensemble of relationship between the parts). It is becoming the matrix, the combinations for the relational structure on which an inhabitable space lows for the definition of all the properties of a given situation in relational modes, both the relationships between the elements themselves (residential areas) and those between these elements and the ensemble or ensembles. It describes morphologies characterised by their dimensions and position in the system and, above all, by the negotiations of distance they carry out with the other parts and as multiple artefacts, produces relational protocols, relational relationships and relational aesthetics: protocols of attraction, repulsion, contiguity, dependence, sharing, indifference, exclusion.

right: Screenshot on Calculus (C++ Linux) of the exo-local, local and hyper-local situations.





These relational modes are simultaneously elaborated within the residential cell and on its periphery in relation to the neighbouring colonies. The multiplicity of possible physio-morphological layouts based on mathematical formulations offers a variety of habitable patterns in terms of the transfer of the self to the other, and to others as well. The data obtained from the physiological interview by means of nanoparticles concerns the following issues: familial socialisation (distance and relationship between residential areas within a single unit), neighbourhood socialisation (distance and relationship between residential units), modes of relations to externalities (biotope, light, air, environment), and also seeing, being seen and hiding, modes of relating to access (receiving and/or escaping, even self-exclusion) and the nature of the interstices (from closely spaced to panoptic).

In contrast to the standard-model formatting of habitats, this tool offers contingencies that produce the potential to negotiate with the ambiguities of one's own humours (tempers) and desires. It enables the mixing of contradictory compulsions (appearances) and even some *malentendus*: 'I'd like that but at the same time/maybe/not/and the opposite.' These *malentendus* are directly influenced by the pathologies generated by collective living, oscillating between phobia and philia (claustro-agora-xeno-acro-nocto-socio-neo phobia/philia).

The secondary goal of the research, in terms of mathematical development, concerned structural optimisation, defining the structural sustainability of the system as a post-production. The possibility of structure as a logic of resistance,[12] emerging a posteriori to become inhabitable morphologies, calls into question the traditional client-architect relationship and offers an alternative way of generating forms. Emancipated from the conceptual logic where the structure is the starting point, the spatial contract takes the place of the social contract. Since it is conceived a posteriori, the structure is reactive, adaptive to multiplicity, as the permanent discovery of new agencies, entities and singularities.

Within the framework of this research, François Jouve developed a mathematical process for 'empirically' seeking optimisation, by creating forms out of constraints and not vice-versa.[13] The structural optimisation algorithm differs from directly calculated structural methods such as calculating the load-bearing structure of a building after it has been designed. In contrast, the algorithm allows the architectural form to emerge from the trajectories of the transmission of forces simultaneously with the calculation that generates them. The algorithm is based on (among other things) two mathematical strategies, one taken from the derivative initiated by the research of French mathematician Jacques Hadamard (to modify a shape by successive infinitesimal steps, to improve the criteria we want to optimise, as a permanent variation of boundaries) and

below top: Bio-cement weaving (material expertise). Development of a viscous and adherent secretable material so as to produce this morphologically complex structure. This is a bio-cement component, a mix of cement and bio-resin developed by the agricultural polymers industry that makes it possible to control the parameters of viscosity, liquidity and polymerisation, and thus produce chemical and physical agglutination at the time of secretion.

below bottom: Robotic process, behaviour and design. Development of a secretion and weaving machine that can generate a vertical structure by means of extrusion and sintering (full-scale print) using a hybrid raw bio-plastic cement that chemically agglomerates to physically constitute the computational trajectories. This structural calligraphy works like a machinist stereotomy comprising successive geometrics according to a strategy based on a repetitive protocol.

the other from the protocol of the representation of complex shapes by Cartesian meshing through level set (to understand locally what could be the line of the highest or lowest resulting point, if we project the local incremental iterative calculus onto a 2-D diagram, to extract the X,Y position in the space as data to be re-injected into the next step of the calculation.)

This strategy of incremental and recursive optimisation (ex-local, local and hyper-local) approaches simultaneously calculates and designs their trajectories, supporting the multiplicity and heterogeneity of physio-morphologies. Following the non-deterministic aggregation of the unpredictable overstacking of desires, the structural branching and coagulation are generated by successive iterations of calculations that physically link the interstices between morphologies so that they can support each other locally and globally. The calculations satisfy precise inputs, including the constraints and characteristics of the materials used, initial conditions, dead load, and the transfer of forces, intensity, and vectorisation of these forces.

The third part of the research was to define a construction protocol able to handle complex, non-standard, non-repetitive geometries through a process of secretion, extrusion and agglutination. This frees the construction procedure from the usual frameworks that are incompatible with a geometry constituted by a series of anomalies and singularities.

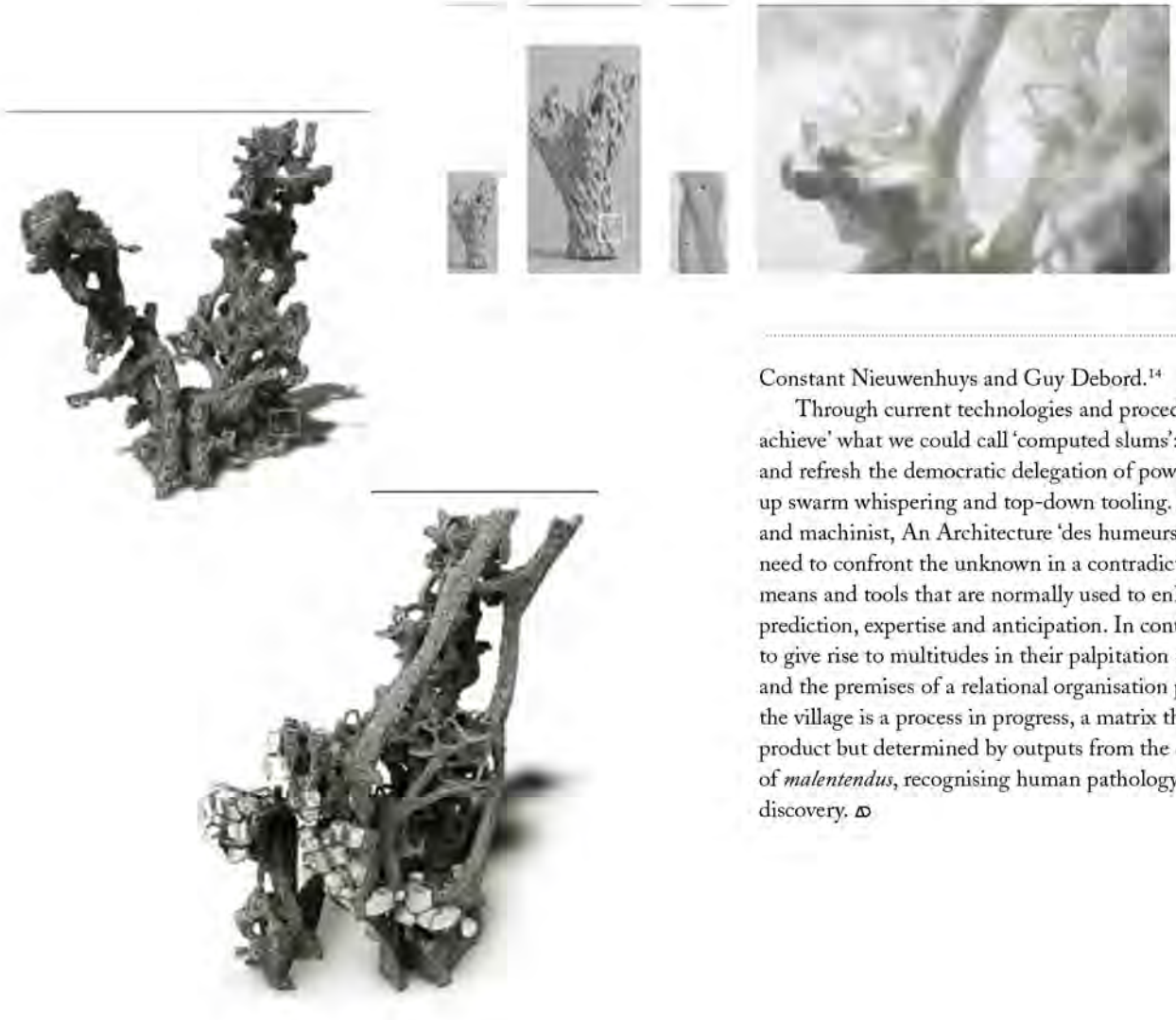
The key is the development of a secretion and weaving machine that can generate a vertical structure by means of extrusion and sintering (full-size 3-D printing) using a hybrid raw material (a bio-plastic cement) that chemically agglomerates to physically constitute the computational trajectories. This structural calligraphy works like a machinist stereotomy comprised of successive geometrics according to a strategy based on a non-repetitive protocol. This machine, both additive and formative, uses a bio-cement component, a mix of cement and bio-resin developed by the agricultural polymers industry that makes it possible to control the parameters of viscosity, liquidity and polymerisation, and thus produce chemical and physical agglutination at the time of secretion. The mechanical expertise of this material is made visible (by constraints of rupture induced by traction, compression and shearing, and so on).

The mathematical process of empirical optimisation makes it possible for the architectural design to react and adapt to previously established constraints, instead of the opposite.

Through the use of these computational, mathematical and mechanisation procedures, the urban structure engenders successive, improbable and uncertain aggregations that constantly rearticulate the relationship between the individual and the collective, between top down and bottom up, and that reactivate the potential for the self-organisation and creativity of the multitude in pursuit of the metabolism developed by

Notes

1. The title of Félix Guattari's last book: *Chaosmosis: An Ethno-Aesthetic Paradigm*, Indiana University Press (Paris), 1995.
2. Transdoor is a kind of 'farcasting', a kind of 'Beam me up, Scotty' carried out in the domestic zone of a basic and banal apartment. Dan Simmons, *Hyperion*, Doubleday (New York), 1989.
3. Second Life description in the film *The Cat, the Reverend and the Slave*, by Alain Della Negra and Kaori Kinoshita, 2009.
4. Bret Easton Ellis, *American Psycho*, Vintage Books (New York), 1991.
5. '*Humeurs*' in French is not so easily translatable in English, and this is why we kept it in French. It means 'mood', 'temper' and 'fluids' in the sense of Hippocrates' four humours: blood, yellow bile, black bile and phlegm. See: www.new-territories.com/blog/architecturedeshumeurs/. The research was carried out with mathematician François Jouve in charge of working out the dynamic structural strategies; with the architect and robotics designer Stephan Henrich; Winston Hampel and Natanael Elfassy on the computational development, with the help of Marc Fornes; and Gaetan Robillard and Fréderic Mauclere on the physiological data-collection station, following a nano-technologies scenario by R&Sie(n)-Berdaguer & Pejus. The research has been funded by the Laboratoire-Paris: Director David Edwards, curating Caroline Naphegyi.
6. The research is organised on several levels: from the physiology of humours to misunderstandings; *malentendus* (a word that can be translated as 'misunderstandings' or 'mishearings'); from the misunderstanding of humours to physio-morphological computation; from physio-morphological computation to the multitude; mathematical operators for structural optimisation; the 'algorithm(s)'; from the 'algorithm(s)' to bio-knit physicality; toolings/robotic process; and tooling/bio-cement weaving (material expertise).
7. '*Heimat*' is a German word that has no simple English translation, denoting the relationship of a human being towards a certain spatial social unit. It is often expressed with terms such as 'home' or 'homeland'.
8. François Roche, *Reclaim Resi[lience] stance*, *Log 25*, Summer 2012.
9. In the sense of the word as used by Toni Negri and Michael Hardt in *Empire*, Harvard University Press (Cambridge, MA) 2000.
10. See Neil Leach, *AD Digital Cities*, July/August (no 4), 2009, pp 40–5.
11. Nano receptors can be inhaled, making it possible to 'sniff' the chemical state of the human body. Like pollens, they are concentrated in the bronchia and attach themselves to the blood vessels. This location makes it possible for them to detect traces of stress hormones (hydrocortisone) carried by the haemoglobin. As soon as they come into contact with this substance, the phospholipidic membrane of the nanoparticles dissolves and releases several molecules, including formaldehyde (H^2CO) in a gaseous state. The molecules rejected by the respiratory tract are detected using cavity ring-down spectroscopy (CRDS). This is a method of optical analysis using laser beams programmed to a particular frequency, making it possible to measure the density of airborne molecules. The wavelength used for the detection of formaldehyde is around 350 nanometres.
12. 'A scientist, a mathematician, creates a function ... it is mainly an act of resistance ... against the wishes of casual opinion ... against the whole domain of stupid questioning ... Creation is resistance ... it is the production of exaggerations ... and their existence is the proof of their resistance ... against stupidity and vulgarity.' Gilles Deleuze, *Abecedarium*, 1988–9, an 8-hour-long video interview about his philosophic ideas and concepts in alphabetical order: 'A' like Animal, 'B' like Boisson (drink), 'C 'like Culture, 'D' like Désir (desire), 'E' like Enfance (infancy), 'R' like resistance and so on.
13. Shape optimisation (C++ on Linux, developed by François Jouve).
14. In the Amsterdam Declaration, Amsterdam, 10 November 1958, reprinted in Internationale Situationniste #2, December 1958.



Constant Nieuwenhuys and Guy Debord.[14]

Through current technologies and procedures we can 'un-achieve' what we could call 'computed slums': we can re-question and refresh the democratic delegation of power between bottom-up swarm whispering and top-down tooling. Animist, vitalist and machinist, An Architecture 'des humeurs' rearticulates the need to confront the unknown in a contradictory manner by means and tools that are normally used to enhance control and prediction, expertise and anticipation. In contrast, it expects to give rise to multitudes in their palpitation and complexity, and the premises of a relational organisation protocol, where the village is a process in progress, a matrix that is not a final product but determined by outputs from the multitude of desires, of *malentendus*, recognising human pathology as a process of discovery.

all above: Nonlinear knitting extrusion. Development of a construction process that can deal with complex, non-standard geometries through an agenda of secretion, extrusion and agglutination.

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