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PANNCENTRALEN
-Form Follows Process The Nature Of Order
PANNCENTRALEN

Form Follows Process
& The Nature Of Order
BACKGROUND & THEORETICAL SUMMARY

TIMES OF INTERREGNUM

My favourite quote from late sociologist Zygmunt Bauman describes our global civilisations current mental state on point: "We live in the Times of Interregnum [between orders] where the old truths have lost their validity and new ones are yet to emerge!"

In the turmoil of a multitude of planetary and social crises the faith in our institutions, political leaders, ideologies and even scientific facts begin to sway.

This urgently calls for new visions and meta-narratives anchored in our increasingly post-industrialist societies to guide our collective actions towards a sustainable and meaningful future.

In this perspective, the field of architecture holds both a strong potential as a creative profession and a huge responsibility as a major contributor to the physical shaping of our planet in the age of Anthropocene – a responsibility which has, in my view, been handled quite poorly during the modern era up until today. To me it seems like the profession currently lack a coherent goal worth striving for; we’re still lost in a postmodern swamp of relativism and glorification of empty originality while increasingly being both seduced and back-tied by the logic of the Market.

The increasing awareness of sustainability points in the right direction, but the efforts are generally incorporated into the global capitalist framework which make them inefficient at best (“sustainable growth” is an oxymoron!).

In response to the above, it has been my personal interest lately to formulate as well as search for new ideas that might help us overcome our postmodern mental state and (hopefully) transcend to the next level of metamodernity.

ARCHITECTURE & SCIENCE

Modern scientific thought have had a major influence on many aspects of our culture, including architecture. The idea of the “rational” established during the Enlightenment favoured measurability, logic and a reductive approach to reality and it was utilized by early modernists to legitimize simplified ideological claims. “The metaphor of the machine” permeated modernity in its quest for the Truth by imposing more or less destructive utopias on cities and communities across the globe. The problem with this is not science and architecture in themselves, but rather that neither the scientific nor architectural knowledge present at the time was sufficient to describe or handle the complex reality of urban, ecological and social structures.

Now, many decades later, we are in a situation where architects seem to almost shun the idea of using a scientific frame of mind to inform their creative processes (maybe because of inherited guilt over past mistakes?) which is regrettable since there has been an unequaled, but widely unnoticed, progression in the sciences towards handling complex phenomena - a progression which, in my view, must be incorporated in our daily practice if we wish to stay relevant in the 21st century.

CHRISTOPHER ALEXANDER

In my search for new ideas I came across the architect, designer and scientist Christopher Wulfgang Alexander. His writings struck a deep chord in me, and it corresponded to what I had read and thought earlier myself. His heydays might have been in the 60’s and 70’s, but what he teaches is perhaps more important now than ever. Among younger generations of architects his work seems to have been almost forgotten though, as he got overrun by the opposing deconstructivist school with Peter Eisenman in the vanguard in the 80’s.

His combination of general civilisatory criticism, multidisciplinary scientific background, philosophical approach and solid architectural experience does however make his magnum opus “The Nature Of Order” hard to dismiss as mere “postmodern romanticism” (as some of his critics liked to label his architecture...). On the contrary, which he also points out himself, his work is not based on the postmodern canon at all but something else entirely; the similarities in aesthetic output are mainly superficial.

THE NATURE OF ORDER

If I were to describe the essence of the books I have read with my own words in this limited format, it might sound something like this:

There is a deep underlying law-boundedness in the way nature shapes form, fundamentally based on the interactions between our universe’s physical and chemical constants. The overarching tendency since the Big Bang is twofold: an accelerating evolution of complexity (order), from elementary particles to life, on the one hand, and the continual increase of entropy (chaos) aiming for the so-called “heat death” on the other.

As the only part of this law-bounded and blind progression the human race have alone (as far as we know) reached to the level where our interactions have given rise to a parallel cultural and technological evolution. These have given her both the will and the means to accomplish things within a socially constructed reality that overlays its objective foundation.

This has led to, according to Christopher Alexander, that we for the first time in our history have gotten to see large-scale examples of form creation that has gone against the logic of our universe. The occurrence of this worrysome phenomenon accelerated quickly primarily during the modern era when a simplistic world-view won legitimacy and gave rise to structurally destructive urban developments. This world-view still manifest itself today not only through impenetrable and outdated bureaucratic legislation, processes and conceptions but lately also the neoliberal tendency to favour measurability, economical efficiency and uniformity.

Could we regain our collective ability to create form in a similar way as nature again? Christopher Alexander dedicated a major part of his research to observe and classify patterns, structures and geometries in both natural and man-made systems and these results give us some clues on what it takes on a purely geometrical level.

15 FUNDAMENTAL PROPERTIES

Christopher have managed to boil it down to fifteen common denominators, or “properties”, in systems that manifest a high level of complex order, something which he calls “degree of life”: These properties are defined in phenomenological and proto-mathematical terms and could be viewed as a kind of toolbox to use if one like to create “living structures”. They encompass everything between desirable scaling relations, repetition typologies, symmetries, gradients, spatial interlockings, boarders and more. The diagram on page 37 shows how different properties can be applied in sequence to step-wise transform an undifferentiated floorplan.

An important point with these properties inherent nature is that they are founded on a systemic perspective where nothing can be reduced simply to its parts; everything always strives for new emergent meta-levels where the wholeness is greater than the sum of its parts. This is the core of understanding complex systems and it is a necessary perspective to have in mind if we want to move on from our waning civilisations many failucies.

FORM FOLLOWS PROCESS

In the second book of the series, “The Process Of Creating Life“, Christopher switches from a static to a dynamic approach. He puts an emphasis on that only certain types of processes can produce the desired results. A spiral galaxy, a human fetus or a growing tree are never “incomplete” in their geometries during their genesis (and later demise). Every step in natural morphogenesis is made up of soft transitions between its developmental stages without any major disruptions (if not externally introduced). The keywords are differentiation and adaptation where the growing structure is modulated continually after both its own emerging logic and the surrounding environment in small, manageable steps. No tabula rasa or for-fetched concepts, just a flexible dialogue with the site where the goal is to solve every question that arise with simplicity, clarity and dignity. Here, the fifteen properties are the tools that should be used to
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them the idea of beauty. Briefly one could say that
number of phenomena in the human culture, among
them we have René Descartes 400 year old dualism that on the one hand laid the foundation for the scientific method, but on the other also split our conception of reality into two hermeneutically separated domains: the person-al-subjective and the material-objective. This world-
view have been dominant in the West ever since and I believe that it constitutes the primary reason for todays perceived lack in existential meaning in sec-
ularized societies as nature got utterly desacralized and left us alone in a cold and deterministic universe. Secondly, the Cartesian world-view did also by ex-
tension found the postmodern philosophical wave of relativism and nihilism where nothing could be taken as true or meaningful anymore. As a combined effect of these two stances, we
today have a view on beauty that says that our sub-
jective valuation of the objective reality is altogether arbitrary, and as such, not reliable nor meaningful compared to what we can measure objectively (which is taken as definite truths...). However, Christopher Alexander believes, in opposition to the prevail-
ing norm, that we have much more that unites than separates us in the appreciation of aesthetics. This statement is backed up by extensive cognitive studies where he have developed a kind of test that tries to measure the level of subjective consensus in test groups. The principle is strikingly simple: the participants are asked to compare two or more pictures, objects or something else and are confront-
ed with questions of the type “which one of these do you perceive as having a higher degree of life?”. The question might seem nonsensical, but that is partially the point as it is formulated to bypass intellecualiza-
tion and hopefully reach more phenomenologically “honest” answers. The results are quite remarkable: a consensus of up to 70-95% is not unusual which suggests that subjectivity in some sense has its own inherent subjective logic which we share.

The wonderful thing about these findings is that it truly legitimizes our feeling as the most important way to make decisions and search for solutions in our creative processes. Our right hemisphere might have
become, in the light of our evolutionary history, way to underestimated - our intuition is quite likely our most efficient tool to gain access to the world of com-
plex order, as the innumerable variables that must be taken into account simply cannot be processed by our left counterpart without grave simplifications. A serious threat to our world-view does however appear if we accept these arguments: suddenly, the right to define beauty is no longer reserved for a specialized profession and subjective opinions must no longer be considered as completely ideiosyncratic. Here, beauty becomes a normative question where there are better and worse solutions depending on how well they comply to the criteria for ordered complexity. This consequence might be one of the primary reasons, I think, why Christopher Alexander was regarded with suspicion by the academia during the 70’s and 80’s, of course noone wanted to give up their aesthetic-ideological privileges (which at the time where completely incompatible with Christo-
pher’s mission).

Personally, I view this question differently. First of all I think that the thought of some kind of law-boundedness in morphogenetical processes is very satisfactory after an education of “anything goes” in terms of design choices. Furthermore, I view the theory as a potentially powerful weapon to aim at the forces that only favours objective measurability, as in Time and Money. Important to note is also that the theories does not say anything about style, an
infinite number of design choices can still be made within the theoretical framework so there is no need to feel that ones artistic freedom is under threat.

**OBJECTIVE SUBJECTIVITY**

As the human species was created in the same
processes as the rest of the universe, the geometries
that that comprise our consciousness mirrors our
environment to a varying degree. We “recognize our-
selves”, so to speak, in the phenomena that surrounds
us - thus enabling us to animate them, i.e. to admit
them a subjective value. This does of course have a
evolutionary point as the ability to sort out “geometric-visual noise” in order to discern more qualitative complex orders in the shape of food benefits all living organisms. Furthermore, it has also been shown in the field of environmental psychology that we prefer environments that display harmonious complex order as these relieve the brain from sensory over-
load of data which might be contradictory or hard to
classify. Later on, this ability have given rise to a
number of phenomena in the human culture, among
them the idea of beauty. Briefly one could say that
Christopher Alexander argues for something which
might be summarized as “beauty is not only in the
eye of the beholder”.

I propose that we today suffer from two philo-
sophical suppositions that complicates our relation
to beauty (or meaning/value). First, we have René
Descartes 400 year old dualism that on the one hand laid the foundation for the scientific method, but on the other also split our conception of reality into two hermeneutically separated domains: the person-al-subjective and the material-objective. This world-
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**FINAL WORDS**

I’d like to end this introduction/summary with some comments on the connections between these grand thoughts and what I have worked with more con-
cretely during this project.

For obvious reasons I have limited myself to a
smaller site, a site which I also knew well since
before. Here I wanted to test Christopher Alexanders ideas practically myself, both to learn them but also
to critically examine their feasibility. Is it possible to
create as he teaches? Does my own personal aesthetic
end up in conflict with the theory? Can the result be
considered desirable? How does other people view
the project, do they see the same values as me?

The actual process began with a thorough map-
ing of the site which resulted in a large site model in
1:100 and a number of detailed drawings. These were
subsequently used in an iterative manner to develop
the project in the adaptive process described above.
The site model which I will present on Diploma Days
is in other words the same initial working model that
have followed me throughout the project, and it has
functioned as the primary design tool. I have fur-
thermore tried to base all the decisions on my “deep
feeling” instead of my ego (hard...) with the purpose of
achieving a result which I really enjoy in the end.

Did I succeed? I have to say that I am rather sur-
priised by the result. One reason to why I wanted to
try out Christopher’s ideas was that I agreed to what he said more than to what he did. His architecture
appeared as way to nostalgic and cute to me then.
Now, in hindsight, I seem to have ended up with a
similar aesthetic myself - and I enjoyed both the pro-
cess and the final outcome!
PROJECT DESCRIPTION

CONTEXT: BAGARMOSEN

In order to put the theory in practice I selected a site situated in Bagarmossen, a southern suburb to Stockholm where I grew up and still live today. Bagarmossen was planned and built in the forties and fifties and constitutes a quite typical “subway suburb” mainly composed of 3-4 stories plastered apartment buildings and up to 10 stories high tower blocks. Adjacent to Nackareservatet, a natural reserve with plenty of recreational amenities, later additions where made 1970, as well as in the districts centre in 1994 when the subway was rerouted underground further southwards to Skarpnäck. Up until 2030 there are plans to build 2500 new dwellings and a school between Bagarmossen and Skarpnäck in order to densify the area and create a more coherent urban structure.

Socioeconomically, there are areas which are clearly separated by segregation; people from the million dollar townhouses rarely set their foot in the villa- and rowhouse areas in the southeastern parts and vice versa and there are problems with petty crimes and vandalism in the centre. On the other hand Bagarmossen has gone through a major gentrification process during the last 5-10 years, probably due to escalating inner city prices that pushes households with relatively strong purchasing power towards the periphery. Whether or not this is a good thing in terms of market trends, it sure has reinvigorated Bagarmossen and turned the reputation of “gangster-suburb” into “family-friendly” instead.

SITE: KRIGSRÅDET 3

On the site, which is situated along the western stretch of the “ring road” of Bagarmossen, there is a historically valuable boiler house that was drawn 1952 by architect Nils Sterner. Along the northern edge there is a walking and biking path that connects Bagarmossen with Kärrtorp and the city in a north-westerly direction, following the subway track. On the southern half of the site there where originally plans to erect a 3 stories high parking garage, something which was never realized. Instead, some temporary parking sheds where constructed in 1977.

Since the operations stalled, the boiler house have been more or less abandoned which is reflected in its current state of heavy disrepair and neglect. Several insensitive additions have also been made and the chimney was sadly torn down a few years ago as a foretaste of a coming complete demolition.

Despite the seemingly hopeless situation, I have been intrigued by the building and the place for a long time as I believe that it can be brought back to its former glory and be made relevant in todays context through a little architectural intervention and programmatic reconceptualization.

STRATEGY: REUSE & ADD

Through the gained momentum of the recent gentrification, I believe that the necessary basis to extend the centre of Bagarmossen mentally and functionally to its semi-peripheral zone has been laid. By introducing a new strong node with a varied program focused on culture, the boiler house might not only complement Bagarmossen, but also nearby suburbs and the city at large, as it is positioned strategically in relation to the road network. Furthermore, the demand for more cultural amenities is likely to rise with the expected influx of new residents due to future development.

So, instead of leveling the historically valuable boiler house down to a modernist tabula rasa and construct mass produced housing of questionable quality, I’d like to propose an extensive, but sensitive, reprogramming of the boiler house internally as well as in the districts centre in 1994 when the subway was rerouted underground further southwards to Skarpnäck. Up until 2030 there are plans to build 2500 new dwellings and a school between Bagarmossen and Skarpnäck in order to density the area and create a more coherent urban structure.

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local context.

As you approach the building from Rusthållarvägen, you cross the former raised turning area for the charcoal trucks, now remodelled as a yard where you can sit outside and enjoy the view during summertime. In the middle, the shape of the former chimney has been resurrected and reimagined as a gigantic signpost in steel. Inside, the floorplan is roughly divided into three parts: common circulation spaces, a dining hall divided by a bar and the restaurant kitchen with all associated spaces for personnel.

Besides replacing most non-loadbearing walls, a new elevator shaft (mirroring the existing staircase) have been proposed in order to make all the floors accessible. Also, a new floorslab has been introduced to replace the massive charcoal funnel and give room for the restaurant kitchen on the northern end.

Theater (Lower ground floor + Basement)
The spacious boiler room in the basement eventually gave birth to a small theater, a perfect way to continue the evening after a dinner at the restaurant! As you enter the boiler house from the main entrance, shared with the restaurant, you are directed down to the foyer on the lower ground floor via the elevator and two staircases. When the performance is about to begin, you go further down and enter the auditorium from the back. The spatial sequence from street – foyer – auditorium has been dramatized similar to how one approaches sacred spaces in order to raise expectations and a sense of wonder. The auditorium in itself has been drawn as an almost church-like “building within a building”, partly due to practical reasons such as minimizing disturbing noise leaking to the neighborhood, but also as a way to “materialize” the relationship between the buildings exterior and interior – another quality often found in sacred contexts. This strategy is further enhanced by materiality – spaces leading to the auditorium are imagined to be more rough and industrial, whereas the auditorium will be clad in soft, warm materials such as wooden paneling and carpeted flooring. The logs and associated spaces are all situated in close connection to the stage on the eastern side and the former loading bay for the boiler room is repurposed to take care of deliveries of bulky stage equipment etc.

Light
The main feature of the auditorium is perhaps the high vault with its walls of glassblocks covering each end. The idea with this set up is to make several different lighting-scenarios possible: one is to simply let the natural light from the large western windows flood in from one side (optionally emulating natural light from the eastern end as well), another is to block the daylight with automated blackout curtains – and work with artificial lighting from both sides. This could be used as dramatic effect lighting as well as soft guiding light before, during and after a performance. The lighting- and curtain installations are reached effectively from entrees between the auditorium and the facade.

Flexibility
Another feature that increases the versatility of the locale is that the first three rows of seats are detachable in order to allow for a standing crowd. Furthermore, the space in front of the stage can be made more intimate and better suited for smaller acts through retractable curtains installed in the roof between rows 3 and 4.

Music centre (Lower ground floor)
Underneath the yard, several spacious storage rooms are proposed to be transformed into a center for rehearsal, production and performance of music for local bands. Dedicated facilities of this type are characteristically lacking in Stockholm, something which I have personal experience of from my youth when I was active in several bands. A music centre can moreover provide meaningful stimuli and distraction for young people in the neighborhood that show tendencies of criminal behaviour.

To enliven the northern end of the site and make the music centre more autonomous, a separate entrance has been provided on the northern gable. Of course, the facility is still accessible from the elevator reached via the main entrance. The various rooms have been arranged around the buildings perimeter to form an internal “social yard” where the former chimney acts as a strong focal point, now containing a new internal staircase (with skylight) that leads to the theater logos a floor below. The five rehearsal rooms and the studio are properly insulated and given special attention in terms of ventilation. Daylight is allowed into the yard through glassblock windows positioned in deep alcoves with fixed seating on the southern side, a window in the northern facade as well as a skylight in front of the small stage. If necessary, the auditorium downstairs can provide a larger stage for events with more audience. Overall, the feeling of being underground is emphasized and in terms of materiality I envision a raw, industrial aesthetic with exposed concrete contrasted with a warm wooden floor.

ADDITION: HOUSING
The apparent void left by the originally planned parking garage from 1952 coupled with the considerable height difference between Rusthållarvägen and Fogdevägen deeply triggered my imagination from the start. What could be proposed here, adjacent to the boiler house itself? I early on decided that I wanted to work with some sort of housing and that a parking garage was sensible to include in the equation, although many other programs and solutions have passed in review throughout the process. Eventually, I decided to give my full attention to this part of the project in order to focus my efforts and come closer to the material. As an effect of this, the following account is more extensive.

Structural grid and landscaping
The final layout is derived from an extension of the structural grid which is implied in the partially built original garage. This structural rhythm gave the extent of the new garage as well as defining the width of the shared, repeated floorplan with the living room and kitchen. The new garage is accessible by car from Fogdevägen and has a separate entrance with elevator positioned axially in the southern end. The existing ramp that leads up to the yard proved hard to assimilate spatially and was in the end replaced with a soft, undulating slope with grass and trees that forms an intimate yard in front of the main entrances. Finally, terraces facing both east and west along with a small lawn is provided for all five units.

Massing
In order to maintain the elevated feeling and view from the restaurant yard as well as paying respect to the main boiler house-volume, the height of the new houses where kept relatively low. They where furthermore separated into two blocks and slightly displaced to better correspond to the topography and the diagonality of Fogdevägen. The main features of the exterior form language, such as the curved roof, has been borrowed from the boiler house in order to achieve unity in the composition as a whole. The kinship between old and new is further emphasized with the chimneys.

Exterior
Whereas no particular style have been actively pursued, the exterior expression can none the less be spoken of as a mediation between the surrounding functionalism and the eclectic interior of the houses – landing in something which might give associations to early functionalism and neo-romanticism. The focal point of the western facade is the repeated rhythm of the large living room windows that function as a visual continuation of the large windows of the boiler house. These windows, together with the massive base, give the western facade a more imposing scale which suits the situation towards the street well. The scale of the eastern facade is on the other hand kept smaller, with the main entrances and kitchen bay windows as the defining motifs. The materials are natural and raw – light gray plaster met by crude granite, black metal roofing and coated oak in panels, doors and windowframes.

Interior
The main floor plan containing the kitchen and the living room comprise the main theme of the interior. This is further added to or adapted with respect to the changing conditions of the site. Conceptually, the plan is divided in spaces you move through and spaces you reside in. This is clarified with different floor heights, vaulted ceilings and floor materials. Movements are made through sequences reminiscent of pre-modern urban streetscapes with interior “facades”, stairways and dark alleys and eventual the structure in itself is orthogonal, you generally traverse it in spirals or diagonals. Sequentially, the spaces formed the walls and not vice versa; a dynamic plasticity between solid/void was sought after. This stance also gave the characteristic jagged profi lings that seek to create a more complex interaction between signifi cant rooms and between daylight/interior.
Common rooms
The relation between the kitchen and the livingroom is mediated via a deep angled "choir" that holds the focal point of the dwelling: an open fireplace. Here, you can sit on the low steps and enjoy the fire while being able to oversee the activities in both adjacent rooms. In the kitchen, the dining area has been given a bay window that welcomes the surroundings into the room. In unit 1-3, the living room is compliment-ed with a smaller space suitable for a library, study or guest room. In unit 4-5 this slot is instead replaced with a bathroom and a small hallway where you can access the western terraces.

Private rooms
Another important gradient indoors is the transition between the public and private realm: bedrooms are always secluded from the main social spaces through either a horizontal or vertical separation. Furthermore, the bedroom sizes have been kept deliberately modest in order to encourage social interaction in the common rooms during the waking hours.

Unit 3 and 5 has the bedrooms on the same floor as the main entrance, these are pushed towards the southern gables and reached via narrow passages. Unit 5 have an adjacent small winter garden with a generous bay window. Unit 4 has its two bedrooms upstairs, under a pitched roof with generous sky-lights facing north. Unit 3 has also, together with unit 1 and 2, bedrooms downstairs that you reach through a staircase crowned with a majestic domed ceiling and a skylight.

The bathrooms in unit 1-3 gain a faint, evocative access to daylight directly above the corner bath via an internal light/ventilation-well that penetrates the structure. This well also supplies the small toilet for a grown up kid or a student on the lower floor.

Construction
As the structure is pretty straightforward and traditional, I was never inclined to go into any depths regarding specific construction details in this project. Though, on a more general level I can say that the exterior walls are made of load bearing concrete (prefabricated if possible) which is insulated with mineral wool and plastered with an air space. The partially loadbearing granite base is being helped by additional concrete that also carry the load of the floorslab. The roof is in turn held up by arched trusses in wood (CTC 2400 mm) that rests on a load bearing internal wall about midway, in line with the fireplace (a similar construction to the roof in the original boiler house).

Materials and colours
The surface materials have been an important tool to articulate the roles of the different spaces. Contrasts between soft/hard, warm/cold and colour together with variable sizes have all been utilized. All materials does also have the capacity to age gracefully and prompts for restoration rather than substitution.

In the "spaces you move through", I have proposed 200 x 200 durable terracotta floor tiles which are handmade in order to avoid mass produced perfection. This is contrasted by the larger 600 x 600 checkerboard linoleum floor in the kitchen, as well as the custom tweaked herringbone oak flooring in the livingroom. Oak is also found in all window and door frames while the checkerboard pattern, which is a wink to the functionalist context, recur in a smaller scale (100 x 100) in all bathrooms. The bedrooms have been given a slightly more rough boarded floor, painted white.

To further enhance the spatial concept, the walls and vaults are covered with a layer of finegrained, white lime plaster in the "spaces you move through" and different wallpapers in the "spaces you reside in".

The kitchen is built on site in plywood and hand-painted in a somber bluish grey contrasted with a backsplash in 250 x 500 green marble tiles from Kolmården. The countertop (and all windowsills) are made of softly honed concrete. Finally, to match the brazen kitchen faucet and sink, all cabinet door handles have been specially cast in brass as well. The rest of the kitchen walls are painted in a pale linden green that complements the terracotta flooring and the grey cabinets. The treshold to the living room is painted in the same colour as the kitchen.

Materials and colours
The surface materials have been an important tool to articulate the roles of the different spaces. Contrasts between soft/hard, warm/cold and colour together with variable sizes have all been utilized. All materials does also have the capacity to age gracefully and prompts for restoration rather than substitution.

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Construction
As the structure is pretty straightforward and traditional, I was never inclined to go into any depths regarding specific construction details in this project. Though, on a more general level I can say that the exterior walls are made of load bearing concrete (prefabricated if possible) which is insulated with mineral wool and plastered with an air space. The partially loadbearing granite base is being helped by additional concrete that also carry the load of the floorslab. The roof is in turn held up by arched trusses in wood (CTC 2400 mm) that rests on a load bearing internal wall about midway, in line with the fireplace (a similar construction to the roof in the original boiler house).

All internal walls and vaults are masoned on site in lightweight concrete blocks to give a feeling of solidity. The versatility and flexibility of this construction method will be very helpful in shaping locally complex situations, although some niches and other details might still need to be cast in concrete separately.

Other
Unit 3 have a semi-separated rentable part suitable for a grown up kid or a student on the lower floor facing Fogdevägen (this can of course be changed to accommodate other needs). In between unit 3 and 4 there is a common bicycle shed with the driveway to the garage beneath and an external garbage room.

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It seems clear to me that humanity currently stands at a major crossroad where “the old truths have lost their validity and new ones are yet to emerge”, to quote late sociologist Zygmunt Bauman. It seems also clear that these “new truths” has to be formulated quickly if we do not want to end up on the wrong fork of the road...

During recent years, these two insights has driven my desire to understand where we are now, how we ended up here and how we might move forward. Whereas I began in the field of architecture, my curiosity has led me to look into a wide array of subjects ranging from economy to thermodynamics and sociology in order to comprehend the bigger picture. In this thesis however, I have limited myself to the architectural realm again and I have done so through a close reading of a figure I found along the way: Christopher Wolfgang Alexander. During the course of the project, I have read his four-volume, magnum opus “The Nature of Order: An Essay on the Art of Building and the Nature of the Universe” (2003-2004) where he summarizes over thirty-five years of scientific and architectural research and practice into a “grand unified theory of architecture”. His views on many issues (social to scientific) align a lot with mine so the goal of this project has been to let his theoretical framework guide my own creative process in order to be able to evaluate the result – does his work present some “new truths” to help us move forward or is it just another blind alley?

CHRISTOPHER ALEXANDER

Born 1936 in Vienna, he began his career within the natural sciences and not architecture. He has a masters degree in mathematics and has studied or worked with physics, chemistry, computer science and cognitive studies (as well as architecture) at Cambridge, Harvard and MIT during the fifties. He moves to Berkley, California, 1963 to accept an appointment as Professor of Architecture, a position that he held up until his retirement in 2002. He has completed over a hundred built projects and released twenty written works on architectural theory so far, which has given him several awards and honors. His best known book is perhaps “A Pattern Language” (1977) which was directed towards architects but instead had a major impact in the field of computer science, most notably inspiring the creation of Wikipedia.

Within mainstream architecture he is often regarded as controversial as his ideas strongly goes against the grain of contemporary theory and practice. In a debate 1982 with Peter Eisenman he is infamously rembered for having said that Eisenman was “fucking up the world” by trying to express the anxiety of postmodernity in his architecture. Despite that minor outrage, he strikes me as a good-natured and strong-minded person with an unwavering humanistic outlook on life, people and buildings.

1. This was covered mainly in my first attempt to do my thesis project during the spring 2016.
KEY:
Translating the theory of “unfolding wholeness” through diagram showing the process of applying the 15 fundamental properties in sequence.

A. Undifferentiated floor area for one housing unit as defined by exterior volumetric studies.

B. Basic division of plan by primary wall elements introduces (1) Levels of Scale.

C. The hatched surface is further differentiated as a (3) Boundary to the main spaces, which is further emphasized with a (10) Gradient in floor heights. This transformation makes main spaces aspire to become (2) Strong Centers.

D. In order to further enhance the main spaces, (4) Alternating Repetition and (7) Local Symmetries are used to strengthen the developing living room and kitchen. The large windows, the deep threshold between the two rooms and the convex bay window introduces (8) Deep Interlock between the rooms and to the buildings context.

E. (5) Positive Space was the most important tool to shape the rest of the rooms. Spaces where given the role of “solids” and “voids” and an interplay similar to the morphology of the Nolli map was pursued. The added complexity gave primarily the living room the quality of (13) The Void.

E. The introduction of materials emphasize the size and role of each room through (1) Levels of Scale and (9) Contrast in tactility and colour. The fireplace becomes a (2) Strong Center through (6) Good Shape and (11) Roughness. The living room floor has a (3) Boundary in (8) Deep Interlock with the main surface where (4) Alternating Repetition and (7) Local Symmetries interplay and give an overall feeling of (14) Simplicity & Inner Calm. Finally, the housing unit is merged with its surroundings through (15) Not-Separatness.
THE NATURE OF ORDER

Christopher Alexander is interested in understanding beauty. What is it, how do you create it and why do we see it so utterly failed in the last century up until today? These are the driving questions of his life-long search and the answers he found so far seem to have surprised even himself. He says that he was never particularly interested in philosophy in the beginning, still his search pushed him far outside the architectural field and demanded a much more profound onset. Now, about 35 years later, he finds himself with a theory that puts many things we take for granted into question ranging between central issues in physics and philosophy to architecture and metaphysics.

In the first book, The Phenomenon of Life, Christopher Alexander frames the failure of modern and post-modern architecture as a world-picture problem at its core. Departing from René Descartes and his major contributions to Western thinking, he points out that the rationalistic-mechanical world-picture that grew out of the Enlightenment have had a tremendous impact on the built environments of the 20th and 21st century. The simplistic “metaphor of the machine”, for instance, suggested that all matter is machine-like, deterministic and dead leading to that very living phenomena such as cities and its inhabitants where treated as mechanical entities by Le Corbusier and his successors. The consequences have been thoroughly pointed out by Jane Jacobs among others, although the critique has not been substantially heeded by our society as unrestrained market forces and the prevalent modernist planning process have rendered such progress necessary near impossible.

Another important aspect of Descartes is the famous split between body and mind which, in the end of the line, has given us our current view on objectivity and subjectivity in relation to truth. In our Cartesian society we are taught to view subjectivity as arbitrary, and as such: meaningless to take into account, whereas measurable and falsifiable objectivity is held as universally true. This conflict has on the one hand generally desensitized all of us to deeper values in the built environment and on the other hand forced the architectural profession to submit to the measurable aspects of architecture, most notably Time and Money. Finally, it has also contributed to an post-modern intellectual climate where subjective relativism is allowed to thrive, often as a way to legitimize the privilege to pursue artistic uniqueness (although often devoid of content, since we lost our subjective compass). At the heart of Christopher Alexander’s work lies a liberation antidote to this: the idea that, in essence, all humans are more or less the same. That is: we seem to agree upon what we like and dislike up to 90%, whereas the rest represent our minor idiosyncracies. This notion is what laid the basis to “A Pattern Language”, where thorough observations of our habits, or “patterns”, in relation to space was documented in a way which could be utilized as a democratizing tool to design by anyone.

In “The Nature of Order” he goes way further. He ponders why these patterns are being favoured by the human psyche and begin to unfold their common geometric denominators. He finds that what they all share is a strong likeness to structures that appear constantly and effortlessly in the natural world. Hence, he calls structures “living” if they have this quality present, but geometrically “whole” or “harmonious” are equivalent terms. The “degree of life” in a structure can be measured with a cognitive test designed by Christopher and his colleagues. Simply put, it exposes the test subject to a number of alternatives (pictures, objects) and questions of the type “which one of these do you perceive as having most life?” (and a number of others that aims at bypassing unnecessary intellectualization in order to reach a deeper phenomenological level of perception). Eventhough the premises of this test might sound ridiculous to Cartesian ears, the surprisingly clear consensus which is being reached (up to 70-90%) has profound implications. It supports the idea of human commonality and deeply questions the legitimacy of the contemporary architectural ideals since it seem to lack the quality of “life” to a significant, in this sense measurable, degree.

The next questions naturally becomes: What is it that we measure? Why is it there? And how can we create it ourselves? The possible answers to these questions constitutes the core of The Nature Of Order. In order to effectively give a brief summary I have taken the liberty to boil it down to three words: Geometry, Process and Feeling.

GEOMETRY

The phenomenon of life seem to be a question of geometry above all. Or, more specifically, of geometrical relations in space. To be able to describe the conclusions of his extensive observations of living structures in everything between Anatolian carpets to Californian grasslands and Japanese pottery he finds it necessary to invent a new terminology starting off with the concept of “wholeness” and “centers”. These two terms are quite abstract, but crucial for the understanding of the theory at large. One way to put it is that they are aimed at replacing our Cartesian view on reality as being made up of a series of autonomous objects, or parts, which act according to the laws of nature as simple, deterministic mechanisms. Instead of this reductive approach, he uses concepts from recent advances within the holistic branches of science, such as systems theory and ecology, where the expression “the whole is more than the sum of its parts” is a central theme. This relatively new way to perceive reality invites you to appreciate everything as open-ended systems infinitely entangled with one another through different levels of scale, not as closed entities with definite beginnings and ends. A human being, as an example, cannot in this view be said to end with her skin considering her need to perspire, breath, eat and socialize – everything is interrelated and codependent.

Practically, the relation between the wholeness of a system and its centers is recursive, meaning that a wholeness is made out of centers, but the centers are whole in themselves as well as they are composed of even smaller centers!

He further states that what is being perceived as a high degree of life, or wholeness, in a system is the relative geometric strength and coherence of the centers that it is comprised of. In order to achieve strong centers and make them cooperate, certain criteria has to be fulfilled. Throughout his research he has been able to pinpoint “fifteen fundamental properties” that are strongly present in every living structure and these are presented briefly on page 40-49 (text source: www.fluxus.com). Each of the properties describes one of the possible ways in which centers can intensify each other and form coherent space.
In the second book, *The Process of Creating Life*, Christopher Alexander moves on to a more dynamic take on the fifteen properties and stresses the notion that in order to create living structure you will have to follow a certain type of process. Again, everywhere in nature wholeness exists and is reproduced in abundance, it seems as if humans are the only exception to this rule, most specifically so during the last century. What does nature do that our civilisation fails to accomplish?

The answer according to Christopher Alexander is that in naturally occurring morphogenesis, new structures always evolve smoothly from the pre-existing state of the system and this process never violates or contradicts the geometry of the earlier stages. In other words there is a constant “smooth unfolding of wholeness” which at all points in time is “structure-preserving”. A growing fetus is never “incomplete” geometrically, nor is the formation of a spiral galaxy. Modernist top-down planning culture on the other hand has given rise to plenty of structure-destroying transformations that has disrupted complex and vibrant urban environments with highways and massive urban renewal projects to an extent which is historically unforeseen. On the contrary both classical, traditional, vernacular and informal architecture yields way better results as they are more closely related to the fifteen properties and the demand for applying them in a proper sequence.

**PROCESS**

Essential to the method that Christopher Alexander propagates for is the extensive reliance on our intuition, or “feeling”, to perceive and recognize life-like qualities of the kind that has been described. To try to reach for a deeper phenomenological apprehension of the surrounding world and rely on it as a guide to inform each individual design choice throughout the process by continually asking oneself “does this feel more alive to me?”. This methodology does of course sound ridicoulus to anyone indoctrinated in the common ways of thinking today, but Christophers supportive cognitive research give this idea an undeniable weight. He suggests that our right brains ability to process incoming information with countless variables is our true access to appreciationg the full complexity of the world, way beyond what our left brain can handle.

**FEELING**
1. LEVELS OF SCALE

Scale refers to how we perceive the size of an element or space relative to other forms around it. All things – a tea cup, a building, language, entire ecosystems – consist of smaller components. It is the relationship of the smaller elements which determines the character and degree of life of the whole. Objects which contain a high degree of life tend to contain a beautiful range of scales within, which exist at a series of well-marked intervals and have clearly recognizable jumps between them. To have good levels of scale, it is extremely important that the jumps between different scales of centers are neither too great nor too small.

2. STRONG CENTERS

The idea of a center is at the heart of all that creates life within an object. But rather than the traditional view of an isolated geometry in space, a true center is defined not only by its internal cohesion, but by its relation to context. A strong center can only occur when other centers are intensifying it. Like levels of scale, the concept of strong centers is recursive. In something which is alive, a strong center is made of many other strong centers, at different levels, which in turn make us aware of the whole they compose.
3. **Boundaries**

The articulation of a form depends to a great degree on how its surfaces are defined and meet at edges. The effect of a strong boundary is twofold: First, it focuses attention on the center, further intensifying it; and second, the boundary unites the center which it surrounds with what is beyond. For the boundary to accomplish both of these tasks – to separate and to unite – it must have a degree of presence as strong as the center which it bounds.

4. **Alternating Repetition**

The principle of repetition orders recurring elements in a composition according to their proximity to one another, and by the visual characteristics they share. Elements need not be perfectly identical to be grouped in a repetitive fashion; they must merely share a common trait of size, shape, or detail characteristics allowing each element to be individually unique, yet belong to the same family. When the repetition within a group of elements occurs parallel on a number of different levels, an alternating rhythm of centers forms, one series of centers intensifying the other.
5. POSITIVE SPACE

Positive space refers to shaped space. Where an element occurs in space, the element not only exists with its own shape, but it also acts to define the shape of the space around it. For something to be whole, both the element itself and the space around it must engage one another, each intensifying the other. When this occurs, every single part of space has positive shape as a center — there are no amorphous, meaningless leftovers. Every shape should be a strong center in itself, which is in turn made up of other, smaller centers.

6. GOOD SHAPE

Shape is the principal identifying characteristic of form, resulting from the specific configuration of a form’s surfaces and edges. Good shape happens when the surfaces and edges of a form have strong centers in every part of themselves. A good shape, even if complex, can usually be broken down easily into more simple shapes. A good shape tends to contain a high degree of internal symmetries, an overall bilateral symmetry, and a well-marked center. The good shape also creates positive space around it, is very strongly distinct from what surrounds it, and has a feeling of being closed and complete.
7. LOCAL SYMMETRIES

A symmetry, or the balanced distribution of equivalent forms or spaces about a common line or point, can organize elements in architecture in two ways: an entire organization can be made symmetrical, or a symmetrical condition can occur in only a portion of the building or object, at any scale. The latter case is what we refer to as local symmetry. Overall symmetry in an object tends to look mechanical and lifeless, usually due to the fact that local symmetries are absent within the overall form. However, when there are local symmetries, centers tend to form and strengthen the whole.

8. DEEP INTERLOCK

Forms which have a high degree of life tend to contain some type of interlock – a “hooking into” their surroundings – or an ambiguity between element and context, either case creating a zone belonging to both the form and to its surroundings, making it difficult to disentangle the two. The interlock, or ambiguity, strengthens the centers on either side, which are intensified by the new center formed between the two.
9. CONTRAST

Works of art which have great life often have intense contrast within: rough/smooth, solid/void, loud/silent, empty/full. It is the difference between opposites which gives birth to something. Contrast is what often gives other principles their degree of life - the intensity of the boundary, the markedness of the alternating repetition. Contrast strengthens centers by making each a deeper entity of itself, and thereby giving deeper meaning to both. It is, at its simplest, what allows us to differentiate. But meaningless contrast remains meaningless. It is only when centers are actively, mutually, and meaningfully composed that it acts to deepen the whole.

10. GRADIENTS

Gradients must arise simply because in the natural world, things vary in size, spacing, intensity, and character. All living things tend to have a certain softness. One quality changes slowly, not suddenly, across space to become another. In something which has life, throughout the whole there are graded fields of variation, often moving from the center to the boundary or vice-versa. We are able to read the character of a larger center often because of the gradation of smaller centers across the larger form.
11. ROUGHNESS

Roughness is the odd shape, the quick brush stroke, the irregular column size or spacing, the change in pattern at the corner – it is adjusting to conditions as they present themselves with meaning, but without ego or contrived deliberation. Though it may look superficially flawed, especially with human perception accustomed to mass-produced regularity and perfection as a goal, an object with roughness is often more precise because it comes about from paying attention to what matters most, and letting go of what matters less.

12. ECHOES

When echoes are present within a design, all the various smaller elements and centers, from which the larger centers are made, have a certain sameness of character. There are deep internal similarities, or echoes of one another, which tie all the elements and centers together at various scales to form a cohesive unity of being.
13. THE VOID

Objects or elements which have the greatest depth, which actively draw the senses in, have at their heart an area of deep calm and stillness—a void bounded by and contrasted with an area of intense centers around it. When an element becomes all detail, its own constant buzz tends to dilute its overall strength. Like a musical wall of sound, it pushes against our perception to produce a flat field-like state. Conversely, it is the pause which allows us to interlock with a piece of music and feel its depth. The presence of void, at many scales, provides a contrasting calm to alleviate the buzz and strengthen the center.

The Void found in the dark field of a Bidjar rug from Kurdistan.

14. SIMPLICITY & INNER CALM

Living things tend to have a special simplicity, an economy developed over time in which all things unnecessary, or not supporting the whole, are removed. This does not preclude ornament, as even in nature ornament has its very necessary place. What simplicity does is cut away the meaningless attachments to an element, the things which often distract and confuse its true nature. When this is done, an object is in a state of inner calm.

Swedish barn, from Västerbotten.
15. NOT-SEPAREATNESS

Not-separateness is the degree of connectedness an element has with all that is around it. A thing which has this quality feels completely at peace, because it is so deeply interconnected with its world. There is no abruptness, no sharpness, but often an incomplete edge which softens the hard boundary. The element is drawn into its setting, and the element draws its setting into itself. Not-separateness is a profound connection occurring at many scales between a center and the other centers which surround it, so that they melt into one another and become inseparable.

Reference:

SITE MODEL 1:100