”Dirty Geometry”

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For whom do we draw buildings? Why does contemporary architecture look the way it does? Why are certain aesthetics considered more valid than others? Is the urban environment representative of its inhabitants? Who are included or excluded? Who are taking part in the urban design and development of Stockholm?

I believe that these questions are elemental to the architectural practice. Therefore, the choice of theme(s) for my thesis project was not a hard one.

With this project, I propose Dirty Geometry: norm-bending design that could challenge conventions within the field of architecture. It is an investigation of concepts such as ugliness, beauty, architecture and the human body, interiority, femininity and "bad taste". The purpose is to, with the aid of parametric design processes, make Stockholm less boring and more dirty.

There is a specific client whose desires this project aim to fulfil. She is my alter-ego, and will tell you more about the design and what it is for.
"You are just too much."

Wow, thanks!!

HI THERE!

“My name is RuPaula and I am longing for some dirtiness in Stockholm! Luckily, I am not alone. So, I found Viktoria, she is becoming an architect and could help me realizing a fantasy that I have been having for some time now.

The idea is to create a pavillion that can be a chill-out space as well as host intimate culture happenings. I want it to be like my own living room, where I can invite the people of Stockholm to come inside, take off their shoes, and get comfortable. Everyone are welcome! Well, except for sexists, racists and people who have a problem with LGBTQ, of course - they can get lost! This pavillion is going to be a safe space, a decadent space, playful, fun, a camp space.

Stockholm is sooo boring, am I right?! Seriously, all these plain buildings with conventional facades, and don’t get me started on the interiors... A nightmare! Grey and beige are the colors of death, as my grandmother used to say. Ain’t nobody got time for that!

And when it comes to cultural life, Stockholm is practically dying! My friends are moving to Berlin, but I have not given up on Stockholm quite yet.

I know that many people are just dying to get their life, to break free from the constraining norms. One of my big inspirations is drag culture, because of the way humour is used in a subversive way to question gender identity, power structures, norms and empower people of the LGBTQ-communities.

In any city, people should have space to be themselves. So, what are we waiting for?!”
This is a short attempt of explaining the concept of queer (there are of course other ways of defining it and much more to it that will be presented here):

"We’re Here, We’re Queer, Get Used To It!"

During the annual gay liberation parade in New York 1990, “queer” was used instead of “gay” to acknowledge the fact that people who did not fit into society’s norm were continually being discriminated and excluded, and instead of being “gay” (old meaning being “happy”), there was anger and frustration and demands for equal rights. But instead of “only” fighting for these rights, queer is to question the norm itself, the very foundation of the structures of our society, such as what it is to be a man or a woman. It is a matter of taking the word “queer”, which originally means “perverse” and “abnormal”, and putting it out there. Queer could be said to be a bit hard to define.

Tiina Rosenberg writes in Queerfeministisk Agenda that it is the way it ought to be, because its purpose is to disturb, twist and shake up categories, not become a category itself.

Source:
"An era without ugliness would be an era without progress."

Asger Jorn

What is ugly? And what is beautiful? Says who?

Ugly is quite a gut feeling, hard to formulate as a stable definition. Studio 11. Ugly and more have been studying ugliness and put together "an incomplete ABC of ugly architecture". In it, there are words such as "weird", "strange", "abnormal". Historically, these qualities have captivated people; an example is the freakshows of the 19th century. The era of modernity gave way for sight as the most important of human senses. Hence, aesthetics and objects on display became increasingly important as a sign of high social status. The freak show fascination and the importance of beauty went parallel with each other and are still today.

One of the main references on the topic of the ugly, Karl Rosenkranz’s Aesthetics of Ugliness, was published in Germany in 1853. He laid out the qualities of ugliness in three categories: lack of form (when form is expected) lack of harmony (when harmony is expected), lack of symmetry (when symmetry is expected). Apparently, the issue is one of expectations. So-called "blob architecture", exemplified by the work of Greg Lynn and Peter Cook and Colin Fournier’s Kunsthaus, Graz, bulge into a site without any apparent order. It is then unexpected in its particular site. Similarly, Umberto Eco, in his book On Ugliness, described the reaction to a toothless stranger as a deviation from the expected. Ugly could also be the asymmetrical growth of a third limb or the addition of a misplaced window. The projection of an expected image onto any given object is part of one’s perception of the ugly. Attacking "the ugly" is also attacking one’s own interpretation of what is considered ugly.

There is also the lack of knowledge. One notorious example is the thirteenth century explorer Marco Polo who is said to have mistaken a rhinoceros for an "ugly unicorn".

Dirty geometry is about challenging these structures of power and the "cleansing" of the city following neoliberal mechanisms. Dirty geometry acknowledges that aesthetics are political and aims to question current power relations therein. Clean is the norm. Dirty is the bending of the norm, the strange, the decisive, that’s luring behind the clean facade. Dirty geometry intends to manifest what could happen when the clean facade cannot be held any longer and the dirty stain is allowed to grow. It could be seen as a glitch in the system.

The communication of the ugly, as a deviation from the ideal model, inevitably relies on the understanding of the expected human or animal form. Deviations of the expected are allowed and enjoyed, but when extremes are reached, the unexpected form’s uginess is confirmed by repulsion.

Dirty design because we live in a dirty world.

Ditrey van Helvert

Just like the ugly, dirt has been said to be matter out of place. It is a stain on a clean surface, noise in a clean soundscape. The stain or noise should not be there, and should be removed. But the more you clean, the dirtier it gets. Dirt does not only occupy space - it threatens to contaminate all the good space around it. Dirt, the ugly object, has a spatial power quite lacking in the beautiful object.

In 2004, former president of the Royal Institute of British Architecture (RIBA), George Ferguson, proposed that the nation’s "most vile" buildings should be given a grade X listing to speed up their demolition. "We have built monocultures since the end of the war and so little of it contributes to decent, civilised places", said Ferguson. When a man of high power and influence like him condemns "ugly architecture" as being "a threat to good citizenship", it is a sign of control. To call something "ugly" can be a way of positioning yourself in a favorable position, to devalue something by the means of power.

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Sources:
Cousins, Mark. The Ugly (Part 1-3], AA Files, No. 28 (Autumn 1994), pp. 61-64, AA Files, No. 29 (Summer 1995), pp. 3-6 AA Files, No. 30 (Autumn 1995), pp. 65-68
Studio 11, Autumn 2017. (Ugly), The School of Architecture, KTH Royal Institute of Technology
https://www.telegraph.co.uk/news/uknews/14959534/5ile-buildings-that-should-be-demolished.html
why architecture and fashion need a dirtier direction

Investment in the look is not as privileged in women as in men. More than other senses, the eye objectifies and masters. It sets at a distance, and maintains a distance. In our culture the preeminence of the look over smell, taste, touch and hearing has brought about an impoverishment of bodily relations. The moment the look dominates, the body loses its materiality.

Lucie Irigaray

The metaphor of architecture as clothing can be traced back to Vitruvius and possibly even earlier. Clothing provided the body with wearable shelter, much like the hut provided stationary shelter.

To draw an analogy between the structure of the human body and architecture is tempting, as much for aesthetic as for symbolic reasons. In our subjective representation of the order of the universe it is not the atom but our body which is the primordial element of reference. It is our way to measure big and small, geometric and amorphous, hard and soft, narrow and wide, strong and weak. A healthy human body appears balanced to us. It is a whole to which nothing more can be added; we can dress or decorate it, but cannot add a third arm, nor extend a leg. Our sense of beauty is probably linked to form of our body. Ugliness is also related to the interiority of our bodies. If the male body is the norm, then all other bodies are not. The female body has been constricted and shamed through history and still is today. There seem to be something ugly, something dirty, about menstruation and about women’s sexualities.

Traditionally, women and their bodies have been put in relation to nature, men to culture. Nature is seen as a fertile and nurturing mother or as a wild creature generating chaotic states that need to be controlled. After the scientific revolution of the 16th century, the mechanistic view of the universe secured domination over the female attributes of nature. In Le Corbusier’s modern urbanism, for example, nature is made to be a part of the urban machine, and is then relegated to the background, expelled by the economic-political forces of capitalism based on the exploitation of nature.

For something to be excluded, two parts are necessary: something inside, something outside. Something is excluded. And what is excluded, or repressed, that interior representation in the system of architecture that determines an outside is woman and woman’s body. Women, who are the bearers of the greatest norm (representationally also acknowledging the non-normative. Architecture in the Renaissance established a system of rules that is the basis of Western architecture. Based on the classic texts from Vitruvius, the male body is put at the center of architectural rules and configurations. The exclusion of the female body has taken place in a process of symbolization that works at the level of architectural ideology, an almost unconscious level.

One example of an artist who has continuously questioned and challenged the objectification of the non-male bodies is ORLAN. From the early sixties to the present day, she has been investigating the poetics of the body, in which body part and carnal art are the fundamental stages. Real body and imaginary body, lived body and emotional body, mystic body and social body, diffuse body and hybrid body, all merge together.

Beside the objectification of the female body, it is important to consider a intersectional perspective. Depending on ethnicity, socio-economic status (class) etc, your body will be considered differently, and if you are LGBTQ, your body will also be treated in a certain way by society’s apparatus of control. I will not dive into these control mechanisms in greater detail, but most people can probably relate to the fact that the body, for instance, moves more or less freely in the recreation park, becomes more cautious in the library, and merges with noise while waiting in the subway station. Our bodies are being controlled.

Sources:
https://www.huffingtonpost.com/lance-hosey/sexism-architecture-_b_7780878.html

Feminist theory identifies two forms of “reduction”: reduction to body (the treatment of a person as identified with her body, or body parts) and reduction to appearance (the treatment of a person primarily in terms of how she looks, or how she appears to the senses). In the bourgeois society, the notion was that the woman’s role was that of a “beautifier”, by her actions but also by her very presence. It demonstrated a belief in the transference of feminine attributes from the woman herself to the home and its objects. A chandelier could be described as “delicate”, which has been associated with the female body.

Comparing women’s bodies to buildings is a double reduction, and the reverse - comparing buildings to women - has always been common among architects. An example is Frank Lloyd Wright, who in a 1957 interview was asked “What do you think of [Marilyn] Monroe as architecture?” “Extremely good.”, replied Lloyd Wright. Flash forward two millennia. In the 1970s and 80s, Japanese architect Arata Isozaki routinely employed a special curve - in chair backs, floor plans and other building forms - that he traced from the contours of Marilyn Monroe’s 1953 Playboy centerfold, which he called “the most perfect curves” and “a symbol of American beauty.” Today, some Australian architects have proposed a new tower for Melbourne that is inspired by the body of recording artist Beyoncé Knowles. According to reports, the “curvaceous” form of Elenberg Fraser’s 68-story Premier Tower emulates Beyoncé’s form in her recent video Ghost, in which she is seen gyrating under wind-blown veils and writhing inside a clingy bodysock. Is the transformation of Marilyn’s or Beyoncé’s body into a chair, a city hall, a museum, or a skyscraper merely artistic inspiration, or does it signify something more sinister, the literal objectification of women?

And what about the fashion industry and architecture? Modernists used to compare building ornamentation and stylistic decorations to “the ribbon and ruffles” of women’s fashion. It was dismissed in favor of an architecture that would be achieved in the spare functionality of menswear. The term “fashion”, used together with architecture, became synonymous with the concepts of short-lived styles, and femininity. Even today, most leading architecture firms avoid using building styles, materials and details that can be described as decorative.

Today, 3D-printing technology is once again bringing architects and fashion designers together. There are promises of intelligent fabrics, hi-tech, costume-zed to fit perfectly. It is quite defeating to observe that there is only one kind of body that is assigned this new, spectacular design - the normative body. Through this norm, we are buying in on the concept of all other bodies being abnormal. (“...”) the strapless, semitranlucent minidress was designed specifically for Dutch model Ickeliena Stange,and 3D printed in structural pieces that were custom fitted to her slender form. After finalising the dress’s 3D design, a scan of the dressmaker’s form was made to match the model’s body for the final file to print. Again, this was a new form of design interaction made possible by digital technologies.”, writes Niccolò Casas about the design collaboration with fashion designer Iris van Herpen. From my perspective, parametric design methodology should be norm-bending, not producing norms.

In 1977, her performance “The Artist’s Kiss” (Le baiser de l’artiste), during the FIAC in Paris, became a huge scandal. Outside the Grand Palais, a life-size photo of her torso was turned into a slot machine. After inserting a coin, one could see it descending to the groin, and then was awarded a kiss from the artist, who stood on a pedestal behind it.

Left: Elenberg Fraser, Premier Tower, Melbourne, Australia.
Right: Beyoncé, Ghost music video.
"BAD TASTE"

"I’m a great believer in vulgarity - if it’s got vitality. A little bad taste is like a nice splash of paprika. We all need a splash of bad taste - it’s hearty, it’s healthy, it’s physical. I think we could use more of it. NO taste is what I’m against."  

Diana Vreeland

SEXUAL POLITICS OF TASTE

As modernity progressed, there was massive critique on the Victorian interiors. This critique came (mostly) from men. They talked of feminine superficiality and bad taste. This stereotypical idea of "feminine taste" that still pervades our western, industrialised culture - that of "unnecessary" ornamentation and "excess" of gilt and glitter - has its roots in the 19th century. The art historian Rozsika Parker has claimed that "twentieth-century concepts of femininity are still deeply embued with Victorianism". Furthermore, with the rationalisation of modernism, the role of feminine culture, linked to desire and consumption, was directly undermined.

The language of modernism works through a hierarchical, binary system of terms; nature vs. culture; fashionableness vs. universal values; surface ornamentation vs. minimal form; consumption vs. production; taste vs. design; and so on. Man: designer, woman: consumer.

When postmodernism, carrying with it the impact of popular culture, challenged the rationalism of modernism, this opened up for the deconstruction of apparent truths and possibilities for feminist movements. However, postmodernism was not founded in an interest for women's experiences. Postmodernism operated mainly in the public sphere, where the main design practitioners were still professionalised men.

Postmodernism did, however, intend to eliminate the barrier between high culture and popular culture. This occurred more of less at the same time as the women's movement and when women became major forces in the arts. And as postmodernism celebrated the commercial, women's culture and taste as part of being the main consumers, had finally come to be recognized as valid.

For the first time since the concept of design had been constructed as the masculine equivalent and controller of feminine taste, that taste appeared to be openly controlling design and receiving approval from the high cultural institutions. In a new era of stylistic "free-for-all", all kinds of products and design became available. As feminine taste gained recognition, in the late 20th century, traditional notions of masculinity and femininity were being questioned, challenged. A variety of sexual identities became more available. Material culture played a role in forming, reinforcing, reflecting and embodying these identities like it always had.

At the same time as the term "queer" appeared and people fought for their right to be openly gay and receive equal rights, sexual inequality was still in affect, and is still today. The feminine is still considered "trivial" and related to the sphere of the vulgar and marginal. One one level, women are linked to a stereotypical image of femininity formed by continuing ideology of separating "male" and "female"; on the other hand, they are encouraged to reject that image and to aspire to the masculine and gain cultural legitimacy.

Even though progress has been made, the conclusion is that the trivialisation and downgrading of feminine taste that has taken place ever since women became exclusively linked with the domestic sphere has resulted in its marginalization within contemporary cultural life.

Sources:

Sparke, Penny. As Long As It's Pink, 1995, Pandora, London.
Pollock, Griselda/McLeod, Mary. Excerpts from 'Modernity and the Spaces of Femininity'/'Everyday and Other Spaces'. In: Rendell, Jana/Penner, Barbara/Borden, Iain (edit.) Gender Space Architecture. 2000, New York, Routledge.

FEMININITY AND INTERIORITY

a very short (Western european/American) herstory lesson

Before modernity and the era of consumption, women were very much involved in the production within the home and the local society. The production was gendered (sewing was "naturally" a female practice), but in this, they were also involved in design processes. As more and more people moved into the cities, the middle and upper class started to buy goods instead of producing themselves. Women soon became the main consumers. Back then, in the nineteeth-century, the ideals of womanhood where closely connected with the private sphere. Men claiming public space was a process depending on women being tied to domestic space. The home was decorated with all kinds of objects on display, reflecting social status and taste.

Comfort was a main idea, the interior being a safe place in a "dangerous" urban reality. Textiles played an important role in creating "cozy corners" and decorating the parlours of the middle- and upper class women. The decoration of the home, the "home-making" process, was seen as important in the Victorian society where moral values were key.

The modernist movement of the 20th century brought it a new aesthetics, new values for the interior. No more "cosy corners" and velvet drapes, to say the least. The gender inequalities of society was pretty much maintained - modernism was supposed to make life easier for the housewife, but a housewife she was still. Dolores Hayden’s article "What Would a Non-Sexist City Be Like (…)" begins with the statement that "a woman's place is in the home", referring to normative ideals of the housewife in the 1950’s. Today, the home is still pretty much viewed as a female domain.

CAMP

Camp is an aesthetic style and sensibility that regards something as appealing because of its bad taste and ironic value. It disrupts many of modernism’s notions of what art is and what can be classified as high art by inverting aesthetic attributes such as beauty, value, and taste through an invitation of a different kind of apprehension and consumption. The American writer Susan Sontag’s essay "Notes on 'Camp'" (1964) emphasized its key elements as: artifice, frivolity, naïve middle-class pretentiousness, and ‘shocking’ excess. Drag queens such as Divine and RuPaul are associated with camp aesthetics. Drag being exaggerated female impersonation, camp became extended to all things "over the top", including women posing as male impersonators (faux queens). Camp, as Susan Sontag observed, is always a way of consuming or performing culture.

Contestants of the reality show "RuPaul's Drag Race chill out backstage in the "Interior Illusions Lounge".
**EXPLODING BOX**
deconstruction, reconfiguration and seeding in search of dirtiness

Is there a way to break free of the norms, of the box?
These experiments were made using Grasshopper. The geometry to start off with
was the box. The box was deconstructed into its vertices, faces and edges. Five of
the box’s six faces were subdivided so that there were nine vertices on each face.
The collection of vertices were isolated, each face separate from the others.
Then a random component was added to the Grasshopper definition and a move
component as well. The vertices were moved in the x, y or z axis depending on the
orientation of the face. When connected with curves, triangulation was achieved.
Each triangulation was connected to its neighbour, constructing a convex hull
triangulated stone-looking geometry. Using the seed input in the random compo-
nent, a great number of different variations were possible. Five were chosen based
on aesthetic qualities and performance, resulting in the five paper models displayed.

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**SPACE STONE ALL STARS**
Who is clean but yet dirty?
Are you strange enough?

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The boring, constraining box...

...subdivided and its vertices identified...

...the vertices are moved in the x, y or z axis, each assigned a random
distance to be moved...

...then the vertices are connected to each other...

...and there is a convex hull! I like this diamond shape...!
What if there are a way of actually making the box explode? The interior can manipulate the exterior? These experiment was made using Grasshopper and Kangaroo physics engine. The physical entities to manipulate are not boxes but spheres. Forces applied are Pressure and SphereCollide, with certain vertices acting as anchor points. The results were unexpected.

Starting out with these two spheres. The idea was to let the inner sphere "pour" out of the outer one...

...even though the pressure force is applied to the inner sphere, the outer one starts to expand...

...and keeps on expanding. Where the sphere has the largest diameter, the middle of it, begins to morph...

...however, the hole, through which the inner sphere was supposed to come out, does not seem to be acting as anchor. The mesh's polygons are unequally affected by the pressure and a strange symmetry is at hand...

...before actually exploding, some of the vertices and edges and faces seem to get out of control. BAAAAM!

Some other experiments with pressure...

...which I honestly didn't understand at all...

...but the results were pretty cool! And dirty (there are so many intersecting faces!)

When symmetry turns alien (through recursion):
Digital Grotesque (Michael Hansmayer and team)

When symmetry turns alien (through ornamentation):
Proposal for Helsinki Guggenheim (Mark Foster Gage)
Exploding box experiments
EXTERIORITY (SKIN)

The concept of the exterior is the snake skin. It is a system of panels that provide protection from the weather, but is much more. The idea is to connect to fashion design, with inspiration from multi-artist Grace Jones as well as designers such as Gareth Pugh. There is definitely a reason for the shape. Firstly, I want the structure to resemble an animal, hence the organic, symmetrical form. The animal’s skin should be dark, artificial. Like scales made out of plastic. It acts like a contrast to the interior. Secondly, it is a way for me to comment how male architects have been drawing curved structures, calling them “sensual” and taking inspiration from the female body without problematizing it.

The shape of each panel, and exactly how they are connected is not entirely clear at this point in time. There are different ways of working with the concept of scales. Is each panel curved in itself or are they planar? If they are planar, the overall shape will not be smooth. How are the panels connected to each other? Are they made of relatively thin plastic and can be folded (such as is the case with the Puppet Theatre by MOS Architects)? Is there a steel structure onto which the panels are connected? The size of the panels and the pavilion is an important factor since the skin has to be not only self supporting - the idea is that it should also be able to manage the load from the interior structure.

The base surface is generated in Rhinoceros... to it, curves are added to outline the form... a surface network is created. It is referenced into Grasshopper... where a hexagonal grid of curves is created... different depending on if the hexagons are oriented in a x or y direction... but there are other type of grids. This one tries to imitate the Puppet Theatre by MOS Architects. The panels should have different sizes depending on the curvature for a more dynamic look.

Panels which are planar. System of support and bioplastic panels

There is the possibility of a self-supporting structure manufactured like this
Representation of snake skin (exterior)

Representation of womb-like interior structure
How could functions of randomness or noise inform the computation of architectural form and become dirty geometry?

Randomness is the lack of pattern or predictability in events. Each random value over time does not consider the value before or after. Noise could be said to be loud, unwanted sound. However, in computation, noise could have a different meaning.

There is a function called Perlin noise, which is a type of gradient noise used by visual effects artists to increase the appearance of realism in computer graphics (created by Ken Perlin for the 1982 sci-fi movie Tron). Like a randomness function, the noise function in Processing will turn out random values over time. Perlin noise gives you “smooth randomness”, since each value is relating to the one before and after.

The increment, the movement through time, is crucial for the result. In 3D, Perlin noise can be used to manipulate a surface, a mesh, by letting its vertices change z values in a somewhat organic way. The result can be a sort of terrain-like animation.

Using Simplex noise, which Perlin developed due to limitations of his classic noise function, I was able to manipulate a mesh sphere in Grasshopper so that the sphere would transform according to these four different noise curves. The first one I would call the most organic-looking, utilizing the potential of the “smooth randomness”.

Small changes in time increment have, as you can see, a high impact on the geometry. And when every step forward in time is no longer tiny, but rather a large jump, the values differ a lot, and the result is similar to proper randomness. Noise can be considered relevant in terms of notation and of formations that are created over time.

I can see the potential in noise in that there is an attempt to imitate nature, the organic, through computation, and it is a wide and interesting field from my point of view. In general, there is something “scale-less” about these noise-generated formations: they could be an animal living at the bottom of the sea, bacteria, a house, or an asteroid from outer space.

Researcher at KTH, Daniel Norell, describes in his paper Noise Control: Designing with Entropic Processes noise as a possible ally in design processes. I aim to produce a noisy interior landscape that distorts our perception, of architecture’s limits and “do’s and don’t’s.”
Randomness is the lack of pattern or predictability in events. Individual random events are by definition unpredictable, but in many cases the frequency of different outcomes over a large number of events (or “trials”) is predictable. For example, when throwing two dice, the outcome of any particular roll is unpredictable, but a sum of 7 will occur twice as often as 4. In this view, randomness is a measure of uncertainty of an outcome.

Many “random number generators” in use today are defined algorithms, and so are actually pseudo-random number generators. The sequences they produce are called pseudo-random sequences. These generators do not always generate sequences which are sufficiently random, but instead can produce sequences which contain patterns.

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**Noise**

Noise is unwanted sound judged to be unpleasant, loud or disruptive to hearing. From a physics standpoint, noise is indistinguishable from sound, as both are vibrations through a medium, such as air or water. The difference arises when the brain receives and perceives a sound.

Perlin noise is a procedural texture primitive, a type of gradient noise used by visual effects artists to increase the appearance of realism in computer graphics. Like a randomness function, the noise function in Processing will turn out random values over time. Perlin noise gives you “smooth randomness”, since each value is relating to the one before and after. The increment, the movement through time, is crucial for the result.

void setup(){
  size(400, 400,);
}

void draw(){
  background(255);
  stroke(255);
  noFill();
  beginShape();
  float xoff = 0;
  for(int x = 0; x < width; x++) {
    float y = noise(xoff)*height;
    vertex(x,y);
    stroke(0);
    xoff+=inc;
  }
  endShape();
}

float inc = 0.015;

Random values over time
- each value has no relation to the next or the previous random value

**Noise in 3D**

Geometry (to be manipulated) Here: triangular mesh (x,y)

Vertice location becomes 3D (x,y,z): the vertices of the mesh have random values relating to the neighboring vertex values. When all vertices are allocated z values, a Perlin noise terrain will be created...

...as long as the increment value is not too high (and not too low)

High or low values will result in very smooth or very random-like terrain / 3D geometry (as shown in 1D above)

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SIMPLEX NOISE

I.

II.

III.

IV.
I decided to continue working with Simplex noise. Basically, I kept the Grasshopper definition that produced the geometries above, but with some alterations. One difference is that I wanted the noise to extend inwards, inside the pavilion. Another is the geometry that is being manipulated. In the experiments above, it is a mesh sphere. A sphere has two poles where the polygons in the mesh will be smaller. A icosahedron, on the other hand, consists of 20 equally sized triangles (as long as it is a Platonic convex regular icosahedron, that is). In my case, it is. If it would be further subdivided, it would become more and more like a sphere, but without the poles. Hence, for a more predictable result, there are advantages using a icosahedron instead of the sphere. And so, I went with the icosahedron instead.

In the following diagram, the Grasshopper definition will be explained. To not understand it at all, is to not understand how the noise is made. My aim is to, at least to some degree, break it down and make the "mystics of parametric design" less mystic. Anything you can achieve using Grasshopper, you can do in Rhino. However, with Grasshopper and parametric design, you have much more control over the design process and changes can easily be made. In comparison to regular 3D modelling, it is a dynamic design process.

When experimenting with Simplex noise, it is quite obvious that there an (almost) never-ending number of variations possible. The ones presented here are, following the nature of randomness, in a way randomly chosen. What they do show is that manipulation of the original geometry (here: the icosahedron) gives you some control in how to shape the noise. I manipulated the icosahedra 1-4 for them to differentiate from each other and therefore produce different noisy "blobs". The result of the Boolean difference operations was important in deciding which iteration was more suitable to continue with, the one that would become this dirty geometry pavilion if you will. One criteria was that the bottom of the box should not be penetrated - it should have a reasonable thickness to it. Also, the result of the Boolean operation, the remaining of the box, should not be too dissolved. Except for this, the overall look of the noisy interior landscape was considered. In the end, I chose the one most appealing and interesting from my point of view.

A Grasshopper definition and its processes always run from left to right. So this diagram is based on the basic line diagram.
Lasercut eggcrate model, cut-out of the noise, the "blob" (exterior)

Lasercut eggcrate model, cut-out of the noise, the "blob" (interior)
REFERENCES: INTERIORITY (CAVE/WOMB)

client

Yayoi Kusama
Extravaganza!
Spiky red dress (lost the name)
Diana Vreeland
Louise Bourgeois
Anish Kapoor
Helen Chadwick

architect

Sea anemones?
Future Landscapes (Rowan Merish)
Veer (Sift Studio)
Close up of Ricordia coral
Textures, heritage unknown
Silk sculptures by Lisa Kellner
Leviathan (Anish Kapoor)
Closed

Semi-closed

Open
Open pavilion (1:50)

Section cut of semi-closed structure

The dirty blob that penetrates the clean box.

All of these models will be spray-painted red for Diploma days (the interior/blob, that is)
Perspective of open structure
Perspective of closed structure (interior)
Once upon a time, there was (or was there? will there be?) this public space where nothing need to be consumed, street art is considered art, kids playing would mix with people having picnic, going to cultural happenings. There was a high acceptance of the fact that people are different and you could actually feel the loving atmosphere.

What would happen if dirty geometry was placed in the middle of this boring, commercialized space? Giiiiiiiiiirl, this was just what the doctor ordered! Let’s spread some dirtiness, let it pour out, spread...

Then came the so-called neoliberalism and market economy. Big cooperations make big bucks and barely pay taxes. “Public” space - is there really a space for the public? Are we driven into consumption when we could spend our time creating the city in which we want to live? Where is the culture? Where is the cheap beer? Where is the liveliness? Replaced by yet another fancy glass box for consumption. iRefuse!
CHOOSING WHICH PART
I chose the yummiest corner.
SLICE IT NICE!

CHOOSING BUILDING METHOD
I chose the delicious EGGCRATE / WAFFLE

Slicin' time!
Max height: 2,4 m (minimum ceiling height)
Length: long enough to lie down on.
Width: wide enough to lie down on.
Also - need to be buildable.

building dirty geometry
DIRTY
GEOMETRY
Lasercut eggcrate model, 1:5. Real distance between planes: 100 mm

Lasercut eggcrate model, 1:5. Real distance between planes: 300 mm
Now, sashay away